

THE NEW INTERNATIONAL YEAR BOOK

A COMPENDIUM OF THE WORLD'S
PROGRESS

FOR THE YEAR

1929

EDITOR

HERBERT TREADWELL WADE

NEW YORK
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1930

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PREFACE

THE NEW INTERNATIONAL YEAR BOOK with its comprehensive record for the year 1929, is the twenty-eighth volume of a series that has enjoyed general favor and long since has become established and appreciated as an annual work of reference. In the present volume there are few departures from a plan that has been found most convenient for ready reference and particularly useful to the general reader. The NEW INTERNATIONAL YEAR BOOK, true to its title, as usual presents an adequate picture of international conditions in politics, literature, art, and science, with special reference to interrelated movements and developments in various fields.

A few of the more important features may be cited in this preface as of more than passing interest. In world politics the year 1929 has been replete with interest. The LEAGUE OF NATIONS has functioned with increased efficiency. After a conference at The Hague the Young Plan for the settlement of the delicate question of REPARATIONS was formulated; while in South America the Tacna-Arica question, outstanding for many years, was settled by Chile and Peru as discussed under INTERNATIONAL ARBITRATION. On the other hand during the year relations between BOLIVIA and PARAGUAY continued strained and aroused the general concern of American states. The liberal tendency of the times was reflected in Labor governments coming into power in GREAT BRITAIN and AUSTRALIA; while in JAPAN a Liberal Ministry headed by Premier Hamaguchi of the Minseito Party assumed responsible government. INDIA continued in a state of political unrest with various movements under way portentous of future trouble; while in the UNION OF SOUTH AFRICA an important general election was held. Somewhat distinct from liberal advances is the record of political conditions in ITALY, including the notable ratification of the treaty with the Vatican and the establishment of VATICAN CITY as an independent Papal State. Under CHINA the confused situation due to the Manchurian railway and other questions are discussed with the hope of simplifying for the reader of the news of the day the political complexities of this Eastern republic. The question of disarmament was prominent in world politics and received an impetus in the action of DENMARK and in movements in NORWAY and SWEDEN toward reducing their military and naval forces, in addition to the regular organized PEACE efforts which continued as in previous years. Naturally this involved a consideration of MILITARY PROGRESS and NAVAL PROGRESS with due attention to developments in these fields.

The YEAR BOOK continues its record of PROHIBITION in the United States as well as elsewhere, and the record for 1929, especially when read in connection with that given in previous volumes, forms a comprehensive view of the progress of this much debated phase of governmental activity which confessedly had not passed from the experimental stage. But Prohibition was by no means the only form of political activity of importance in the UNITED STATES and the progress of Farm Relief and Tariff Revision is chronicled, including the passage of the Agricultural Marketing Act and the establishment of the Federal Farm Board with the development of cooperative effort on the part of the farmers.

In no field has the YEAR BOOK been found more useful than in its summaries of the literary activity of the year, not merely in the United States and Great Britain, but

PREFACE

in France, Germany, Italy, Scandinavia, and Spain, with due attention to the literatures of Spanish America. For the present volume an unusually interesting summary of the THEATRE has been prepared. ART and ARCHITECTURE continue to receive the attention they merit, with special consideration given to European conditions and developments as well as to notable work in America. The social sciences receive customary treatment with such topics as CHILD WELFARE, COOPERATION, CRIME, IMMIGRATION, LABOR LEGISLATION, MARRIAGE AND DIVORCE, OLD AGE PENSIONS, and UNEMPLOYMENT, indicating the range of a department which keeps the reader fully in touch with movements related to human activities and welfare. No recent development in the YEAR BOOK has been more cordially received than the department of finance and commerce, dealing as it does with applied economic and business conditions. Of particular interest under BANKS AND BANKING, BUSINESS REVIEW, and FINANCIAL REVIEW, is a discussion of financial conditions including the Panic of October which was so startling in its apparent suddenness and immediate consequences.

The authoritative review of PHOTOGRAPHY presented in the previous YEAR BOOK has been continued, and this year there is included a discussion of MOVING PICTURES with a full consideration of the changes that the combination of talking features has brought to this art and industry. In CHEMISTRY the usual interesting summary is submitted, while under GEOLOGY a new contributor records the developments of the year. Under AERONAUTICS the YEAR BOOK summarizes the interesting developments in this ever-progressing art and now general means of communication. In mechanical and power engineering new and important power plants and units are described, including INTERNAL COMBUSTION ENGINES, ranging from those for the motor vehicle to the largest ship. Whether considered from the engineering or economic standpoint the progress of the AUTOMOBILE warrants the careful attention it receives in the YEAR BOOK. Not only must problems involved in changes of design be treated, but as one of the world's leading industries it must be considered in relation to life and civilization as expressed in financial relations, highway improvements, public safety and taxation, with appropriate legislative and administrative conditions involved under one or more of these heads.

The YEAR BOOK contains no single article on religious progress, yet this important subject is fully discussed in important and authoritative summaries of the activities of the various churches and religious denominations. In the preparation of these articles the editors of the YEAR BOOK have received the gracious cooperation of leaders of religious bodies. The same holds true for education, and in addition to the general article on EDUCATION IN THE UNITED STATES and UNIVERSITIES AND COLLEGES each of the important institutions is considered with significant statistics as of the autumn of 1929. The reader of the YEAR BOOK will note a somewhat increased NECROLOGY with the biographical sketches of important men and women who died during the year, some of these, of course, finding treatment in the main body of the book.

In conclusion, as in previous years, the Editor desires to record his cordial thanks for the kind and effective cooperation of many governmental agencies in various parts of the world who have placed at his disposal their most recent official statistics and other information. Likewise, unofficial but important organizations in letters, science and arts, not to mention countless individuals, have rendered valuable assistance in the volume that is herewith presented.

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KEY TO PRONUNCIATION

- a** as in *ale, fate*. Also see **æ**, below.
- ä** " " *senate, chaotic*
- å** " " *glare, care, and as e in there* See **æ**, below.
- ä** " " *am, nt.*
- ä** " " *arm, father*
- ä** " " *ant, and final a in America, armada, etc.*
In rapid speech this vowel readily becomes more or less obscured and like the neutral vowel or a short *u* (**ü**)
- æ** " " *final, regal, where it is of a neutral or obscure quality.*
- æ** " " *all, fall*
- æ** " " *eve.*
- æ** " " *elate, evade.*
- æ** " " *end, pet.* The characters **ê, â, and ä** are used for **a, æ** in German, as in Baedeker, Grafe, Handel, to the values of which they are the nearest English vowel sounds. The sound of Swedish **a** is also sometimes indicated by **ê**, sometimes by **ä** or **ä**
- æ** " " *fern, her, and as e in sir* Also for **o, œ**, in German, as in Goethe, Ortel, Oertel, and for **eu** and **œu** in French, as in Neufchâtel, Crèveceur; to which it is the nearest English vowel sound
- æ** " " *agency, judgment, where it is of a neutral or obscure quality.*
- i** " " *ice, quiet*
- i** " " *quiescent.*
- i** " " *ill, fit*
- i** " " *old, sober.*
- i** " " *obey, sobriety.*
- i** " " *orb, nor*
- i** " " *odd, forest, not*
- i** " " *atom, carol, where it has a neutral or obscure quality*
- oi** " " *oil, boil, and for eu in German, as in Feuerbach*
- oi** " " *food, fool, and as u in rude, rule.*
- ou** " " *house, mouse.*
- ou** " " *use, mule*
- u** " " *unite*
- u** " " *cut, but*
- u** " " *full, put, or as oo in foot, book.* Also for **u** in German, as in Munchen, Muller, and **u** in French, as in Buchez, Budé, to which it is the nearest English vowel sound
- ü** " " *urn, burn*
- y** " " *yet, yield*
- z** " " *the Spanish Habana, Córdoba, where it is like a v made with the lips alone, instead of with the teeth and lips.*
- ch** " *chair, cheese.*
- d** as in the Spanish *Almodovar, pulgada*, where it is nearly like *th* in English *then*, *this*.
- g** " " *go, get*
- g** " " *the German Landtag, and ch in Feuerbach, buch*; where it is a guttural sound made with the back part of the tongue raised toward the soft palate, as in the sound made in clearing the throat.
- h** " *j* in the Spanish *Jijona, g* in the Spanish *gila*, where it is a fricative somewhat resembling the sound of *h* in English *hue* or *y* in *yet*, but stronger
- hw** " *wh* in which
- k** " *ch* in the German *ich, Albrecht*, and *g* in the German *Arensberg, Mecklenburg*, where it is a fricative sound made between the tongue and the hard palate toward which the tongue is raised. It resembles the sound of *h* in *hue*, or *y* in *yet*, or the sound made by beginning to pronounce a *k*, but not completing the stoppage of the breath. The character **k** is also used to indicate the rough aspirates or fricatives of some of the Oriental languages, as of *kh* in the word *Khan*.
- n** " " *in snker, longer.*
- ng** " " *sing, long*
- n** " " *the French bon, Bourbon, and m in the French Etampes*, where it is equivalent to a nasalizing of the preceding vowel. This effect is approximately produced by attempting to pronounce "onion" without touching the tip of the tongue to the roof of the mouth. The corresponding nasal of Portuguese is also indicated by **n**, as in the case of *São Antão*.
- sh** " " *shine, shut*
- th** " " *thrust, thin.*
- th** " " *then, this*
- zh** " *z* in *azure*, and *s* in *pleasure*
- An apostrophe [**’**] is sometimes used to denote a glide or neutral connecting vowel, as in *tä'b’l* (table), *käz’m* (chasm).
- Otherwise than as noted above, the letters used in the *romanization* for pronunciation are to receive their own English sounds
- When the pronunciation is sufficiently shown by indicating the accented syllables, this is done without repelling, as in the case of very common English words, and words which are so spelled as to insure their correct pronunciation if they are correctly accented. Pronunciation is discussed in the *NEW INTERNATIONAL ENCYCLOPEDIA*.

THE NEW INTERNATIONAL YEAR BOOK

ABORTION IN LIVESTOCK. See VETERINARY MEDICINE

ABYSSINIA. See ETHIOPIA

ACADEMY, FRENCH (ACADÉMIE FRANÇAISE). The oldest of the five academies which make up the Institute of France and officially considered the highest, founded in 1635, reorganized in 1816. The membership is limited to 40. The list of the Immortals at the beginning of 1929, in order of their election, was as follows: Paul Bourget, Gabriel Hanotaux, Henri Lavedan, René Bazin, Maurice Donnay, Raymond Poincaré, Eugène Brieux, René Doumic, Marcel Prévost, Henri de Régnier, le maréchal Louis Lyauté, Pierre de La Gorce, Henri Beigson, le maréchal Joseph Joffre, Louis Barthou, Mgr. Alfred Baudrillat, Jules Cambon, Georges Clémenceau (died Nov 24, 1929), le maréchal Ferdinand Foch (died Mar 20, 1929), Henri Bordeaux; Joseph Bédier, André Chevrillon; Pierre de Nolhac, Georges Goyau, Henri Brémond, Georges de Porto-Riche, Edouard Estaunie, Henri Robert, Camille Jullian, Georges Lecomte, Émile Picard, Albert Bernard, Louis Bertrand, Auguste de Caumont, duc de La Force, Paul Valéry, Abel Hermant, Émile Mâle, Louis Madelin, and Maurice Paléologue.

Louis Madelin, the historian, who was elected to membership in the academy in 1927 to fill the chair formerly occupied by Robert de Fiers, was formally received during the year. On June 20, Marshal Henri Pétain was elected to fill the place made vacant by the death of Marshal Foch. Marshal Pétain was born in Cauchy à la Tour in 1856 and received his military education at the École Supérieure de Guerre. During the World War, he greatly distinguished himself on the occasion of the French offensive near Arras in May, 1915, where his corps broke through the German position, and it was largely owing to his energy that Verdun was saved during the German offensive of the spring of 1916. In April, 1917, he was appointed chief of the general staff of the Ministry of War and a few weeks later replaced General Nivelle as commander-in-chief of the armies in the field. He received the baton of Maréchal de France from President Poincaré at Metz on Dec. 8, 1918.

At the academy's June meeting, the ballot was inconclusive as to the successor to the seat formerly occupied by Viscount François de Curel. Charles Le Goffic and François de Croisset being close contestants. The academy's *Grand Prix de Littérature* was awarded in June to Henri Massis. See FRENCH LITERATURE. The salaries of

the academicians were raised by the French Parliament to 5000 francs a year. The permanent secretary of the academy was René Doumic.

ACADEMY OF ARTS AND LETTERS, AMERICAN. A society founded in 1904 by members of the National Institute of Arts and Letters, its charter of incorporation being approved by Act of Congress Apr 17, 1916. It corresponds to the French Academy, its membership being limited to 50 chairs, and vacancies caused by death are filled by election by the members from the National Institute on the basis of lifetime achievement in literature, painting, sculpture, architecture, and music.

The twenty-fifth anniversary of the founding of the academy was observed on Apr 23, 1929 in connection with the formal session held on that date. The gold medal of the academy for distinction in literature was awarded to Edith Wharton, the medal for good diction to Julia Marlowe, and the new medal for good diction over the radio to Milton J. Cross. On April 24, Prof. George Pierce Baker of Yale University, a member of the academy, read a paper, "The Modern English Language", and on the evening of the same day, the third concert of all American music by American composers was given by the Philharmonic-Symphony Orchestra, under the auspices of the academy, at Carnegie Hall. An exhibition of memorabilia of members of the academy, living and deceased, also was held in connection with the twenty-fifth anniversary. The annual meeting scheduled for November, 1929, was postponed to November, 1930, owing to the fact that the new academy building, facing 156th Street near the site of the headquarters building, was in process of erection.

The membership of the academy, as of Dec. 1, 1929, consisted of the following in the order of their election: Daniel Chester French, Robert Underwood Johnson, Henry van Dyke, Arthur Twining Hadley, Edwin Howland Blashfield, George Edward Woodberry, George Whitefield Chadwick, George de Forest Brush, Bliss Perry, Abbott Lawrence Lowell, Nicholas Murray Butler, Owen Wister, Herbert Adams, Augustus Thomas, Timothy Cole, Cass Gilbert, Robert Grant, Frederick MacMonnies, William Gillette, Paul Elmer More, Gari Melchers, Elihu Root, Brand Whitlock, Hamlin Garland, Paul Shorey, Charles Adams Platt, Archer Milton Huntington, Childre Hassam, David Jayne Hill, Lorado Taft, Newton Booth Tarkington, Charles Dana Gibson, John Charles Van Dyke, Royal Cortissoz, Henry Hadley, Charles Downer Hazen, George Pierce

Baker, Edwin Anderson Alderman, Edward Channing, Wilbur L. Cross, Herman A. MacNeil, John Russell Pope, Edwin Arlington Robinson, James Earle Fraser, John Huston Finley, William Mitchell Kandall, and Edwin Markham.

The officers in 1929 were: President, Nicholas Murray Butler; secretary, Robert Underwood Johnson, directors, Herbert Adams, Wilbur L. Cross, Hamlin Garland, Robert Grant, Cass Gilbert, Archer Milton Huntington. The offices of chancellor and treasurer were not filled. Headquarters are in the academy building, 633 West 155th Street, New York City.

ACADEMY OF SCIENCES. See NATIONAL ACADEMY OF SCIENCES.

ACCIDENTS. See RAILWAYS, ACCIDENTS, WORKMEN'S COMPENSATION.

ADAMSON, WILLIAM CHARLES American lawyer, public official and legislator, died in New York, Jan. 3, 1929. Born in Bowdon, Ga., Aug. 13, 1854, he was graduated from Bowdon College in 1874, and received the A.M. degree in 1883. Having studied law in a private office, he was admitted to the bar in 1876, and practiced in State and Federal courts, and before the Interstate Commerce Commission, being municipal attorney for Carrollton, Ga., for several years, and judge of the city court, 1885-89. Judge Adamson served as a Democratic presidential elector in 1892, and in 1896 was elected to the Fifty-fifth Congress from the fourth Georgia district, being continuously reelected through the Sixty-fifth Congress. As chairman of the House Committee of Interstate and Foreign Commerce and head of the board, he drafted the much-contested eight-hour railway labor law, also taking a prominent part in other legislation. On being appointed to the board of U. S. General Appraisers, of the Customs Court, by President Wilson in December, 1917, Judge Adamson resigned from Congress. He retired from the board in 1928 to resume private law practice.

ADAPTATION. See ZOOLOGY.

ADELBERT COLLEGE. See WESTERN RESERVE UNIVERSITY.

ADELPHI COLLEGE. A nonsectarian college of arts and sciences for women in Garden City, N. Y., incorporated in 1898. Adelphi was located in Brooklyn, N. Y., until the autumn of 1929, when it was transferred to its new home in Garden City, where it has a campus of about 70 acres and three buildings which can accommodate 1000 students. The enrollment for the summer session of 1929 was 79 students and for the autumn term, 588 students. The faculty numbered 57. Two new departments, physical education and music, were added during the year. The income for 1928-29 was \$230,000. The library contained 26,000 volumes. President, Frank Dickinson Blodgett, LL.D.

ADEN, a'den or a'den. A volcanic peninsula on the Arabian coast belonging to Great Britain since 1839, about 100 miles east of Babel-Mandeb. Area, 75 square miles; including the protectorate, about 9000 square miles. The settlement comprises also the peninsula of Little Aden, some villages on the mainland, and the island of Perim, the last named having an area of 5 square miles. In 1921 the population of Aden and Perim was 54,923, of which 80 per cent was Mohammedan. The population of the protectorate was about 100,000. The manufactures, which are unimportant, consist chiefly of salt and cigarettes.

As the principal commercial centre of the Arabian peninsula, Aden is the entrepôt for the Red

Sea markets of Ethiopia, Eritrea, and Somaliland. It is also important as a fueling station, largely due to its position halfway between the Orient and Europe, and is fortified. The total imports during 1927-28 amounted to 97,538,991 rupees and the total exports for the same period to 80,608,401 rupees. The chief imports were cotton piece goods, grain, hides and skins, tobacco, coal, and provisions; the chief exports were coffee, gums, hides and skins, cotton goods, provisions, sugar, and tobacco. Most of the goods entering the foreign trade are transshipments. In the same year, 1575 merchant vessels of 5,707,205 tons entered the port of Aden, as compared with 1204 ships of 3,058,000 tons in 1912-13.

Attached to Aden are the Kuria Muria Islands off the Arabian coast, five in number, ceded by the Sultan of Muskat. Aden is under a British political resident with four assistants, the British Colonial Office having charge of all political questions and the British War Office, of military questions. The internal administration is in the hands of the Government of India. The gross revenue of the settlement in 1927-28 was 742,625 rupees. In 1929 dredging operations to extend and deepen the harbor were under way, the commerce of the port having shown a steady increase. Political resident and general officer commanding in 1929, Lieut. Col. Sir Stewart Symes.

"ADMIRAL SCHEER," GERMAN CRUISER.

See NAVAL PROGRESS, under Germany.

ADULT EDUCATION, AMERICAN ASSOCIATION FOR. An organization formed in 1926 to serve as a source of information concerning adult education activities and particularly to act as a clearing house through which the experience and findings of every adult educational enterprise may be made available to others. The association also seeks to advise those who are already engaged in adult education, to aid those who are planning to initiate such work, to publish and secure the publication of material useful to those in the field, and to assist in studies of problems fundamental to adult education. Its view is that adult education should count in its enrollment those men and women, young and old, who are no longer in contact with formalized education, whose primary interest lies in a vocation but who possess a secondary interest in their own educational improvement as a sustained and continuing process.

Membership in the association is open to individuals or groups interested in adult education. It depends for financial support upon dues from members, contributions from individuals, and grants from educational foundations. Organizations directly concerned with adult education include libraries, universities and colleges, largely through their extension and other extramural departments, the public-school system; chautauquas, open forums; people's colleges; labor schools, corporation schools; and numerous other agencies, including radio broadcasting, motion pictures, and newspapers.

The association has cooperated with the People's Institute toward the working out of teaching methods and subject matter for adult education in experimental classes in various sections of Greater New York. An investigation of the ability of adults to learn was made by Dr. Edward L. Thorndike and his associates at Teachers College, Columbia University, under the auspices of the association and was published in 1928 under the title, *Adult Learning*. A committee of which

Dean William S. Gray of the college of education, University of Chicago, was chairman, undertook a study seeking to determine the influences which account for the formation of reading habits, desirable or otherwise, the findings were published in 1929 in a volume entitled, *The Reading Interests and Habits of Adults*. The results of a study of the drama and little-theatre movement in relation to adult education were embodied in *Footlights across America*, by Kenneth Macgowan (1929). Other studies undertaken at the instance of the association included prison educational programmes, correspondence-school methods, possibilities of radio broadcasting, and continuing education of collegiate alumni.

The national conference of the association was held in May, 1929, in Chapel Hill, N. C. The officers elected were, President, James E. Russell, dean emeritus, Teachers College, Columbia University; vice president, Prof. Leon J. Richardson, director, extension division, University of California; treasurer, J. H. Puelicher, chairman, committee on education, American Bankers' Association, Milwaukee, secretary, Miss Margaret Burton, executive secretary, education and research division, National Board of the Young Women's Christian Associations, New York City, director, Morse A. Cartwright, New York City. The officers and 14 other members constitute the executive board of the association. Headquarters are at 41 East Forty-second Street, New York City.

ADVANCEMENT OF SCIENCE, AMERICAN ASSOCIATION FOR THE. This organization was founded in 1848 to advance science, to give a stronger and more general impulse and more systematic direction to scientific research, and to procure for the labors of scientific men increased facilities and a wider usefulness. In 1929 its membership included about 18,500 individuals interested in the advancement of science and the progress of knowledge and education. There were also 120 autonomous and independent associated scientific societies, of which 89 were officially affiliated with the association, 23 being local academies of science. The association has 15 sections representing the main current subdivisions of science: Mathematics, physics, chemistry, astronomy, geology and geography, zoological sciences, botanical sciences, anthropology, psychology, social and economic sciences, historical and philological sciences, engineering, medical sciences, agriculture, and education. Its activities are of three kinds: Those related to the holding of the annual and other meetings, those related to publications, and those related to the advancement of knowledge by research.

The eighty-sixth annual meeting of the association was held in Des Moines, Iowa, Dec. 27, 1929, to Jan. 2, 1930, with an attendance of about 2000 persons. There also were 33 organizations meeting with the association. At its 175 sessions about 1600 papers and addresses were given by about 1300 persons. The science exhibition also was well developed, with exhibits by commercial firms, individuals, and scientific organizations. Among the important papers read at the general sessions were: "The Discovery of Tertiary Man," by Henry Fairfield Osborn, "An Anthropologist's View of Race," by Fay-Cooper Cole, "Some Aspects of Human Biology," by George H. Parker; "Earthquakes and What They Tell Us," by James B. Macelwane, "The Rela-

tion Between the Size of the Energy Atom and Its Physiological Effect," by W. T. Bovie, "The Application of Mathematics to the Social Sciences," by Irving Fisher, "Glaciation: The Background of the Development of the Mississippi Valley," by George F. Kay, "Some Aspects of Celestial Evolution," by Edwin B. Frost; "Exploration for Human Origins and Migrations in the Far Northwest," by Ales Hrdlicka, "The Alleged Sins of Science," by Robert A. Millikan, and "By Airplane to Pigmy Land," by M. W. Stirling.

The annual association prize of \$1000 for the paper describing a noteworthy contribution to science presented at the annual meeting was awarded to A. J. Dempster of the University of Chicago for his paper entitled, "The Deflection of Hydrogen Positive Rays by Calcite." The next annual meeting was to be held in Cleveland Dec. 29, 1930, to Jan. 3, 1931.

The official organ of the association is a weekly journal, *Science*, which furnishes an open forum for the discussion of questions regarding science and education, almost every branch of scientific knowledge being represented in its columns. In addition, the association issues the *Scientific Monthly*, an illustrated magazine of timely articles of general interest by eminent men of science; prepares an elaborate programme for each annual meeting, and publishes at four-year intervals a volume of *Summarized Proceedings*, including a directory of members. The permanent endowment of the association, the income from which is employed to advance scientific research, amounted on Sept. 30, 1929, to \$159,766; grants are made annually to individuals or scientific organizations to promote research. Two regional divisions are under the auspices of the association: The Pacific division, including the Pacific States, Alaska, the Philippines, and the Hawaiian Islands; and the Southwestern division, including Arizona, New Mexico, Colorado, western Texas, and northern Mexico. These divisions are autonomous, holding annual and other meetings and engaging in special projects in their respective fields.

The direction of the association is entrusted to a council consisting of the officers, secretaries of the sections, representatives of the affiliated societies and academies, and eight members elected at large by the council. It holds an annual meeting at the same time as the association and operates in the interim through an executive committee. The president of the association for 1929 was Robert A. Millikan, eminent physicist and director of the Norman Bridge Physical Laboratory, California Institute of Technology. The president-elect for 1930 was Thomas Hunt Morgan, director of the Kerckhoff Laboratories of the Biological Sciences, California Institute of Technology. The other officers who were to serve until 1932 were: Permanent secretary, Burton E. Livingston, general secretary, Frank R. Lillie, treasurer, John L. Wirt. Headquarters are in the Smithsonian Institution Building, Washington, D. C.

ADVANCEMENT OF SCIENCE, ASSOCIATIONS FOR THE. The eighty-sixth annual meeting of the American Association for the Advancement of Science (q.v.) was held in Des Moines, Iowa, Dec. 27, 1929, to Jan. 2, 1930, with 33 affiliated societies. The Southwestern Division of the American Association for the Advancement of Science met in Albuquerque, N. Mex., Apr. 22-25, 1929.

The Pacific Division met in Berkeley, Calif., June 19-22, 1929. The British Association for the Advancement of Science (q.v.) met in Cape Town, South Africa, July 22-31, 1929. The French Association for the Advancement of Science met in Havre July 25-30, 1929.

ADVENT CHRISTIANS. See **ADVENTISTS**
ADVENTISTS. The Advent Movement had its origin in America with William Miller, who believed not only in the coming of Christ in person, power, and glory, but that such an advent was at hand and that the date might be fixed with some definiteness. The movement, however, began in England and on the Continent, under the leadership of the Rev. Hugh McNeile and the Rev. Edward Irving, in England, and the Rev. Joseph Wolfe, DD, LL.D., in Prussia. A Prophetic Conference was held at Albany Park in 1836, at the residence of Henry Drummond, Esq., afterward a member of the British Parliament, with "Eight days of serious study of the prophecies," at which the Rev. Hugh McNeile presided. The first general gathering in America of those interested took place in Boston, October, 1840, the movement at that time being wholly within the existing churches, but in April, 1845, a conference was held at Albany, N. Y., at which the adherents of the Adventist doctrine were organized and a declaration of principles adopted, embodying the views of Mr. Miller. For the next ten years this organization included practically all the Adventists, but gradually separate bodies developed, beginning with the Advent Christian Church, in 1855, and including the Seventh-Day Adventists, organized in 1860; Life and Advent Union, in 1864; The Church of God (Adventists), in 1866; and The Churches of God and Christ Jesus, in 1888.

ADVENT CHRISTIAN CHURCH. This church which is congregational in church government holds simply to the general imminence of Christ's return but takes the position that the day cannot be determined. It holds a biennial general conference, the 1928 meeting having been held in Dowling Park, Fla. Statistics for 1929, covering 44 conferences, showed 527 churches, 494 ordained ministers, 109 licensed ministers, 29,381 church members, 333 Sunday schools, 20,139 Sunday-school members, 131 Young People's Societies of Loyal Workers, with 2831 members. The denomination maintains four publication societies and two educational institutions, Aurora College in Aurora, Ill., and the New England School of Theology in Boston. Periodicals published include *The World's Crisis* (Boston), *Messiah's Advocate* (Oakland, Calif.), *Our Hope* (Mendota, Ill.), and *Present Truth Messenger* (Live Oak, Fla.). Among the philanthropic institutions of the denomination are the American Advent Christian Home and Orphanage in Dowling Park, Fla., and the Vernon Home for ministers and missionaries in South Vernon, Mass. The Rev. J. William Denton was general director of the Advent Christian General Conference in 1929. Headquarters are at 160 Warren Street, Boston.

SEVENTH-DAY ADVENTISTS. This denomination, which is the largest of the Adventist group, embraces 12 union conferences in the United States and Canada. It believes that the seventh day of the week, from sunset on Friday to sunset on Saturday, is the Sabbath established by God's law and that immersion is the only proper form of baptism. The local church is congregational

in government, although under the general supervision of the conference. The statistical report of the denomination for 1928 indicated 2229 churches in the North American division, 869 ordained ministers, and 113,737 church members; Sabbath schools numbered 2724 and the membership, 119,491. The foreign division consisted of 3998 churches, 1012 ordained ministers, 171,556 church members, and 6297 Sabbath schools, with an enrollment of 222,943. The movement maintains in the United States and Canada 96 educational institutions, which in 1928 had an enrollment of 16,188 students. Of the colleges and seminaries, Loma Linda Medical College, Loma Linda, Calif., and Pacific Union College, St. Helena, Calif., are the largest. There are also 79 educational institutions maintained in foreign countries. The denomination has 18 publishing houses in North America and 38 in foreign countries. During 1928 denominational literature was issued in 141 languages and evangelistic work was conducted in 135 countries. Periodicals of the movement include *The Advent Review and Sabbath Herald* (Washington), *Signs of the Times* (Mountain View, Calif.), and *The Watchman* (Nashville, Tenn.). The headquarters of the General Conference of Seventh-Day Adventists are at Takoma Park, Washington, D. C.

AERONAUTICS. The development of commercial air transportation and its systematic extension undoubtedly was the leading feature of progress in aeronautics during the year 1929. There was unquestionably active development also along technical lines, including the improvement of planes and engines and the construction of larger and more improved airships, for long-distance transportation. The globe was circumnavigated for the first time by a dirigible and a number of important flights as usual were to be recorded, but, all things considered, the rapid increase in organizing air-transportation facilities and the systematic operation of airways on a regular schedule were the main features of the year and consequently find somewhat extended treatment in this summary. As usual, the **YEAR BOOK**, in the following paragraphs, records the more significant developments of the year, observing the customary grouping.

NATIONAL BALLOON RACE. The National Elimination Balloon Race for the Litchfield Trophy, which was held from the Pitt Stadium, Pittsburgh, Pa., on May 4, was won by Lieut. Thomas W. G. Settle, U. S. N., and his aide, Ensign Wilfred Bushnell, U. S. N., in the N. S. Navy A-8278 No. 1 balloon, which covered a distance of 952 miles in an elapsed time of 43 hours and 20 minutes, landing at Savage Island, Prince Edward Island, Canada. The contest established a new international record for free balloons for both distance and duration for balloons of 1201-1600 cubic meters capacity. Second place was won by W. T. Van Orman and A. L. MacCracken, in the balloon *Goodyear VII*, landing at Plattsburgh, N. Y., a distance of 403.6 miles. Third place was taken by E. J. Hill and A. G. Schlosser, holders of American duration records, in the Detroit *Times* entry, which landed near Tahawus, N. Y., after covering a distance of 386.4 miles. These contestants later constituted the United States team in the international Gordon Bennett Balloon Race. The contest attracted 12 entries.

GORDON BENNETT BALLOON RACE. The Gordon Bennett Balloon Race of 1929 was held from St.

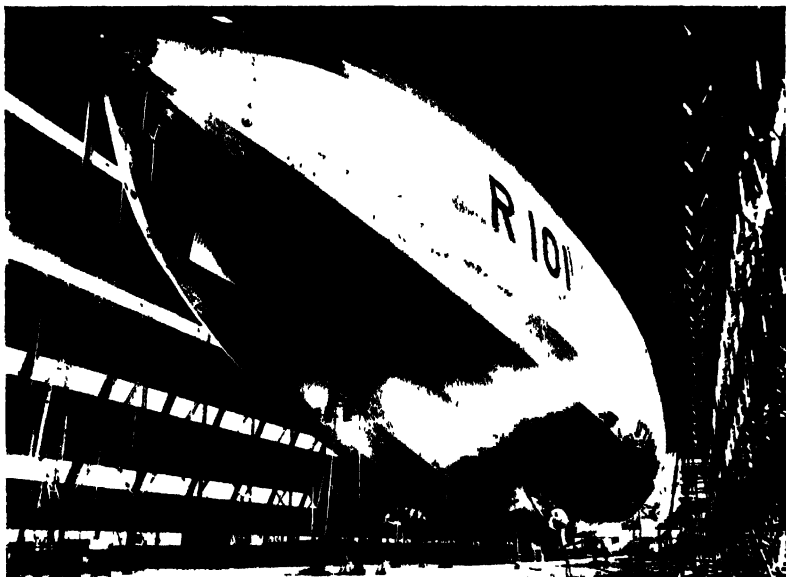


Photo by Photopress London

BRITISH DIRIGIBLE R-101 IN HANGAR



Courtesy Detroit Aircraft Corporation

ALL METAL UNITED STATES NAVY DIRIGIBLE "ZMC-2"

NOTABLE DIRIGIBLES OF 1920

Louis, September 28, and resulted again in a victory for the United States, being won by Ward T. Van Orman in the balloon *Goodyear VIII*, with 341 miles to his credit. Second place was won by Capt. W. E. Kepner, U. S. A., in the Army balloon with 338 miles, and third place, by Lieut. T. G. W. Settle, U. S. N., in the Navy balloon, with 304 miles. According to the official results, the balloons, pilots, aides, landing places, and distances in miles were as follows:

First, *Goodyear VIII*, United States, Ward T. Van Orman, Alan MacCracken, 3 miles southeast Troy, Ohio, 341 miles.

Second, Army, United States, Capt. W. E. Kepner, Capt. J. F. Powell, 2 miles north Neptune, Ohio, 338 miles.

Third, Navy, United States, Lieut. T. G. W. Settle, Ensign W. Bushnell, 10 miles southwest Eaton, Ohio, 304 miles.

Fourth, Belgium, Belgium, Ernest Demuyter, Frans Lecharlier, Corydon, Ind., 226 miles.

Fifth, Denmark, Denmark, Georg Schenstrom, S. A. U. Rasmussen, 5 miles southeast Bedford, Ind., 209 miles.

Sixth, Lafayette, France, Georges Blanchet, H. A. Scholle, Stinesville, Ind., 200 miles.

Seventh, Barmen, Germany, Hugo Kaalen, Jr., Fritz Ebener, 4 miles southeast Melvin, Ill., 171 miles.

Eighth, Essen Stadt, Germany, Eric Leimkugel, George Froebel, Catlin, Ill., 169 miles.

Ninth, Argentina, Argentina, D. Eduardo Bradley, Francisco J. Cadaval, Fairbanks, Ind., 155 miles.

BRITISH AIRSHIPS The completion of the large airships, the *R-101* and the *R-100*, described in earlier YEAR BOOKS, was an important event of the year. The *R-101* built by the British Government for service on the England-India air route, after designs by government engineers, completed her shed trials on October 1 and on October 12 was successfully launched and taken to the mooring tower at Cardington. She made several flights during the autumn in one of which she was in the air for 30 hours and later was returned to the air shed for minor alterations and adjustments. The test flights, although not officially described by the end of the year, seemed to indicate that the new ship had functioned satisfactorily, but complete details were issued of the performance of the heavy-oil engines which were used in the power plant for the first time. The *R-101* is 724 feet in length or 50 feet shorter than the *Graf Zeppelin*, and 130 feet in diameter, or 30 feet larger in waist measurement than the German airship. The lifting gas displacement was 5,000,000 cubic feet, as compared with 3,710,000 cubic feet of the *Graf Zeppelin*. The *Los Angeles*, of the U. S. Navy, for purposes of comparison may be said to have 2,470,000 cubic feet gas capacity, or over a million cubic feet less than the *Graf Zeppelin*.

The *R-101* has its principal framing made of stainless steel tubing with aluminum alloy used for the minor structural members. In this respect, it differed from the *R-100*, which, like other modern airships, utilizes for its framing the aluminum alloy, duralumin. The ship has two deck passenger cabins with dining, sleeping, and recreational accommodations for 100, contained within the hull in order to reduce the air resistance that would be caused by a car slung below the large cigar-shaped structure, and in this respect it anticipates the design of the new United States Navy airships discussed elsewhere. Hydrogen is used as the lifting gas, so that it is necessary to restrict smoking to a single smoking room which has been specially designed. The dining-room of the *R-101* seats 60 guests and there is also a lounge or main cabin with a bal-

cony at each end with non-splintering glass observation areas.

From a technical point of view, the important consideration is the use of heavy-oil engines to propel the great airship, eliminating the highly inflammable gasoline which naturally is a hazard in proximity to the hydrogen lifting gas. There are five Beardmore Tornado engines which develop 650 B.H.P. at 1000 revolutions per minute. These are Diesel engines of the compression-ignition type using a fuel oil of high flash point. Being self-igniting, spark plugs are not required and carburetors also are lacking. Waste heat from the two side engines is utilized in heating the quarters of the crew and passengers. One of the engines has to be reserved for propelling the vessel astern, being connected to the screw with a reversed pitch. It was found that the engines had to run at 900 revolutions per minute instead of the designed speed of 1000 revolutions per minute, so that the power available for driving the ship ahead was reduced from the total of 3250 B.H.P. to a total of 2340 B.H.P.

While the *R-101* was government-built her sister ship, the *R-100*, was constructed by the Airship Guarantee Company, a private firm, at Howden, Yorkshire. This craft, 709 feet in length and with a maximum diameter of 133 feet, was taken over for flight trials by the Air Ministry on November 22 and, after a delay caused by unfavorable weather, was launched from her shed on December 16, making 140 miles in two hours. There was a second flight on December 18 after which the ship was returned to her shed at Cardington for minor adjustments to the fabric covering. Consequently, little technical data was available regarding the flights at the end of the year. The engines of the *R-100*, as stated, used gasoline.

Further developments in the heavy-oil engines by the builders of those used in the *R-101* were under way and late in the year it was announced that a new engine with the same sized cylinder as used in the *Tornado*, 8½-inch bore by 12-inch stroke, had been designed, but with six cylinders in line instead of eight, so that it could run at a higher speed.

UNITED STATES AIRSHIPS On November 7 at Akron, Ohio, a gold rivet was driven in the uppermost portion of the first great ring of the duralumin skeleton of the U. S. Navy airship, *ZRS-4*, which with her sister ship *ZRS-5*, was the largest airship in the world so far to be designed. The construction of this airship was being undertaken in a special hangar, which the Goodyear-Zeppelin Corporation had built to take the *ZRS-4* and the *ZRS-5*. The shed had a length of 1175 feet, a width of 325 feet, and a height of 107 feet. It was of special design with doors at each end with two leaves which together constituted a quarter of a hemisphere. These leaves open and close by means of electric motors. The shed has a total area of 364,000 square feet. The new airships were designed with a length of 785 feet with a maximum diameter of 134 feet, 9 inches, and a height of 148 feet, 5 inches. Each airship will require 6,500,000 cubic feet of helium gas and will have a gross lift of 180 tons, as compared with 152 tons for 5,000,000 cubic feet of hydrogen carried in the British *R-101*. There are eight engines developing a total of 4480 horse power, installed within the hull instead of in suspended gondolas. The method of construction involved in building the airship frame was to construct a series of large rings giving the ship its cylindrical form, these

rings being constructed flat on the floor of hangar. A novel feature of the design was to provide in the airship a hangar compartment capable of accommodating five scout planes which could be released and taken aboard as required.

METAL CLAD AIRSHIP. A notable development of the year was the ZMC-2 airship, built by the Aircraft Development Corporation of Detroit, which, inflated with helium, made its first flight on August 19, and which later was turned over to the U S Navy for further experiment and trial. This novel airship was 149 feet in length, and 53 feet in diameter, capable of lifting a useful load of 3127 pounds and flying 680 miles at a cruising speed of 50 miles per hour. On the frame, consisting of five main, and seven subsidiary, rings stayed by radial wire and united to one another by 24 longitudinal girders, was fitted a skin aluminum sheeting less than 100th of an inch in thickness and composed of a series of sections riveted one to another with joints rendered gas tight by a bitumen compound. The skin serves as the actual gas container and acts structurally as a part of the hull. A car, with accommodations for a crew of three and four passengers, is carried beneath the hull and is equipped with a Wright Whirlwind engine of 220 horse power. Control is effected by eight radial fins placed 30 feet forward from the stern, the two upper and two lower fins being provided with co-acting rudders and the two port and the two starboard fins, with co-acting elevators.

"GRAF ZEPPELIN'S" FLIGHT AROUND THE WORLD. During the year, the airship, *Graf Zeppelin*, described in the 1928 and earlier *YEAR BOOKS*, made a notable trip around the world, circumnavigating the earth by airship for the first time. In the course of still another flight to the westward in May, motor trouble developed, the airship returned, and landing near Toulon, France, made repairs before returning to Friedrichshafen. A successful trip was made to the United States in July, completed on August 4. Then proceeding on its world circling trip, it flew over 12 different countries and 13 States of the United States, requiring 21 days, 7 hours, and 34 minutes and, throughout the world flight, the average speed maintained was in excess of 50 miles an hour, the rate rarely, if ever, exceeding 70 miles. The *Graf Zeppelin*, under command of Capt. Hugo Eckener, left Friedrichshafen on August 16, and its course was over Germany, Latvia, Estonia, and into Russia. From Russia, Siberia was traversed, and at Kasumi-gaura, Japan, a distance of 9980 miles had been covered in 101 hours and 44 minutes. The *Zeppelin* came to earth and was duly placed in a hangar through the assistance of the Japanese Navy. After a rest and notable reception in Tokyo, the *Zeppelin* proceeded August 23 on its way across the Pacific and in 68 hours and 51 minutes made the 5400 miles from Kasumi-gaura to the Golden Gate. The city of San Francisco was duly circled, and the *Graf Zeppelin* then proceeded to Los Angeles, where on August 26 it was tied to the mooring mast at Mines Field. The next section of the flight was across the United States, with unfavorable air conditions over Arizona, and after a rest at Lakehurst, the final flight to Friedrichshafen, reached on September 4, was accomplished in 67 hours. On the August 4 transatlantic trip, 46 hours and 52 minutes were required for the flight from New York to Paris and favorably compared with Lindbergh's record of 33½ hours and Byrd's

flight of 43 hours and 21 minutes from New York to the French coast. The globe-encircling flight was made under service conditions with passengers and cargo and was a further step in advancing commercial aviation. A trip to the North Polar region arranged during the year was canceled on December 23, various reasons for its abandonment developing.

GIANT AIRPLANES. It may be said with truth that the year witnessed the development of giant airplanes for passenger service, and first among these in point of size was the Dornier DO X flying boat, developed in Germany by the engineer after whom the plane was named. The Dornier airplane, designed to carry 100 passengers besides its crew, had a wing-spread of 150 feet, with a chord of wing of 32.8 feet, and an approximate major-wing area of 8150 square feet. The craft, built entirely of metal, was 149 feet long overall, and its gross weight loaded was 106,000 pounds, or 53 tons, and its weight empty 55,000 pounds. The power plant consisted of 12 Bristol-Jupiter engines, each of 525 horse power, or a total of 6300 horse power. The engines, controlled from a central station, were placed in tandem sets of two, rigidly mounted on top of the wings standing some 21 feet above the water line. On October 21, this huge flying boat, carrying 159 passengers, in addition to a crew of 10 (the largest number of persons ever carried by aircraft), and fuel for 750 miles, weighing with load 50 tons, was in the air one hour over the surface of Lake Constance, flying about 110 miles over the lake and neighboring country. It maintained an average altitude of 600 feet, which at times was increased to 1200 feet. It took off and landed with ease and was readily handled in the air. The promoters expressed satisfaction with the performance of the new ship.

Another notable large-sized plane, also of German design and construction, was the Junkers G-38, a 32-passenger plane which was provided with sleeping compartments for direct transcontinental service. Built entirely of metal, it had four Junkers engines, two of 800 horse power, each driving four-bladed tractor propellers, and two of 400 horse power, each driving two-bladed screws, the power plant developing a total of 2400 horse power. These four engines were built integral into the front edge of the wings. Later Junkers heavy-oil Diesel engines, under test in another plane during the year, were to be installed. The machine, the largest landplane so far to be built, weighed 13 tons empty and 20 tons when loaded. The use of a wing section of great thickness made possible accommodation of passengers inside the wings with windows on the forward edges on both sides of the fuselage nose.

In Italy, Caproni, the famous designer, during the year prepared designs for two notable planes, one a 6000-h. p. biplane and the other a 3000-h. p. monoplane, the latter with pontoons capable of carrying three and one-half tons of useful load and making the trip from Rome to New York via the Azores and Bermuda with two stops.

In the United States, the Fokker Aircraft Corporation of America had under construction the Model F-32 type, a 32-place passenger transport plane motored with four Pratt & Whitney Hornet engines and weighing over 11 tons fully loaded. This was the largest land plane in the United States up to the end of 1929. Another American plane of the year was the *Commodore*, a 32-place flying boat weighing nearly nine tons

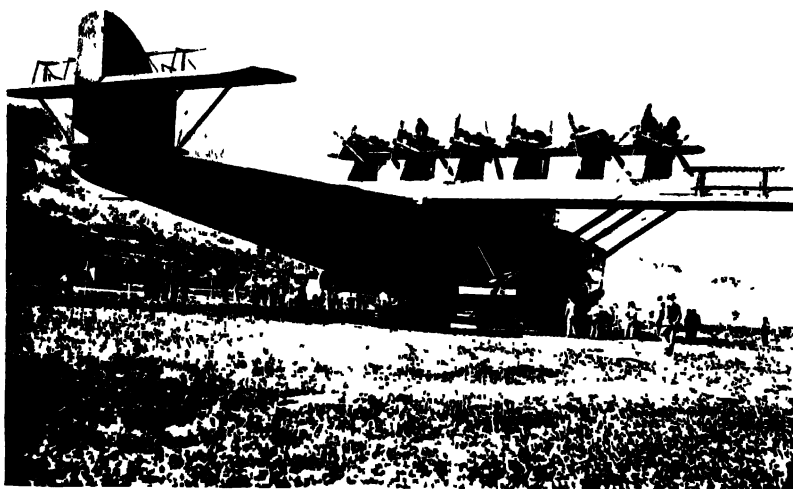


Photo by Photopress London

DORNIER DO-X FLYING BOAT DESIGNED TO CARRY 100 PASSENGERS



Photo by Photopress London

THE BRITISH SUPERMARINE 'S-6' WINNER OF THE SCHNIDER TROPHY 1929

NOTABLE AIRPLANES OF 1929

loaded and built by the Consolidated Aircraft Corporation. This was the largest of its type in the United States.

There was a notable increase in the passenger-carrying capacity of the airplanes employed for air transport in the United States. At the beginning of the year, planes with a capacity of 10 passengers ruled, but at the end, the number had increased to 15, 18, and 20 and the Fokker F-32, a 32-passenger plane, as stated, was under construction for use early in 1930. The tendency during the year 1929 was to use multi-engined planes and this seemed to be increasing. In an analysis made of leading air lines, it was found that on 16 lines three-engined planes were employed, on four lines two-engined planes, and on 16 lines single-engined planes. In one notable instance, namely the Transcontinental Air Transport Line, where Col. Charles A. Lindbergh was chairman of the technical committee with C. S. ("Casey") Jones and Maj. Thomas Lamphier, formerly of the United States Air Corps, as associates, tri-motored planes were recommended for the extensive service of this operating company. It was realized, of course, that tri-motored planes could fly on two of their three engines and could have a wider landing radius with but one engine running. The tri-motored plane also was used by the Universal Aviation Corporation when it established its coast-to-coast service.

OPEL ROCKET PLANE Considerable interest was aroused during the year by the report of a successful flight of Fritz von Opel in a rocket plane on September 30, at Frankfort, Germany. This accomplishment involved making a take-off, assisted flight, and landing with the aid of rockets only, with the plane under control during the procedure. There had been previous experiments in rocket propulsion made earlier in the year by the German pilot, Stahmer, in connection with the flight of a regular airplane. The apparatus of von Opel was a simple glider provided with a single cantilever wing of wood construction partially planked with wood and the remainder covered with fabric. A fuselage of wood accommodated the pilot, who was provided with a conventional type of control-stick, while in the rear was the box containing the rockets which were carried in tubes, the whole reinforced by struts and supports attached to the keel. There was a tail with horizontal surface to which the elevator was attached and two fins on which the rudders were fixed. The tail surfaces were arranged so as not to be in the path of the rocket explosions. There were 16 rockets carried in rows of four in the box which fitted into the abbreviated fuselage, and the detonation could be controlled by a mechanism available to the pilot. Eleven of the rockets were of the continuous-burning type, producing a uniform thrust of about 50 pounds for a period of 25 seconds. The remaining five were of a quick-burning type used in landing. The plane rested on a small car, also rocket-propelled, which ran on a track affording a run-way of about 50 feet of useful length. Three rockets were used with this car affording a thrust of about 600 pounds. Two trials of Herr von Opel were unsuccessful, but a third was considered entirely successful on an experimental basis. The average velocity during a flight of $1\frac{1}{4}$ miles in 75 seconds was about 95 miles per hour, and the thrust of the rockets varied between 145 and 200 pounds. The apparatus was somewhat damaged in the course of the experiments due to an unfortunate landing but

sufficient was accomplished to warrant further work in the light of the experience gained.

AUTOGIRO PROGRESS Progress continued during the year in the development of the autogiro, invented by Juan Cierva, and three American-built machines with Wright J-6 geared engines were flown in numerous flights. On October 22, a notable test was made at Pitscarrn Field, Bryn Athyn, near Philadelphia. The engineer was able to make practically vertical landings after some half-dozen flights and to make a speed of about 100 miles per hour. In this autogiro, there is a fuselage 15 feet long and an air-cooled Genet Major engine of 100 horse power. Two small wings have bent up tips to increase the lateral stability of the craft while in the air, and the "windmill" has four blades which are set in motion by air thrown up to the horizontal propeller by a deflector, maintained about the horizontal stabilizer, placed at the end of the fuselage. The power thus developed gives a rotation of 130 revolutions per minute to the vanes, a speed which must be maintained before the plane takes off.

AIRPLANE ENGINES The Packard Diesel engine, as developed for airplanes and discussed in the 1928 YEAR BOOK, underwent a severe service test in a successful flight on May 13, 1929, from Detroit to Langley Field, Va., a distance of 700 miles. The engine was installed in a Stinson monoplane and the flight took 6 hours and 40 minutes. The coarse fuel oil, ordinary furnace oil, burned in this flight cost but \$4.68, as compared with an estimated cost for a gasoline engine of equivalent capacity of approximately \$24. The new motor was a radial internal-combustion engine rated at 200 horse power, and resembling in external appearance the radial type of gasoline engine but simpler and smaller. It weighed less than 3 pounds per horse power, as against 100 pounds per horse power in the case of an ordinary stationary Diesel engine. There were no electrical ignition systems and the oil fuel was injected into each cylinder separately. Such a motor naturally reduced the fire hazard of the plane. The builders were continuing experimental and development work and had built a special plant to undertake quantity production of the new engine in several sizes during the following year.

In the early autumn, tests were made in France, both on the bench and in trial flights, of a new Diesel power unit for airplane use designed by M. Clerget, who had been a pioneer in airplane-engine designing. This engine was of a nine-cylinder, radial, air-cooled type, using heavy oil and developing 80 to 100 horse power. It was a four-stroke engine following the constant-volume cycle with a sufficient compression to provide self-ignition. Each cylinder had an independent fuel pump and atomizer and was able to start by means of a mechanical starter. The weight of the first experimental engine was a little more than 45 pounds per horse power, a result never achieved for a heavy-oil engine of less than 100 horse power. For test purposes, it was installed on a Morane-Saulnier A R monoplane, which ordinarily was equipped with a 120-h p. gasoline engine. The first test was encouraging and subsequent endurance tests were planned.

An interesting test of the endurance of an airplane motor was made in England with a De Haviland Gypsy engine which was sealed on Dec 28, 1928, and, after an endurance test of 600 hours in the air without major overhauling and a fly-

ing service of about 51,000 miles, was taken down and examined. In this period, one magneto was changed, but aside from that the amount of wear and tear was found to be within the requirements of a British certificate of air worthiness. The entire repairs could have been made at an expense of a little more than \$35. It was stated that, at the conclusion of the test, the engine had developed greater horse power than at the beginning.

FLYING BY INSTRUMENTS During the year, a notable series of experiments in flying by instruments alone were made by Lieut. James H. Doolittle, U. S. A., in connection with the Guggenheim Fund for the Promotion of Aeronautics. These experiments, conducted at Mitchell Field, N. Y., were aimed particularly to secure safety and proficiency in fog flying, and Lieutenant Doolittle was able to take off, fly, and land "blind" several times under such severe conditions of test as to demonstrate that with instruments developed and readily available it was possible to fly indefinitely without being able to see outside the cockpit. In these tests, which reached a successful climax on September 24, Doolittle was seated in an enclosed blind cockpit and was able to take off, hold his plane to a course, and make a landing entirely by the use of instruments and without seeing the ground. While it was shown conclusively that it was possible to fly and land by instruments alone, the procedure at the end of the year was still in an experimental stage and needed to be brought to a point where it was commercially applicable, so that it could be used generally and particularly for flying in a fog. In this event, Lieutenant Doolittle stated that the airplane would become the safest known means of transportation, as it would be the only one that could operate unhampered by fog.

The test made for blind flying by Lieutenant Doolittle was as follows. After his instruments had been correctly calibrated and set at zero, the takeoff was made in the path of a radio beam which was followed about 4 miles, while the plane climbed 1000 feet, being piloted in the meantime by means of gyroscopic instruments. The plane then was turned around and headed back into the beam. As the radiobeacon, which was the source of the beam, was approached, the beam became narrower, and, while it was more difficult to follow, the course became more exact and, at the exact moment of passing over the beacon house, an indicating reed stopped vibrating momentarily and then began to vibrate in the opposite direction. Lieutenant Doolittle followed the beam about four miles again in the new direction, made a turn, and approached the field at an altitude of about 400 feet. Preparing to land, he followed the exact centre of the beam with the aid of the directional gyroscope and with his progress accurately indicated on the instrument both as regards speed and descent was able to make a safe landing at such an angle that the plane absorbed the shock of hitting the ground. He was able to read his altitude within 10 feet of the exact figure from an instrument for which varying air pressure was checked by radio from the ground. The actual landing was made at a speed of about 55 miles an hour and a glide of 400 feet per minute.

AUTOMATIC PILOT DEVICE A gyroscopic stabilizer, or automatic pilot device, produced by the Sperry Company, was tested during the autumn on a tri-engine Ford plane in a flight from Wright

Field, Dayton, Ohio, to Bolling Field, Washington. In this automatic mechanical robot, the equipment consisted of two gyroscopes, the armatures of which were electrically driven at 15,000 revolutions per minute by means of an externally-mounted, wind-driven, electric generator. One of these gyroscopes was mounted horizontally and the other vertically and, through electrical contacts, kept the plane in an even position. In this flight, the pilot of the craft set the stabilizer after taking off, and did not resume control until about 30 miles from Washington. The gyroscopes maintained certain definite positions regardless of the motion of the airplane, and any departure from the position set developed a pull restoring the craft to an even keel. It was said that the new automatic pilot was sensitive to change of movement of one-half of one degree about the airplane's axis. The apparatus weighs about 50 pounds and occupies a space of only 14 x 14 x 10 inches beneath the pilot's seat. It affects the three major controls of an airplane—the rudder for direction, the elevator for upward and downward movements, and the aileron for maintaining lateral balance.

During the year, the U. S. Bureau of Standards and others developed plane-to-ground, two-way radio communication, which was believed to be an important means toward greater safety in flying. Another important development was a radio-echo altimeter which was devised and tested. The Bureau of Standards also discovered that a coating of pure aluminum on the lighter duralumin, so extensively used in aircraft, protected the metal from corrosion and made it much more useful in aircraft. The application of ethylene glycol for the cooling of airplane engines made possible the improvement of the liquid-cooled engines.

During 1929, pilot charts of the upper air over the North Pacific Ocean were published monthly for the use of aviators by the United States Hydrographic Office.

NOTABLE FLIGHTS The airplane for several years had been accepted as a necessary feature of polar exploration. Commander Richard E. Byrd (promoted Rear Admiral U. S. Navy, December 21), with an airplane party, on Nov. 29, 1929, flew from his base to the South Pole and back. A series of exploratory flights had been made in that region, resulting in notable discoveries. It will be recalled that Commander Byrd in 1926 had flown over the North Pole. The Antarctic expedition of Capt. Sir Hubert Wilkins also utilized the airplane in exploration of the Graham Land sector on the other side of the Antarctic continent in a notable flight on December 31 over Charcot Island and to the south, adding some 300 miles of new coast line to the Antarctic continent. Airplanes also figured in the explorations of Sir Douglas Mawson and of the *Norvegia*, Bouvet Island being surveyed from the air by Captain Ruess-Larsen. See **POLAR RESEARCH**.

In 1929 there were three non-stop flights across the Atlantic Ocean, of which the most noteworthy was that of Captains Ignacio Jimenez and Francisco Iglesias flying from Seville, Spain, March 24, to Bahia, Brazil, a distance of 4200 miles, in the plane *Jesus del Gran Poder*. The original destination was Rio de Janeiro, but the plane was forced down by lack of fuel after 43 hours and 48 minutes. Jean Assolant, René Lefevre, and Armento Lotte, Jr., flew from Old Orchard, Me., to Comillas, Spain, in the French

monoplane, *Yellow Bird*, 3128 miles in 29 hours and 52 minutes on June 14. Roger Q. Williams and Lewis A. Yancey, in the *Pathfinder*, flew on July 8 from Maine to Spain and continued to Rome, Italy, arriving on July 10.

A notable flight of the year was that from New York to Los Angeles and back in 36 hours, 49 minutes, and 48 seconds of actual flying time made by Captain Frank Hawks, landing at Roosevelt Field June 29. His westward time was 19 hours, 10 minutes, eastward, 17 hours, 44 minutes. Captain Hawks earlier in the year on February 5 had made a West-East transcontinental record of 18 hours, 22 minutes.

Refueling in the air eleven times, a two-way, non-stop flight, was made by Mamer and Walker in the *Spokane Sun God* from Spokane, August 15, to New York and return, 115 hours 45 minutes in the air, and a round-trip distance of 7200 miles.

The Land of the Soviets, an all-metal, two-engine, monoplane designed and built at the Central Aero-Hydro-Dynamic Institute (TsAGI) of the Soviet Union, made a flight from Moscow to New York, a distance of 12,883 miles in 141 hours and 33 minutes flying time, or an actual time of 72 days from August 23 to November 1. The flight was across Russia, Siberia, Alaska, and the United States at an average speed of 91.3 miles. The crew consisted of S. A. Shestakov, chief pilot, F. E. Bolotov, naval pilot, V. V. Sterligov, aero-navigator, and D. V. Fufaev, mechanic.

A notable international non-stop flight was that of George W. Haldeman who, on February 23 flew from Canada to Cuba, 1404 miles in 12 hours and 56 minutes, the first time this trip ever had been made.

The Curtiss Marine Trophy Race, held at Anacostia, D. C., May 25, produced a new speed record for standard military seaplanes of 162.52 miles per hour and was won by Lieut. W. G. Tomlinson, U. S. N.

REFUELING FLIGHTS Record refueling flights were made and supplanted several times in the United States during the year. On January 7, the *Question Mark*, with a crew of five under the command of Maj. Carl Spatz, rising over southern California maintained a record flight of 150 hours, 40 minutes, and 15 seconds, a time in excess of the duration record for lighter-than-air craft. The *Fort Worth*, with Reginald Robbins and James Kelley as pilots, then gained the record on May 26, when this plane was in the air for 172 hours, 32 minutes, and 1 second, over Fort Worth, Tex. On July 6, a Stinson-Detroit plane equipped with a Wright Whirlwind engine, piloted by Byron K. Newcomb and Roy L. Mitchell, returned to earth after remaining in the air 7½ days and making an endurance flight record of 174 hours and 59 seconds. During this flight, 24 refueling contacts were made, and for the first time an automatic forced-oiling system was employed. This record stood only until July 9, when a Buhl cabin seaplane, piloted by L. W. Mendell and R. S. Reinhart, was in the air for 240 hours and 44 minutes. Finally, the *St. Louis Robin*, taking off from Lambert-St. Louis Flying Field on July 13 and piloted by Dale Jackson and Forest O'Brien, made a record for sustained flight of 420 hours, 21 minutes, and 30 seconds, using 3590 gallons of gasoline and 158 gallons of oil, 77 contacts being required with the refueling plane of which 48 were used for the

transfer of gasoline. This airplane was capable of a still longer period aloft when those responsible for the flight ordered the craft to the ground, as the possibility of extended flight had been duly demonstrated.

On Dec. 17, 1929, the long distance-record was broken by Capt. Dieudonne Costes and Paul Godos who, flying over a measured triangular course at Istres, France, covered 4990.33 miles in 52½ hours. This supplanted the distance record made by Clarence Chamberlin on his flight to Germany in 1927 and was to be compared with the performance of Orville Wright exactly 26 years earlier when he flew 120 feet in the first man-carrying, power-driven airplane.

SCHNEIDER RACE The Schneider International Cup Race for Seaplanes, the first to be held since 1927, was contested at Cowes, England, over the Solent on September 7 and was won by Flying-Officer Henry R. D. Waghorn of the Royal Air Service, who flew in seven laps over the course of 217.8 miles at an average speed of 328.64 miles per hour. His plane was the Supermarine, S-6, with a Rolls-Royce engine, the engine being developed from the Supermarine Napier, which won at the Lido in 1927 and which scored third place in the 1929 competition. The speed of the 1929 winner was 47 miles per hour faster than that achieved in 1927 and that, in turn, was 34.99 miles per hour better than the record of the Italian, Major Bernhardt, who won in 1926 at Hampton Roads, Va. Second place in the 1929 competition went to Warrant Master Tomaso Dal Molin, who flew a Machi Fiat, M-52, over the course at an average speed of 284.20 miles per hour, and third place to Flight-Lieut. D'Arcy Greig, with 282.11 miles per hour in the *Napier*. There were in all six seaplanes in the competition, and these on the previous day had passed a test for navigability and seaworthiness. The competition was confined to Italy and Great Britain, as the failure in the flight tests of Lieut. A. J. Williams, in S. N. *Mercury* racer, mishaps to the French team, and the lack of time afforded to prepare for entry reduced the number of competitors. The best lap-time during the race was made by Flying-Officer R. L. R. Atcherley, who negotiated two laps of 100 kilometers at 332.9 miles per hour. Subsequently, on September 12, the Supermarine machine, piloted by Squadron Leader Augustus H. Orlebar, established a world's speed record of 357.7 miles per hour. Later in the year, the British Air Ministry announced that it would not take part in the 1931 Schneider Trophy Contest or in any subsequent competition, but it was thought that the Italian government would continue the interest that it had previously manifested in this work.

NATIONAL AIR TOUR The fifth national air tour of 1929 started with 29 air crafts of different types, which embarked on a 5017-mile flight on October 5, and was completed by 24 of the planes. The tour covered 20 States and two Canadian provinces, extending as far south as Jacksonville, Fla., and west to Wichita, Kansas. Five of the entries withdrew either on account of motor trouble or plane damage. The first prize, a cash award of \$2500, and the Edsel Ford Trophy were won by John Livingston in a Waco straight-wing bi-plane powered by a 225-h.p. Wright engine. The competition was based on a series of points of merit, and Livingston's total score was 45,672.43, as compared with 28,090.60 for the tenth place which carried with it a prize of \$300. The

1929 tour was somewhat shorter than that of the previous year, but, as usual, it covered a number of important cities and aroused considerable interest among others than the contestants. Three women started on the tour and two finished.

NATIONAL AIR RACES. This important American competition was held Aug 24 to Sept 2, 1929, at Cleveland, Ohio, and in attendance, performance, and general interest was more important than any previous event of the kind. Civilian aircraft shared with Army, Navy, and Marine Corps flyers the honors in acrobatic and other maneuvers. Col. Charles A. Lindbergh made his first appearance with a naval team, flying each day with Lieuts. F. O. Kivette and Frank O'Beirne of the Navy's Flying Squadron No. 1, performing such feats as wing-tip formations, squirrel-cage loops, and inverted flying. There were also civilian stunt teams representing the Waco, Laird, and Travel Air companies. The programme covered every phase of aeronautical activity, planes of every type being used.

Of the nine long-distance competitions, which terminated at Cleveland, the women's cross-country derby from Santa Monica to Cleveland was of greatest interest, first place and a prize of \$3600 being won by Mrs. Louise McPhetridge Thaden in a flying time of 20 hours, 2 minutes, and 2 seconds, at a speed of 135.97 miles per hour; Miss Gladys O'Donnell finished second, with a record of 21 hours, 21 minutes, and 43 seconds, 127.52 miles speed. The All-Ohio derby, with a first prize of \$1000, was won by Lewis Love in a Davis monoplane Vs with a LeBlond five-cylinder engine in an elapsed time of 4 hours, 43 minutes, and 15.6 seconds, and the Portland (Ore.)-to-Cleveland derby, first prize \$3000, by T. A. Wells in a Travel Air D-4000 plane with a record of 14 hours, 44 minutes, and 10 seconds. The Miami-to-Cleveland race was divided into three classes, Class C being limited to planes with engines of 275 to 510 cubic inches displacement, and Class D for engines with a displacement ranging between 510 and 720 cubic inches. The winner in Class C was George E. Halsey, who flew in a Challenger powered Rearwin Ken Royce biplane over the course in 12 hours, 42 minutes, and 4.5 seconds. The winner in Class D was Earl Rowland, whose Cessna cabin plane made the journey in 12 hours, 30 minutes, and 41 seconds. The Philadelphia-to-Cleveland derby for planes of the cabin type was won by Errett Williams in an Alexander Bullet, and the Oakland-to-Cleveland derby, with first prize of \$300 for cockpit or mail-type planes, by Loren W. Mendell, who flew from California in a Buhl Cabin Monoplane, powered by a 300-h.p. Wright J-6 engine in 17 hours, 43 minutes, 16 seconds.

Two Toronto-to-Cleveland races were held—the Canadian commercial derby and the Canadian Club derby. The first was won by Herbert St. Martin in a Travel Air Waap plane, which covered the route in 2 hours, 10 minutes, and 24 seconds, and the second K. E. Whyte, in a DH Gypsy Moth, whose record was 3 hours and 20 seconds. The Los Angeles-to-Cleveland non-stop race, with a cash prize of \$5000, was won by Henry J. Brown in a Lockheed Air Express plane, with Hornet engine, with a record of 13 hours, 15 minutes, and 7 seconds, at the rate of 156.2 miles per hour. The Cleveland-to-Pittsburg race for women was won by Miss Gladys O'Donnell in

an elapsed time of 46 minutes and 5 seconds, Mrs. Louise McPhetridge Thaden finishing second, accomplishing the distance in 50 minutes and 4 seconds.

Among the most important of the 35 closed-circuit races was the pursuit-plane race of 8 laps over a 10-mile course for the John L. Mitchell Trophy. The winner was Lieut. P. B. Wurtsmith, whose record was 36 minutes and 6.8 seconds at an average speed of 152.17 miles per hour. Two other military competitions of special interest, each consisting of 8 laps over a 10-mile course, were the Mason M. Patrick Trophy race and the Marine Corps race. The former was won by Lieut. Ivan M. Palmer, who in the seventh lap attained an average speed of 154 miles per hour, and the latter, by Lieut. Haynes Boyden, who covered the route in 30 minutes and 46.4 seconds, at an average speed of 142.88 miles per hour.

The Liberty Engine Builders' Trophy race, over a 9.16-mile, 8-lap course, was won by J. K. Gill at an average speed of 132.72 miles per hour, while the race open to planes powered with engines of 720 cubic inches displacement or less, over a 50-mile course, was won by Errett Williams in his J-6 Eaglerock Bullet at an average speed of 134.58 miles per hour. The 50-mile race for planes with engines of not more than 100 cubic inches displacement was won by E. B. Heath in a Heath Super Parasol monoplane powered by a Bristol Cherub engine, his record being 47 minutes and 41.3 seconds, at an average speed of 62.91 miles per hour. The first prize in the light airplane speed and efficiency contest, open to planes powered by engines of 275 cubic inches displacement or less, was awarded to H. A. Speer who flew a Barling NB-3 low-wing monoplane powered by a Genet engine, his elapsed time over the 50-mile course being 28 minutes and 34 seconds and his average speed, 105.02 miles per hour.

The race for women contestants over a 50-mile course, using planes powered with engines of 510 cubic inches displacement or less, was won by Mrs. Keith Miller, who flew a Fleet biplane powered with a Kinner K-5 engine, at an average speed of 98.73 miles per hour, in 30 minutes and 33.2 seconds. This race marked the first appearance in the United States of women pilots in closed course racing.

Two races were held for open-cockpit and cabin planes powered with engines of not more than 800 cubic inches piston displacement. The open-cockpit plane race was won by C. W. Holman, who in a Laird plane with a Wright J-4 engine covered the course at an average speed of 150.61 miles per hour, the cabin-plane race was won by R. W. Cantwell, in a Lockheed Vega plane with a record of 23 minutes and 38.5 seconds, at an average speed of 152.27 miles per hour. The Detroit News 80-mile transport and efficiency race was won by George Haldeman, in a Bellanca CH-300 plane, his record being 36 minutes and 39 seconds, at an average speed of 119.97 miles per hour. The free-for-all race, open to aircraft of any type, was won by Douglas Davis in the Travel Air Mystery plane, which at an average speed of 194.9 miles per hour over the 50-mile course, defeated the fast Army and Navy planes in an elapsed time of 14 minutes and 5.9 seconds. Second place went to Lieut. R. G. Breen of the Army, who flew a Curtiss P-3-A plane in an elapsed time of 14 minutes and 42.4 seconds, at a speed of 186.84 miles per hour.

AIRPLANE AND SEAPLANE RECORDS During 1929
 a number of new airplane records were made which indicated the continued advance of aviation. The airline-distance record of 6294 kilometers (3911 miles) established by Clarence Chamberlin, when he flew from Roosevelt Field to Isleben, Germany, June 4-6, 1927, was broken by the French pilots, Coste and Bellonte, who on Sept. 27-29, 1929, flew in a Breguet-19 plane from Le Bourget to Coulart, China, a distance of 7905.14 kilometers (4948.59 miles). The altitude record for airplanes was attained by Lieut. Apollo Soucek, U. S. N., who on May 8 at Anacostia, D. C., reached a height of 11,930 meters (39,140 feet). This record, however, was supplanted on May 25 at Dessau, Germany, by Willy Neuenhofen, who in a Junkers W-34 monoplane equipped with a Bristol-Jupiter engine of 420 horse power reached a height of 12,739 meters (41,795 feet). For speed for specified distances without pay load, Commandants Girler and Weiss secured the 5000-kilometer record at Etampes, France, May 24-25 in a Breguet plane equipped with a Hispano-Suiza engine of 600 horse power, the speed record which they established was 188.09 kilometers (116.82 miles) per hour.

For airplanes with a pay load of 500 kilograms (1102.31 pounds), J. Burtin, the French pilot, made an altitude record of 9374 meters (30,654 feet) at Toussus-le-Noble on August 23 in a Breguet-19 plane equipped with a Faism engine of 500 horse power. The altitude record for airplanes with a pay load of 1000 kilograms (2204.12 pounds) also was established by Burtin in his Breguet-19 plane, when, on July 26 at Toussus-le-Noble, he reached a height of 8089 meters (26,538 feet). On the same date at the Metropolitan Airport, Los Angeles, Waldo Waterman attained an altitude record of 6346 meters (20,820 feet), in a Bach landplane with a Wright J-6 motor. The duration record for an airplane refueling in flight, 420 hours and 17 minutes, was made by Dale Jackson and Forest O'Brien in the *St. Louis Robin No. 1* equipped with a Curtiss-Robertson radial engine of 170 horse power at Lambert Field, St. Louis, July 13-30.

Several new records also were established for light planes. In the first category for two seaters weighing empty less than 400 kilograms (881 pounds), the closed-circuit distance record of 1601 kilometers (993 miles) was established by Cornelius Edvard at Bremen, Germany, on August 20, in a Focke-Wulf S-24 plane equipped with a "Kiebitz" Siemens 80-h.p. motor. In the second category for single seaters weighing empty less than 200 kilograms (440 pounds), the altitude record of 4404 meters (13,254 feet) was established by Lieut. F. H. Zwiwkot at Kocjan at Varsovie, Poland, on October 19, in the RWD-2 equipped with a Salmson engine of 40 horse power. In the third category for single seaters weighing empty 200-350 kilograms (440-771 pounds), the airline distance record of 2655 kilometers (1650 miles) was established by D. S. Zimmerley, who, on July 17 in a Barling NB-3 landplane, equipped with a 60-h.p. LeBlond engine flew from Brownsville, Tex., to Winnipeg City, Canada. The altitude record in this category also was attained by Zimmerley in a Barling NB-3 plane equipped with a Genet engine of 80 horse power, which, on May 28 at Parks Airport, East St. Louis, Ill., reached a height of 6346 meters (20,820 feet).

In the class for seaplanes returning to point of departure without refueling, Lieut. Apollo Soucek, U. S. N., in the Wright plane *Apache*, equipped with a Pratt & Whitney engine of 425 horse power, attained at Washington on June 4 an altitude record of 11,753 meters (38,555 feet). This was the plane he had used before, but it was equipped with pontoons. The maximum speed for seaplanes in this category was established by Squadron-Leader A. H. Orlebar in the Supermarine Rolls-Royce S-6 at Spithead, England, on September 12, when he attained a record of 575.7 kilometers (357.72 miles) per hour.

The speed record for seaplanes covering a distance of 100 kilometers was established at Spithead, England, on September 7 by Flying-Officer H. R. D. Waghorn, who in the Supermarine monoplane Rolyce S-6 made a record of 531.2 kilometers (330.7 miles) per hour. On June 10 at Warnemunde, Germany, Rolf Starke in a Heinkel HE-9 plane, equipped with a BMW VI engine of 600 horse power, established the speed record of 222.27 kilometers (138.11 miles) per hour for seaplanes over a distance of 100 kilometers.

The German pilot, Rolf Starke, secured all five records in trials held at Warnemunde on May 7, May 21, and June 10, to establish specified distance-speed records for seaplanes carrying a pay load of 500 kilograms (1102.31 pounds) and 1000 kilograms (2204.62 pounds). In the 100-kilometer class in the first category, a speed of 259.92 kilometers (161.51 miles) per hour was established, in the 500-kilometer class, 235.94 kilometers (146.6 miles) per hour, and in the 1000-kilometer class, 222.27 kilometers (138.11 miles) per hour. The speed record established for 100 kilometers in the second category was 235.29 kilometers (146.2 miles) per hour and for the 500-kilometer race, 235.94 kilometers (146.6 miles) per hour. In each instance Heinkel Planes equipped with BMW-6 engines of 600 horse power were used. The altitude record for seaplanes with a pay load of 2000 kilograms (4409.24 pounds) was made on May 15 at St. Raphael by the French pilot, Lieut. de Vasseau, Paris, who in a C. A. M. S. plane equipped with a Hispano-Suiza engine of 600 horse power reached a height of 4827 meters (15,837 feet). The greatest pay load carried to an altitude of 2000 meters (6561.7 feet) was 6450 kilograms (14,220 pounds) in the Rohrbach plane *Romar*, equipped with a 3-BMW engine of 500 horse power at Travenmunde, Germany, on April 17.

BALLOON RECORDS A new balloon distance record for the fifth category of balloons (1601-2200 cubic meters), the sixth (2201-3000), the seventh (3001-4000), and the eighth (4001-5000) was established by Lieut. T. G. W. Settle, U. S. N., and Ensign W. Bushnell, U. S. N., who on May 4 flew from Pittsburgh to Savage Harbor, Prince Edward Island, Canada, a distance of 952 miles, in the course of the National Balloon Race in the United States, described above.

GLIDER RECORDS Glider records for the year were established by Johannes Nehring, on April 25 at Bergstrasse, Germany, when in the glider *Darmstadt* he attained an altitude record of 1209 meters (3940 feet) and flew in a straight line from Frankenstein to Ubstadt, a distance of 72.2 kilometers (44.86 miles).

COMMERCIAL AVIATION. That air transportation had become an indispensable adjunct to commerce and industry seemed clearly demonstrated by the end of 1929. While there were but few

marked developments in Europe during the year, the condition in the United States in this respect had materially improved. Not only were a number of spectacular achievements recorded and the amount of actual flying increased, but the daily scheduled operations indicated that a number of apparently insuperable obstacles had been overcome and that in this respect the United States was leading all nations. In fact, all phases of commercial aeronautics in 1929 continued to grow at an average rate of about 60 per cent and the scheduled air-transport planes were flying over 90,000 miles per day. These scheduled operations, however, constituted less than 15 per cent of the total mileage flown in the United States. Both on the operating side and on the manufacturing side, there has been rapid expansion in the industry, so much so, in fact, that in some quarters it was feared that this growth had been too hasty, as in some cases, due to overproduction and inadequacy of capital, distress and embarrassment had resulted.

When it was realized that 40,000 passengers were carried in the first six months of 1929, as against 35,000 in the entire year of 1928, and that the number of airplanes manufactured and the planes exported had experienced a remarkable increase, it was natural for the investing public to become enthusiastic. Aviation securities that enjoyed a boom suffered in the general decline following the financial situation of October and many investors lost heavily in the shrinkage of values.

It was inevitable that the inadequately financed and inexperienced manufacturers and operators should go to the wall, but there seemed to be no reason why strong companies, both manufacturing and operating, should not succeed in view of the increasing popular interest in this field. For it must be remembered that, by 1929, the United States was leading in the industrial application of the airplane, such as aerial surveying, aerial photography, cotton dusting, and fire patrol and, in addition on a very large basis, in the transportation of air mail and express. The United States also led in the private ownership and operation of airplanes for various purposes, and it was inferior only in the carrying of passengers, which was due to a number of special circumstances, as well as to lack of government subsidies such as were provided in Europe.

At the end of the year 1929, the United States was far in advance of the other countries of the world in extending and developing its air routes. Carrying out plans that had been made in the previous year, a network of air routes, connecting the air lines linking the various major American cities, was developed and regularly scheduled passenger service conducted between all important points, either in connection with other air lines or with railway companies as the various air routes were extended. Terminals were quite generally provided and useful measures were adopted to secure traffic. In 1928 the United States operated 16,667 miles of airways, as compared with 15,540 miles for Germany, a country which led Europe in this respect, as France had in this year 14,894 miles of such air routes. In 1929 the United States had increased its air routes to 35,000 miles, while no European country during that year had made any substantial increase. As a result, the United States was operating more miles of air route and flying more passenger miles than any other two countries together.

Passenger carrying in the United States jumped from 49,713 in 1928 to approximately 85,000 for 1929, but was still behind Germany which had approximately 115,000 passengers, the same figure as for 1928, when French commercial airplanes carried 10,698 passengers, 287,160 pounds of mail, and 2,529,880 pounds of freight, having a record of some 4,506,000 miles of flying. The French, however, were seeking to extend their air activity and late in 1929 it was proposed that French and Swiss airplanes should meet American steamers at Cherbourg to expedite the forwarding of specially stamped mail to Paris and Basel, and other points.

In air mail in 1929, the United States carried 8,000,000 pounds, as against less than 2,000,000 pounds carried by France. The air-mail net work had been well arranged in 1929, so that fewer new mail routes were necessary.

In addition to an increased number of all-air lines developed during the year, important air-and-rail services were inaugurated. On July 7, the Transcontinental Air Transport, in cooperation with the Pennsylvania Railroad and the Atchison, Topeka & Santa Fe Railroad, inaugurated a 48-hour passenger service between New York and Los Angeles, utilizing tri-motored Ford, all-metal planes with a capacity for 17 passengers. On July 12, the Universal Aviation Corporation, in connection with the New York Central Railroad and the Atchison, Topeka & Santa Fe Railroad, established a coast-to-coast service, making use of Fokker tri-motor planes. In the autumn of 1929, it was stated that there were 44 companies in the United States giving passenger service, while the Universal Aviation Corporation and the Western Air Express, acting together, were planning to fly passengers from coast to coast in about 30 hours. Already on April 30, a coast-to-coast airline had made a commercial flight test in 31 hours.

With the notable increase in passenger air-transportation service, there was also an increase of municipal airports, though unfortunately in the latter respect some of the larger cities, such as New York, were not as favorably equipped as others. An example of this condition was indicated by the statement that an airplane passenger from New York to Boston spends 45 minutes in a bus from the Hotel Pennsylvania to the transportation company's airport in Newark and 35 minutes from the Statler Hotel in Boston to the airport there, while the trip in the air requires but one hour and 45 minutes, making three hours and five minutes for the entire trip. At the end of the year, however, there were 948 equipped airports exclusive of Federal fields, which included would bring the total to 1554. New construction under way was expected to involve a total cost of between \$45,000,000 and \$50,000,000.

In connection with the economic side of commercial flying, and this was becoming increasingly important, the matter of rates at the end of the year figured on a more important basis than ever before. Many of the operators seemed convinced that the public was unwilling to pay on a much greater scale than for existing methods of transportation and that a distinct effort must be made to compete vigorously on the basis of present rates and service rendered. In several of the larger cities, air transportation to many distant points was available by one company which announced that it would carry passengers at a flat rate of 25 cents a mile.

The safety of air transportation in the United States in 1929 was indicated by the fact that, in the first six months of the year, there was but one death for approximately 1,000,000 miles flown. In the latter half of the year, a serious accident, when the regular service airplane *City of San Francisco* was wrecked on September 3 by striking a mountain in New Mexico, and several minor mishaps acted slightly to reduce the safety ratio. The accident mentioned resulted in the deaths of five passengers and three of the crew. The public gradually, however, was gaining confidence, and the hazards were ceasing to be as serious considerations as in the earlier years of commercial flight and transcontinental flying. Nevertheless, the operating companies made every effort to provide maximum safety, enjoying in this respect the cooperation of the U. S. Department of Commerce and other government departments. In connection with the extensive use of airways in the United States, the U. S. Weather Bureau inaugurated an hourly weather broadcast for aviators along the leading air routes with a half-hourly service between certain terminal points. On the transcontinental planes, a radio directional installation to the pilot, and there is radio communication with ground stations.

AMERICAN AIR TRANSPORT The Aeronautical Chamber of Commerce of America, Inc., in a report published in *The Aircraft Year Book for 1930*, stated that civilian, commercial, and government planes flew 197,546,690 miles during the year 1929, which was sufficient to establish the United States as the leading nation in air transport operations. An important development was that civilian and commercial flight was more than three times as great as military and government activities. Planes in the former class covered 149,579,451 miles, as compared to 47,967,139 miles for military and official activities. Another striking feature was that America's major air transport lines, operating on regular schedules, flew more than 20,000,000 miles during the year, carried more than 7,000,000 pounds of mail, and transported more than 165,000 passengers. Every 24 hours, passengers, mail, and express were being flown over 90,000 miles and a territory of . . . population was being served. Scheduled transport lines were flying one-third of this distance on lighted airways between dusk and dawn, the United States being far better provided than any other country in this respect. Consolidations of air transport operators reduced the number from 32 to 27, but there were 619 planes in such service, as against 294 in the previous year. These 27 major transport operators flew 20,242,891 miles in 1929, as compared with 10,472,024 miles in 1928. Likewise, . . . business increased, with 165,263 . . . on air lines in 1929, as against 52,934 in 1928. In 1929 7,096,930 pounds of mail were carried, as against 3,632,059 pounds in 1928 and 1,222,843 pounds in 1927. Express matter was beginning to be an important item, with 197,538 pounds reported. Mail and express lines flew a total of 13,344,172 miles in 1929 and passengers, a total of 14,889,850 miles, these figures referring only to scheduled operations on regular lines and not including short hops or chartered flights.

Statistical estimates of the Aeronautical Chamber of Commerce, Inc., based on reports of typical operators and computed to include aerial service operators in the United States, indicated that their planes flew 104,336,560 miles and carried

2,995,530 passengers. Private flying in the United States increased from 12,000,000 to 25,000,000 miles. The average passenger rate per mile on the established air-transport lines was 10.6 cents per mile during 1929, but toward the end of the year, most of the lines contemplated for 1930 radical cuts which indicated a far lower average rate. Of the 27 major lines, eight carried passengers exclusively, three air mail and express exclusively, and the others, both passengers and mail. In their services, 620 planes were employed, of which 594 were land planes, 7, seaplanes, and 19, amphibians. There were 480 single engined planes, 17 had twin-engines, and 122 were tri-motored planes. The personnel employed on these 27 lines totaled 2867 persons, of which 372 were pilots and 1425 mechanics or ground personnel, it having been demonstrated that about eight men were needed on the ground for every pilot in the air.

AIRCRAFT INDUSTRY The extent of the American Aircraft Industry is indicated in the annual production report of the Aeronautical Chamber of Commerce of America, Inc., which stated that airplanes and engines valued at \$98,000,000 were produced during 1929. Twenty-five aircraft engine manufacturers reported a total of 7378 engines produced in 1929 for both military and commercial use, representing a total valuation of \$26,495,830.15. The 96 major manufacturers reported a value of \$44,457,300.60 for 6034 commercial and military airplanes built during the year. The Aeronautical Chamber of Commerce added the appropriate value for spare parts, so that its estimate of \$98,000,000 was attained and could be compared with \$62,000,000 in 1928. An interesting feature of the American industry was that of 7378 engines manufactured, 5517 were taken by commercial interests, as against 1861 for military service. Commercial engines represented a total value of \$17,895,300 and military motors, \$8,600,530.15. These 1929 figures, compared with the previous year, indicated an increase in commercial production of 3607 units or 193 per cent, while military production increased by 448 units, or an increase of 32 per cent. It was further interesting to note that commercial aircraft engine production showed an average unit price of \$3243.65 during 1929, as compared with \$4830.65 in 1928. The average unit value of all types of aircraft . . . was \$9520 in 1929, as compared . . . in 1928. Most of the engines produced were about 300 horse power with 1404 motors being so rated, while the next to largest number was in the class between 76 and 125 horse power, with 1309 units so classed. Between 126 and 175 horse power, there were 1208 engines, while below 75 horse power, there were 479 engines.

The exports of aircraft and aircraft accessories in 1929 showed a considerable increase over the previous year. There were exported in 1929, 354 machines, valued at \$5,574,480, as compared with 162 machines valued at \$1,759,653 in 1928. Engines exported in 1929 totaled 321, valued at \$1,375,697, as against 179, valued at \$664,826 in 1928. Exports of parts in 1929 were valued at \$2,252,208, as against \$1,240,244 in 1928.

GUGGENHEIM FUND It was announced that the Daniel Guggenheim Fund for the Promotion of Aeronautics would terminate its existence at the end of the year, having been responsible for the disposal of \$3,000,000 since it was established in January, 1926, with an initial donation of \$2,500,000 made by the foundation. The extra \$500,000

given to the fund during the year by Mr. Guggenheim was to be used for the equipment of an Airship Institute in Akron, Ohio, the foundation of an aeronautical engineering school in the South, and the organization of a complete aeronautical library for the Library of Congress. A sum of \$250,000 was to be given to the city of Akron and the California Institute of Technology for an Airship Institute to be supervised by the latter, so that, among other subjects, research in lighter-than-air development might be undertaken. For a chair in the Library of Congress, \$140,000 was to be appropriated. Various educational institutions received gifts, such as \$30,000 to provide supplementary equipment for the aerial photographic survey and mapping center of Syracuse University. Approximately \$1,200,000 was appropriated, after the fund was inaugurated, for aerial activities at the California Institute of Technology, the Massachusetts Institute of Technology, Stanford University, the University of Michigan, and the University of Washington. Various grants were made to European societies. The blind-flying test of Lieut. James Doolittle described above was made possible by the Guggenheim Fund, which established and operated a trial weather-reporting system on the San Francisco-Los Angeles airway. The fund also established the safe aircraft competition, sponsored the National Safety Conference, and assisted in the movement for air markings of towns and cities.

DANIEL GUGGENHEIM SAFE AIRCRAFT COMPETITION. This notable competition, which had been announced in 1927 with the aim of developing and discovering safer airplanes, was held in November and December, 1929. The conditions for this competition have been indicated in previous YEAR BOOKS. Prizes totaling \$150,000 made the competition worth while for designers and manufacturers. At the end of the year, it was stated that the \$100,000 prize had been awarded to the Curtiss *Tanager*, a large biplane of the cabin type carrying a pilot and passenger in tandem within the inclosure. It was equipped with a Curtiss Challenger engine, with which during the year the world's endurance record was made. The wings were equipped with a modification of the Handley Page slot, while in addition, flaps, the hinged rear portion of the wings, were individually and manually operated so that their position could be fixed in any position by means of a chain gear at the will of the pilot. The landing gear employed the familiar combination of rubber in composition and a long-travel oleo gear permitting of a landing-gear travel of more than one foot. The travel of the shock absorbers is restricted in taking off, so as to assure the landing gear leaving the ground in the shortest possible distance, and the gear is placed in full action before landing, so as to secure full use of the shock absorber. The full floating ailerons of the wing-tip design which are placed at the tips of the lower wings floating and in a free position trail at a zero angle with the relative wind, being, however, individually operated around this trailing position. There is an aileron control independent of the wings, so that whether the wings are stalled or not they are never in a stalling condition though always being displaced from the zero angle.

The Guggenheim Competition originally attracted the interest of 27 manufacturers, but only 15 eventually presented planes for testing

at Mitchel Field, and of these, 6 withdrew. Another entry failed to arrive within the specified time. During the period of test, there were two major crashes resulting in the almost complete destruction of planes yet without injury to the pilots. The competition unfortunately was somewhat restricted and in some ways a disappointment to the sponsors of the original project, but it did indicate progress toward greater safety and the field in which further advances must be made.

The winning *Tanager* was able to come to a complete stop within 100 feet of the spot where it first touched the ground on landing, and likewise it was able to take off after a run of less than 300 feet and then clear a 35-foot obstruction 500 feet from the starting point. The pilot was able to remove his hands from the control for five minutes or more and the plane demonstrated that it could recover automatically from sudden air disturbances. The plane showed also that, in the event of engine failure on a steep climb, no abnormal position followed by a nose dive would result, but that the plane would descend in a steady, easy glide without intervention of the pilot. The *Tanager* was found capable of gliding with all power shut off and at a speed not exceeding 38 miles per hour. The only serious rival to the *Tanager* in the Guggenheim Competition was the British Handley Page plane.

BIBLIOGRAPHY. Among the notable books of the year in various fields of aeronautics were the following: Klemin, *If You Want to Fly* (New York); Black, *Civil Airports and Airways* (New York); and *Transport Aviation* (New York); Munk, *Fundamentals of Fluid Dynamics for Aircraft Designers* (New York); Wooley and Hill, *Airplane Transportation* (Hollywood, Calif.); Monther, *Simple Aero-dynamics and the Airplane* (New York); Harper, *Twenty-five Years of Flying* (London); Yancey, *Aerial Navigation and Meteorology* (New York); Bennett, *Aviation: Its Commercial and Financial Aspects* (New York); Page, *Modern Aviation Engines* (New York); Studley, *How to Fly* (New York); Ramsey, *Navigation of Aircraft* (New York); Burney, *The World, The Air and the Future* (London); Colvin and Colvin, *Aircraft Handbook* (4th ed., New York); Grey, Bridgman and Flanders, *All the World's Aircraft of 1929* (London); Goldstrom, *A Narrative History of Aviation* (New York). The Aeronautical Chamber of Commerce of America, as usual, published *The Aircraft Year Book for 1929* (New York), containing a full summary of recent developments in aviation, and it summarized in its 1930 issue the activities of 1929. See also MILITARY PROGRESS, NAVAL PROGRESS; and PHOTOGRAPHY.

AEROPLANES. See AERONAUTICS

AFGHANISTAN, af-gân-'i-stan'. An independent kingdom of Asia between the parallels 29° and 38° 20' north latitude and 61° and 72° east longitude with a narrow strip extending to 75° east. The estimates of the area vary from 245,000 to 270,000 square miles. The population is estimated at about 12,000,000, although some authorities place it at about half that number. Ruler after October, 1929, Nadir Khan, Capital, Kabul, with a population of about 100,000.

Other important towns are Kandahar (60,000), Herat (121,000), and Mazar-i-Sharif (46,200). The Afghan is the dominant race and the chief tribes are the Durrani and the Ghilzais, numbering about 2,200,000. The prevailing languages

are Persian and Pushtoo and the dominant religion is Islam.

Afghanistan's natural resources are but little known, as the area has not been carefully surveyed and prospected. The northern part is said to be fairly rich in copper, and lead is found in several sections. A gold mine was operated at Kandahar under the supervision of a British mining expert, and precious stones, particularly lapis lazuli, are found. Manufacturing of the cottage-industry type is carried on throughout the country, making soap, cloth, boots, and certain other articles for local consumption. Carpets are made both for domestic consumption and for export. Until within the last few years, Afghanistan has been almost completely isolated from the remainder of the world, but under the leadership of King Amanullah, rapid strides were made in opening the country to international trade and intercourse. The construction of an automobile road from Kabul to the Indian frontier was half completed when interrupted by the revolution in November, 1928.

The most convenient means of reaching Afghanistan from the outside world is through British Indian ports, as the country has no seaport of its own. India's trade with Afghanistan averages about \$15,000,000 in normal years. Cotton goods, indigo, sugar, hardware, leather, silver, and automobiles are taken by Afghanistan in exchange for carpets, timber, fruits, vegetables, several kinds of nuts, wool, spices, silk, hides, cattle, tobacco, pulse, ghee, assafoetida, and other drugs. Many of the commodities passing from India to Afghanistan are of foreign manufacture, and a good proportion of the import from Afghanistan is designed for reexport to Europe and the United States.

From 1922 to early in 1929, Afghanistan was a constitutional monarchy with legislative and state assemblies, and a cabinet presided over by the King. Administratively, the country was divided into five major and four minor provinces, each ruled by a governor. The total revenue was estimated at about 50,000,000 rupees annually. Amanullah Khan ascended the throne as Amir when his father was assassinated in 1919. In 1926 he changed his title from Amir to King. He was forced to abdicate Jan. 14, 1929, and was succeeded by Habibullah Ghazi, whose brief régime was ended in October when Nadir Khan ascended the throne. Constitutional government was then reestablished.

His story Afghanistan remained in a state of civil war until November, 1929. The revolt which broke out against King Amanullah in November, 1928, following his return from his European tour and his inauguration of drastic social, economic, and religious reforms based on the Western model, resulted in his forced abdication on Jan. 14, 1929. Designating his elder brother, the Sirdar Inayatullah Khan, as his successor, Amanullah escaped to Kandahar. The rebelling tribesmen refused to recognize Inayatullah, however, and he in turn was forced to flee while the rebel leader, Bacha-i-Sagoo, assumed power in Kabul, January 17, under the title of Habibullah Ghazi. The evacuation of foreigners from Kabul, including diplomatic representatives of various countries, by the British Royal Air Force continued from Dec. 23, 1928 to February 25, some 580 persons being transported to India by eight planes in eighty flights without any casualties. On January 29, Amanullah rescinded his ab-

dication and organized an army at Kandahar with the aid of a Turkish Military Mission and sixty Afghan officers, who had studied with the Turkish army. Early in April, he marched toward Ghazni but was defeated south of that point about April 19 and on May 23 left the country with former Queen Surruja, his brother, Inayatullah, and a considerable retinue. They went to Rome, Amanullah taking up residence in the Afghan Legation there. In the meantime Gen. Nadir Khan, uncle of Amanullah and his former Minister of War, had raised an army with which he defeated Habibullah and, on October 6, captured Kabul. Habibullah held out in the citadel for two days after the fall of the city, it was reported, brutally murdering several members of the royal family whom he held as hostages. He then escaped to Fort Jelul Serai, where he was captured on October 23. Nadir Khan waited outside of Kabul until the citadel was reduced by his brother, the Sirdar Shah Wali Khan, and then made a formal entry with his tribal allies. A solemn service of thanksgiving was held in the throne room of the royal palace at which the spokesmen of the tribes urged Nadir Khan to accept the crown. He at first refused, urging that a king be chosen at a later meeting of the National Assembly, but the tribesmen insisted upon his acceptance, threatening to leave the city if he refused. He finally consented and the government which he established was recognized in November by Great Britain and other leading powers, after his authority had been extended by the capture of Kandahar and Jellalabad. The latter city was reported badly damaged by a magazine explosion.

King Nadir, or Nadir Shah as he was addressed by the British government in extending recognition, was born in 1880. He was a relative of former King Amanullah by marriage and was commander-in-chief of the Afghan army in 1919 and later Minister of War. In October, 1924, he became Afghan Minister to France, resigning that post in 1926 on grounds of ill health. He made his residence in France until the revolt against Amanullah caused him to return to his native country. With two of his four brothers, he reached Bombay in February, 1929, and entered Afghanistan from Peshawar in March to relieve another brother, Sirdar Shah Mahmud Khan, who was holding out against Amir Habibullah. His final defeat of Habibullah was accomplished only after three reverses, which forced him temporarily to postpone his offensives. One of his first acts upon becoming King was to appoint his brother, Muhamed Azis Khan, as Minister to Soviet Russia, indicating an apparent desire to cultivate friendly relations with the Soviet Union.

Habibullah was executed following his capture, King Nadir having left his fate to the decision of twelve ministers and other officials. They condemned him to death for "rummaging the government, murdering thousands of Moslems, looting homes, disgracing Moslem women, and squandering the contents of the treasury," according to dispatches from Kabul.

Amanullah, by sending a telegram of congratulation to Nadir Khan from Rome, indicated his acceptance of the new régime. It was reported that he would become Afghan Minister to Rome.

In December, it was reported from Peshawar, India, that King Nadir had appointed a ministry headed by Sirdar Mohammed Hashim Khan and was making important progress in pacifying cer-

tain still rebellious tribes, organizing a regular army, raising funds, and recovering government arms from the tribesmen

AFRICA. The various divisions of Africa in this volume are discussed under their own heads. See articles on the respective countries and territories, including ETHIOPIA, KENYA, EGYPT, MOROCCO; TUNIS, SOUTH AFRICA, UNION OF, etc. See also the articles ANTHROPOLOGY, ARCHAEOLOGY, and EXPLORATION

AGNES SCOTT COLLEGE. An institution for the higher education of women in Decatur, Ga., founded in 1889. The enrollment for the autumn of 1929 was 456, distributed as follows: Freshmen, 161, sophomores, 101, juniors, 98, seniors, 96. The faculty numbered 51 members, and the officers of administration, 14. The endowment amounted to \$1,182,941, while the gross income for the year was \$356,309. There were 20,142 volumes in the library. During 1929 a central steam plant was erected at a cost of approximately \$150,000 and a contract was let for the construction of an administration and classroom building to cost about \$315,000. The General Education Board of New York offered the college \$500,000 for the furtherance of its building and endowment programme, if friends of the institution would complete the raising of \$1,000,000 for this purpose. President, James Ross McCain, Ph.D., LL.D.

AGRAMONTE (MONTGOMERY Y AGRAMONTE), GEN. CHARLES HORACE. American soldier and lawyer, died in Mexico City, Mar. 14, 1929. Born in Havana, Cuba, Sept. 19, 1830, he attended schools in France. Choosing the career of a soldier, he served in the Crimean War with the British General Staff, fought against Nana Sahib and the Sepoys in the Indian Mutiny, joined in the relief of Lucknow, and took part in the Maori Rebellion in New Zealand. On his return to the United States, he served with the Union Army during the Civil War, and was active in the 10 years' war for Cuban independence. General Agramonte was twice decorated by the French Legion of Honor. Having settled in Mexico, in 1914, he resumed the law practice which he had previously followed, and in which he worked until his death, being a leader in the American colony at Mexico City.

AGRICULTURAL EXPERIMENT STATIONS. The national system of agricultural experiment stations continued to develop during the year in each State of the United States and in the territories of Alaska and Hawaii and the insular possessions, Porto Rico, Guam, and Virgin Islands. Of more than \$15,000,000 available for their maintenance, the Federal Government furnished \$4,086,400, which included an additional \$480,000 provided by the Purnell Act of 1925. The remainder, coming from State appropriations and allotments, fees and sales, shows that, as in the past, the Federal funds were very liberally supplemented. In four years, the State appropriations had increased about 50 per cent, practically paralleling the increase in the Federal appropriations. The funds for the support of experiment stations maintained by the U. S. Department of Agriculture in Alaska, Hawaii, Porto Rico, Guam, and Virgin Islands aggregated \$246,000.

A number of important additions to buildings, equipment, and land were provided by the several States and others were authorized. Among nearly 7000 research projects at the stations, 447 were

active under the Adams fund and 1186 under the Purnell fund. Increase of the regular personnel of the stations brought the number over 3000. Only one change occurred in directorship, the director of the California Station resigning.

The Hawaiian Agricultural Experiment Station, resulting from the union of the Federal Experiment Station and the station of the University of Hawaii, was to be conducted jointly by the U. S. Department of Agriculture and the university. The merger of the two institutions was a consequence of the Act of Congress, approved May 16, 1928, authorizing the Territory of Hawaii to share in the Hatch and supplementary acts. The director of the Federal station became director of the joint institution and the research staff includes all former members of the staff of the Federal station and also a number of specialists from the university faculty. The Territorial Legislature appropriated \$5000 for a research station in the Kona coffee district of the island of Hawaii, to be operated in connection with the main station.

Congress, in an act approved Feb. 23, 1929, extended the Hatch Act to Alaska, with a proviso that no appropriations should be made under the act until the Secretary of Agriculture should determine the ability of the Territory to use the funds effectively. A bill introduced in the Legislature of Alaska that would meet the conditions laid down by the Secretary of Agriculture failed of passage.

The Georgia station and the Virginia truck station occupied new administration buildings having facilities for laboratories. The Louisiana station completed a new dairy building with space for research in dairy manufacture and production. A new substation was established at St. Joseph, Texas, Parish, in the delta section of Louisiana. As a part of a comprehensive building programme the University of Kentucky erected a dairy-products building on the station farm.

The new life science building under construction at the University of California at a cost of about \$1,750,000 was to provide space for the division of plant nutrition of the station. A poultry plant was built and equipped at a cost of \$80,000. The regents of the university were authorized to use \$125,000 for an addition to the main building of the citrus experiment station at Riverside and \$150,000 for a building for sub-tropical horticulture on the new campus of the university at Los Angeles.

In Pennsylvania, the legislature appropriated \$6,311,000 for the State College, of which \$300,000 is for agricultural research, \$650,000 for agricultural and home economics extension, and \$2,250,000 for new buildings. Kansas State appropriations provided an increase of from \$87,450 to \$106,500 for the four substations.

A gift of \$1,500,000 was tendered Cornell University by the General Education Board, upon condition of its duplication by the university within one year, for the establishment of a research foundation, ultimately to require \$9,000,000. The plan contemplates the strengthening of research in physics, chemistry, and biology by the creation of a centre of research in general physiology. Funds were made available for an animal nutrition research laboratory and for additional field buildings in the experimental orchard and at the experimental vegetable gardens. The plant industry building, being erected, was to cost over \$1,000,000.

NECROLOGY. The personnel of the stations suffered a number of losses through death. Robert R. Dinwiddie, long associated with the veterinary work of the Arkansas station, James W. McColloch, professor of entomology and investigator at the Kansas station, Henry D. Hooker, a horticulturist of note at the Missouri station, William H. Wright, at the Wisconsin station, John C. Allen, head of the department of animal husbandry of the New Hampshire station, Thomas R. Osborne, for 42 years connected with chemical work at the Connecticut station, and Frank H. Hall, who was research associate at the New York State station, the first experiment-station editor appointed in the United States and introducer of the popular bulletin series, died during 1929. Members of the staff of the U. S. Department of Agriculture, having important contacts with the stations, dying during the year, included Alfred C. True, former chief of the Office of Experiment Stations and an outstanding leader in agricultural education and research, and Edwin W. Allen, chief of the Office of Experiment Stations in England, Thomas Barlow Wood, professor of Agriculture at the University of Cambridge, noted for his research in animal nutrition, died Nov. 6, 1929.

BRITISH EMPIRE. Developments in agricultural research in the British Empire looking toward the organization of fundamental research on an empire-wide basis and a very extensive scale have proceeded under the sponsorship of the Empire Marketing Board and other bodies. From July, 1926, to May, 1928, allotments of over £1,000,000 were made for research projects and institutions, with supplementary funds from local contributions often equivalent to the imperial grants. Other phases contemplated included a series of imperial clearing stations for specific branches of research, a chain of central tropical and subtropical research stations, a colonial advisory council of agriculture and animal health to coordinate agricultural research in non-self-governing dependencies, and the formation of a colonial agricultural service with a specialist wing for research and administration.

Prominent among the research enterprises currently going on under substantial allotments were low-temperature research in Great Britain, Irish Free State, and Trinidad, fruit studies in Sierra Leone and Trinidad, entomological work in New Zealand and Great Britain, investigation of mineral content of pastures in Scotland, Australia, New Zealand, and Southern Rhodesia, animal breeding work in Fife, Scotland, and Palestine, poultry research in Ireland, and dairy-products research in Scotland and Northern Ireland.

The Australian Commonwealth Council for Scientific and Industrial Research erected a laboratory building at the University of Adelaide, costing about £14,000, and equipped for fundamental biochemical studies of animal nutrition, especially sheep.

The John Rose Laboratory of Waite Institute, South Australia, erected at a cost of £10,000, provides for botanical, chemical, and entomological research.

Albert College at Glasnevin and the accompanying experiment station of the Irish Free State were transferred to the agricultural department recently established in Dublin University.

The Stellenbosch-Elzenburg College of Agriculture, formed by union of the faculty of agri-

culture of the University of Stellenbosch and the Elzenburg School of Agriculture, operated as a part of the University of Stellenbosch, Union of South Africa. An experimental milling and baking plant was completed at Stellenbosch and buildings at Elzenburg and the cereal experiment station at Langgewens, Malmesbury.

The Agricultural Bacteriological Station at Gamans, Southwest Africa, founded by the German Empire and destroyed during the World War, was converted into an agricultural school with a model farm.

The department of agriculture in Albania carried on three experiment stations, which dealt with adaptation work with improved varieties of cereals, root crops and fruits, and livestock.

Consult also *Report on the Agricultural Experiment Stations*, 1928, by E. W. Allen, W. H. Beal, and H. M. Steece, U. S. Department of Agriculture.

AGRICULTURAL EXTENSION WORK.

The year marked the twenty-fifth anniversary of the beginning of demonstration work carried on through practical farm demonstrations by the U. S. Department of Agriculture. A celebration of this anniversary was held in Texas, where the first agents were appointed in 1904, and where the first demonstrations of improved farm practices were undertaken under the direction of the Department of Agriculture. The comprehensive national system of cooperative extension work as it now exists, however, was set up under the authority of the Smith-Lever Act of 1914. This system operates on a cooperative basis in the 48 States and the Territory of Hawaii, funds for the work being provided by the county, State, and national governments. Extension agents are employed with headquarters in the rural counties. Through demonstrations, meetings, tours, campaigns, and other teaching activities, these county extension agents carry direct to farmers, farm women, and farm children the latest successful methods of farming and home making.

The trend toward the economic phases of farming became more pronounced during 1929. Plans were formulated to cooperate with the Federal Farm Board, appointed by President Hoover, in furthering the betterment of improving the condition of farmers through the operations of farmers' cooperative marketing associations. Extension programmes of work were focused more directly than heretofore on larger farm incomes. It was recognized that increased production alone is not sufficient and that in marketing programmes consideration must be taken of underlying economic factors. Agents found it expedient to gather, organize, and interpret facts regarding adequate farm incomes, existing and probable future demand, supply, and market prices of farm products, competition with other areas, transportation facilities, and other economic factors. The data accumulated from these studies when used as a basis for extension programmes enabled farmers to adjust the kind, volume, or organization of their farm enterprises to take full advantage of existing economic conditions and thus increase their farm incomes.

Along with the more general recognition of economic factors came a steady increase in the production phases of extension work. As a result of the educational work of extension agents, there were almost a half-million instances in which farmers, farm women, or farm boys and

girls accepted and put into use the practices taught. These practices included practically every phase of farm and home improvement. County agricultural agents featured the building up and maintenance of soil fertility, the production of more home-grown roughage for dairy cows, the control of diseases and pests affecting livestock and crops, better breeding of livestock, improved construction of farm buildings, and the use of high-yielding varieties of seed adapted to local conditions.

The home demonstration agents aided farm women to make their homes more comfortable, attractive, healthful, and efficient. The proper selection, preparation, and preservation of foods to maintain a healthful diet the year round were taught. Women were trained in child welfare, home nursing, and sanitation. They were aided in the making, care, and renovation of clothes, the trimming of hats, repair of furs, and similar features. Business methods were introduced in the home, kitchens were rearranged, modern equipment was utilized, inexpensive but practical lighting, heating, water, and sewage systems were installed, houses were painted, furniture upholstered, flower beds, shrubbery, trees, and lawns were planted, and other improvements in the farm home were adopted through the efforts of the home demonstration agents.

The 4-H Club work with farm boys and girls increased substantially over the previous year. There was little or no change in the projects carried on with these boys and girls. The projects attracting the greatest amount of attention were concerned with dairy and beef cattle, swine, poultry, corn, potatoes, and cotton among the boys, and clothing, food preparation and preservation, poultry, house furnishings, home management, and home gardening among the girls. An encouraging development during the year was the increased popularity among club members of leadership activities. Extension agents and club members continued to look with favor on judging teams and demonstration teams. Such teams and public exhibits showing results obtained through club work in the county were important factors in popularizing and extending the advantage of 4-H Club work to all sections.

In June, the third annual 7-day encampment of 4-H Club members was held in Washington, D. C. Forty States and the Territory of Hawaii sent 150 delegates who were selected to discuss their 4-H achievements. The camp gave the youthful farmers and home makers an opportunity of becoming better acquainted with the work and facilities of the department, enabled them to learn how the Federal Government operates, and allowed them to discuss 4-H Club matters of mutual interest with delegates from other agricultural regions.

Each year, extension agents in one part of the country or another are called on to meet emergency conditions. This year, valiant emergency aid was given by extension agents in Alabama, Georgia, and Florida to flood sufferers. In Alabama, the extension service cooperated with the American Red Cross in raising approximately \$100,000 and in providing 15 cars of food, clothing, and other supplies for the immediate needs of the refugees. Shipments of fertilizer were arranged through the Alabama Farm Bureau Federation. Home demonstration agents gave dem-

onstrations in refinishing furniture damaged by the flood, and helped to put the homes in a healthful condition. Farmers were aided in resuming their farming operations when the floods subsided and in many ways were helped by the extension agents in rehabilitating their homes.

By special Act of Congress, the Smith-Lever Act was extended to Hawaii and cooperative extension work was begun there on July 1, 1928. The Department of Agriculture lent W. A. Lloyd to act for a year as the first dean of extension and to organize the work on the Island. In the winter of 1928-29, Congress authorized the extension of the Smith-Lever Act to the Territory of Alaska, but no funds had yet been appropriated for this purpose. Porto Rico came into the extension family during the year through the beginning of cooperation with the U. S. Department of Agriculture in the employment of an extension forester. Extension work in Guam and the Virgin Islands was carried on through the Federal experiment stations.

The total funds provided for cooperative extension work from all sources for the fiscal year ending on June 30, 1930, were approximately \$24,258,000, an increase of about \$1,340,000 over the previous year. Approximately \$274,000 of this increase was from Federal sources and \$1,066,000, from State and county funds. Additional funds in the amount of \$500,000 were made available under the provisions of the Capper-Ketchum Act, but this increase was offset to a considerable extent by reduction in the special Federal appropriation for aid in the employment of extension agents in the Mississippi Valley area flooded in 1927. Of the total funds, \$9,250,000, or 38 per cent, was contributed by the Federal Government, \$6,950,000, or 29 per cent, was from State appropriations to the agricultural colleges and other State agencies, and the remaining 33 per cent, or \$8,058,000, came from county appropriations for extension work and from contributions of local organizations and individuals. About 95 per cent of all funds allotted for cooperative extension work during the year came from public sources.

Although most of the increase in extension funds this year came from State and county appropriations, the opposite was true in the previous year when Federal appropriations were increased approximately \$1,500,000 over those of the preceding year. These increases in Federal, State, and county funds since July 1, 1928, permitted material expansion in the extension staff. From July 1, 1928, to Oct. 31, 1929, the extension personnel increased by 659 workers. Of these, 221 were new county home demonstration agents, 28 were assistant home demonstration agents, and 20 were county Negro women workers, an increase of 269 women workers in the counties. The county agricultural agent staff increased by 110, assistant county agricultural agents, by 63, and Negro men agents by 12. One hundred new 4-H Club workers were appointed, 74 of them being county club agents, 20 assistant county club agents, and 6 club supervisors. The number of subject-matter specialists increased by 104. There was no increase in the administrative and supervisory staff. Of the 5820 persons who were engaged in extension work in the United States, 2668 were in county agricultural agent work, 1329 in home demonstration work, 366 in work with boys' and girls' 4-H clubs, and 300 in Negro extension work. There

were 49 State extension directors, one in each of the States and one in Hawaii, and 1108 subject-matter specialists.

Although statistics of extension accomplishments for 1929 were not available at the end of the year, some idea of the volume of work carried on and results obtained may be gained from the figures for 1928. In helping farm people to obtain a larger farm income and to make their home life more comfortable and attractive, extension workers supervised a total of 851,526 result demonstrations in 1928 that were carried on by farmers and farm women as practical and inspiring lessons to their neighbors. This was an increase of about 80,000 over the previous year. Boys' and girls' club members also completed 882,800 demonstrations, or an increase of 106,700. The demonstrations supplemented by the press, bulletins, extension meetings, lectures, and other methods resulted in a total of 4,662,000 instances in which some member of the farm family accepted and put into every-day use the practices taught. Valuable assistance was given to extension workers by 237,817 volunteer local leaders who gave their time and effort in the formulation of extension programmes, training club members, conducting demonstrations, and in other ways helping to make extension efforts more productive.

The enrollment of different boys and girls in 4-H Club work has increased steadily during five years, the increase per year having averaged approximately 41,000 boys and girls. The enrollment in 1928 was 663,940, as compared with 619,712 in 1927. They were organized into 40,670 groups, known as 4-H clubs. Of the total number enrolled in 1928, 67.4 per cent completed all work assigned to them. Some of the results obtained by club members during 1928 were the cultivation of 37,000 acres of corn, 21,500 acres of cotton, 5800 acres of potatoes, 5500 acres of peanuts, 2000 acres of wheat, 1540 acres of soy beans, and 7760 acres of home gardens, 68,500 hogs, 35,000 dairy animals, 24,800 sheep, and 1,473,600 standard-bred fowls were raised, 3,356,000 quarts of fruits, jellies, and vegetables were canned, and 528,700 articles of clothing were made.

Farmers' institutes were conducted in 13 States in 1928. A total of 2545 institutes were held with an attendance of 1,354,000 persons.

The demand in 1929 of the U. S. Department of Agriculture for motion pictures exceeded the supply of films available. The Department had films on about 250 subjects. During the year, 55 new exhibits were completed by the Office of Exhibits, 35 were revised, and 105 renovated. Exhibits were made at 74 fairs and expositions in the United States and at the Ibero-American International Exposition at Seville, Spain.

GREAT BRITAIN England and Wales conducted rural extension teaching through farm schools, local lectures, farmers' institutes, and by means of demonstrations and advisory work carried on by the county agricultural staff. A staff of specialists, known as advisory officers, also was maintained at each of 14 advisory centres. On Apr. 1, 1928, 67 specialist advisory officers were stationed at these centres, covering the subject-matter phases of dairy bacteriology, agricultural economics, entomology, mycology, and veterinary science, all branches of science bearing directly on farm management. Their duties were to visit farmers to give them advice on matters

which the county staff could not handle, give lectures, and reply to letters requesting information. They cooperated closely with the county agricultural staffs and acted as liaison officers between the county staffs and the research workers at the colleges and experiment stations. Women's rural institutes gave training to farm women on all phases of home economics and handicraft and included also studies in English, history, literature, singing, arithmetic, and other practical and cultural branches of learning. Early in 1929 the National Association of Young Farmers' Clubs was formed under the auspices of the National Council of Social Service. Boys' and girls' clubs had been sponsored in 1921 by commercial interests. In 1924 they came under the supervision of the Ministry of Agriculture. At the close of 1928, however, a review of club work revealed that although it had made progress and the movement had become national in scope, certain social features made it desirable to transfer responsibility for young farmers' clubs from the Ministry to a voluntary body. The National Council of Social Service, an organization consisting of rural community councils in many counties, was selected for the purpose and given a grant of money for five years, the amount decreasing annually until the end of this period, when it was hoped the club movement would be self-supporting. Although the National Association of Young Farmers' Clubs came into existence early in 1929, club work at the end of the year was already on a more solid foundation and gave promise of steady and substantial growth.

SCOTLAND A staff of agricultural workers in the counties came under the direction of the agricultural colleges at Aberdeen, Glasgow, and Edinburgh. This staff of county workers was supplemented by a corps of specialists at the colleges, to whom difficult problems were referred.

CANADA Extension activities were carried on through the provincial departments of agriculture by means of agricultural representatives, boys' and girls' clubs, short courses at colleges, women's institutes, lectures, demonstration trains, and similar methods and agencies. In Nova Scotia, boys' and girls' club work made outstanding progress in 1928, more communities being reached than ever before. Poultry-club judging competitions and calf-club demonstrations at the Maritime Winter Fair were new features. Garment-making clubs were started for the first time by the women's institutes. An encouraging sign of progress in this province was the increased number of men and women who gave their time and effort to developing extension work. In Ontario, women's institute courses proved to be popular among farm women who desired a knowledge of cooking, food values, home nursing and first aid, sewing, and millinery. Lecturers were provided by the Institutes Branch of the Department of Agriculture who gave, in 1928, a total of 277 demonstration-lecture courses which were attended by 7239 women. Quebec established demonstration farms managed by the owner under the supervision of the Department of Agriculture. Typical farms were selected in an effort to determine and to teach to other farmers what profit may be expected from following scientific farming methods. In 1927, 25 such farms were being operated with an average labor income of \$1012. In Manitoba one of the most popular forms of extension work, was

a series of lectures broadcast over the radio. These radio correspondence courses included lectures, bulletins, quizzes, and special assistance for individual students by means of correspondence. Certificates were supplied to persons completing a course.

UNION OF SOUTH AFRICA Extension work was conducted by the Division of Agricultural Education and Extension of the Department of Agriculture. Extension officers were stationed in various districts throughout the Union, whose principal duties were to give personal advice and instruction to farmers, hold lectures, establish demonstration plots, and direct the extension activities of four schools of agriculture, which are extension centres in their respective areas. During 1927-28, 24 extension officers gave 630 lectures attended by 22,080 persons, visited 3270 farms, and established 82 demonstration plots. Sheep and wool officers and poultry-extension officers visited 4240 farms and gave 940 lectures. Six women, trained in domestic-science subjects, gave 530 lectures and demonstrations to 11,000 farm home makers, on subjects as canning, planning the laundry, laundering, child welfare, kitchen arrangement and the like. This work was begun by the Department of Agriculture in the form of boys' maize-growing competitions. A special officer was employed by the Division of Agricultural Education and Extension to direct all club work in the Union. In 1928 there were 565 maize-growing and 76 tobacco-growing competitions in addition to kaffir-corn clubs and poultry clubs.

INDIA In Madras cooperative agricultural associations have been found to be most effective in introducing quickly improved agricultural practices in a country where farming people constitute more than 70 per cent of the population. In spite of the difficulty of persuading peasants to form agricultural societies and the great amount of departmental supervision necessary when first started, gratifying results have been obtained. In Bengal, Mahila Samitis, or women's associations, have been prominent in bettering the condition of rural women through proper vocational and cultural education and training. Their activities are very numerous and include public-health work, maternity and child-welfare work, instruction in cottage and domestic industries, exhibitions, care of kitchen gardens, women's classes for general instruction, organization of girls' schools, and rural reconstruction work.

SWEDEN Farm advisers and agricultural experts employed by county agricultural societies continued to carry on extension activities among rural people. Competitions formed one of the important features of the work with young boys and girls, the aim being to arouse the interest of young people in the farming profession and to teach them to manage their own enterprises. Courses were given in the care of gardens, pruning trees, slaughtering, cooking, canning, farm bookkeeping, home industries, care of the sick, and other phases of crop growing and livestock raising.

NORWAY Extension work was conducted through the Department of Agriculture, the various agricultural and forestry associations, and, in some instances, the local authorities. The Department of Agriculture employs a staff of 29 extension specialists. The 18 county agricultural societies, subsections of the Society for Norway's Welfare, employ experts who give instruction to

farmers, hold exhibitions of livestock and farm and garden products, and conduct experiments. Other associations which are national in scope also employ specialists to assist farmers. The Norwegian Agricultural Council was formed as an advisory body to strengthen the cooperation between the agricultural societies and the central administration. Some of the local district councils also employed extension workers, whose salaries and expenses are paid partly by the county, partly by the district council, and partly by the State. To reach the farm women, a national committee was formed in 1927 to organize home-economics extension work. The aid of the agricultural societies was sought. The societies agreed to appoint rural home-economics committees, provide teachers and lecturers for courses and demonstrations, furnish needed equipment, and further the cause of home-economics extension among the farm women.

DENMARK The Department of Agriculture, the Royal Agricultural Society, and local farmers' organizations were responsible for carrying on extension activities. Instruction was given to rural women through short courses at colleges and schools, through lectures sponsored by the agricultural societies, and through tours to model farm homes. Young country girls who were unable to attend the regular home management schools were given instruction by advisers employed by rural and domestic-economy societies in cooperation with the General Education Board.

GERMANY Experiment clubs continued to operate as a method of inducing farmers to adopt improved agricultural practices. They originated in Saxony in 1921, where they were first composed of landowners who formed societies to carry on experiments to increase farm production during the difficult years following the close of the World War. In 1929 more than 600 of these experiment clubs flourished in Germany with the greater portion of the membership consisting of farmers managing small and medium-sized farms. The work of experiment clubs was financed mainly from funds provided by the central administration, the district governments, and the chambers of agriculture. Experiments conducted by the clubs were concerned with practices of fertilizing, soil tillage, production of forage crops, market crops, and orchards, livestock raising, farm management, and plant protection.

Rural housewives' societies continued to teach rural women through lectures and courses in home economics and agriculture. Each of the various societies employs a number of specialists in various subjects, such as gardening, poultry keeping, and home management. These specialists give lectures, conduct short courses in baking, food preservation, sewing, fruit growing, poultry keeping, and similar subjects, conduct demonstrations of modern methods and equipment, and give advice and help to individual farm women in their own homes.

AUSTRIA Home-management instruction was extended to the rural women of Lower Austria through courses in domestic science, nutrition, hygiene, darning, poultry keeping, and kitchen gardening. During the four winter months, classes were held three evenings each week. During the remainder of the year itinerant courses were given which lasted six weeks, the entire day being devoted to instruction. Most satisfactory results were obtained from these home-manage-

ment courses. Their number had increased from six in 1924-25, which were attended by 110 pupils, to 70 in 1928-29 with an attendance of 1200 pupils. Measures were taken during the year to hold the courses regularly in every province of Lower Austria.

HUNGARY Since the World War, the Government had devoted considerable attention to improving the condition of village people. Special agricultural instruction was given in the village schools, as well as extension teaching carried on outside of the schools. Instructors in schools of agriculture and in normal schools were obliged not required for regular school duties to the agricultural training of young people and adults in their school districts. The instructors give lectures, competitions, conduct meetings, and give advice. During 1928, 2000 lectures were given in 252 villages. The radio also has proved to be an effective medium of disseminating agricultural information. The Federation of Hungarian Villages, an association founded in 1920, initiates, organizes, supports, or directs every enterprise for farm and home improvement.

ITALY A traveling staff of agricultural teachers continued to instruct the peasant people in proper agricultural practices. A chair of agriculture was maintained in each province with a director in charge and a corps of specialized assistants and part-time agricultural teachers. Practical demonstrations were given. It was estimated that there was an average of one center of agricultural instruction and improvement for every 34,000 hectares (about 84,000 acres) of agricultural and forest land or for every 50,000 inhabitants. As a result of this, progress in agriculture was marked.

Agricultural extension work also was carried on in Argentina, Australia, Belgium, Brazil, British Guiana, China, Cyprus, Czechoslovakia, Ecuador, Finland, France, Jamaica, the Netherlands, New Zealand, Paraguay, Poland, Spain, Switzerland, and Uruguay.

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AGRICULTURAL LEGISLATION IN THE UNITED STATES Although the outstanding agricultural question inherited from 1928 was still that of attempting to relieve the agricultural situation by Federal legislation, the outgoing Seventieth Congress confined its efforts in the brief period before its expiration on March 4 almost entirely to noncontroversial matters. The annual act making appropriations for the support of the Federal Department of Agriculture (see **AGRICULTURE, U. S. DEPARTMENT OF**) was duly enacted on February 16, and later supplemented by numerous deficiency appropriations and the provision of \$6,000,000 for Federal loans for seed, feed, and fertilizer to farmers in storm- and flood-stricken areas of Virginia, North Carolina, South Carolina, Georgia, Florida, and Alabama. The funds available to the States, under the Federal Vocational (Smith-Hughes) Act of 1917 were,

under an act approved Feb. 5, 1929, enlarged by an additional grant of \$500,000 for the fiscal year ending June 30, 1930, and for each year thereafter, for four years, by a sum exceeding by \$500,000 the sum appropriated for each preceding year. These sums were to be divided equally between the subjects of agriculture and home economics for the payment of salaries of teachers, supervisors, and directors and the development of home economics subjects in the various States and territories on a basis of their respective farm and rural populations. See also **AGRICULTURAL EDUCATION**.

In addition, by acts approved January 21 and February 23, respectively, a grant of 100,000 acres of vacant nonmineral lands was made for the support and maintenance of the Alaska Agricultural College and School of Mines, and the benefits of the Hatch Act of 1887 and the Smith-Lever Act of 1914, providing, respectively, Federal funds for agricultural experiment stations and for extension work in agriculture and home economics, were extended under certain restrictions to the territory of Alaska. The Federal Farm Loan Act of 1916 was amended to provide branch banking facilities for Porto Rico, with a limit of \$15,000 on individual farm loans.

Shortly after his inauguration, President Hoover convened a special session of the Seventy-first Congress to meet on April 15 for the purpose, as stated in his initial message, of redeeming "two pledges given in the last election—farm relief and limited changes in the tariff." On the opening day of this session, the House committee on agriculture submitted a farm relief measure which was passed by the House of Representatives with amendments, on April 25, by a vote of 367 to 31. Meanwhile, the Senate committee had reported a bill, which also contained a provision for the issuing of debentures on exports of raw agricultural commodities or their food products. On May 8, the Senate voted 47 to 44 for the retention of this provision, and on May 14 passed the bill itself 54 to 33. Eventually, however, after the rejection of the debenture provision by the House on June 13, by a vote of 250 to 113, the Senate agreed to its omission and the bill was signed by President Hoover on June 15.

The new measure, known as the Agricultural Marketing Act, declared it to be the policy of Congress "to promote the effective merchandizing of agricultural commodities in interstate and foreign commerce, so that the industry of agriculture will be placed on a basis of economic equality with other industries." To that end the act was designed to protect, control, and stabilize the currents of this commerce by minimizing speculation, by preventing inefficient and wasteful methods of distribution, by encouraging producer-owned and controlled cooperative organizations for greater unity of effort in marketing, and by aiding in preventing and controlling surpluses in any agricultural commodity through orderly production and marketing.

As the executive agency to administer the act, there was created the Federal Farm Board, consisting of the Secretary of Agriculture *ex officio* and eight members selected by the President with "due consideration to having the major agricultural commodities produced in the United States fairly represented on the board." Provision also was made for the selection by the various cooperative associations handling each commod-

ity of an advisory committee for that commodity.

In addition to an administrative fund of \$1,500,000 for the use of the board and its commodity committees for the period ending June 30, 1930, there was appropriated a revolving fund of \$500,000,000. This revolving fund was intended to be drawn upon as needed for loans to coöperative associations and stabilization corporations and for the furnishing of insurance to the coöperative associations against loss through a decline in prices.

Loans to coöperatives were authorized to assist in the effective merchandizing of agricultural commodities and their food products, the construction or acquisition of physical marketing facilities, the formation of clearing-house associations to foster economic distribution and minimize waste and loss, the enabling of the coöperative associations to advance to their members a greater share of the market price of the commodity than is practicable under other credit facilities, and the extending of the membership of the associations by a campaign of education. In a similar way, the stabilization corporations which may be organized for the preparing, handling, storing, processing, and merchandizing of specific commodities may be granted loans to provide working capital or attempting a control of a surplus under prescribed conditions. Neither loans nor insurance are authorized to be supplied, however, if in the judgment of the board the result would be to increase unduly the production of a commodity in which a surplus is commonly produced in excess of the annual marketing requirements.

In order that it may operate with a background of adequate and accurate information, the board also is given broad powers along the lines of education, research, and extension. In this work, it is directed to avail itself of the services and facilities of any establishment in the executive branch of the Government, and is authorized to coöperate with any State or Territory or any department, agency, or political subdivision thereof or with any person. Progress under the act is discussed elsewhere. See AGRICULTURE.

Efforts to restrict the tariff bill, passed by the House of Representatives on May 28 and pending in the Senate at the close of the year, mainly to the agricultural schedules proved unsuccessful, and the measure took the form of a general revision, as discussed elsewhere. See under UNITED STATES.

AGRICULTURE. Agriculture occupied a very important position in the public affairs of the United States during 1929. There was evidence of better basic conditions, although much further improvement was held necessary before the situation could be deemed satisfactory. President Hoover called a special session of Congress to meet April 15, asking that it confine itself to passing legislation for the relief of agriculture and revising the tariff, especially for the benefit of farming and industries which had not been prosperous. Deliberations in farm relief culminated in the passage of the Agricultural Marketing Act, approved June 15. This measure was essentially intended to enable agriculture to effect a better adjustment of production to demand and a more efficient system of marketing. Although opinion was sharply divided during the preparation of the law, its enactment was hailed with general approval and satisfaction. Consideration of the tariff measure which revised

most of the schedules and generally increased duties was continued into the regular session of Congress. Preferential interest rates for agriculture and large scale farms, both significant of the new trend of industrialization of agriculture, also were considered by Federal government agencies engaged in planning a programme of farm relief.

The position of agriculture in general at the close of the crop season of 1928-29 was better than at the close of the preceding year, and there were prospects of continued improvement. The crop season 1929-30 began with a rising farm-commodity price level, and with only moderate supplies of the principal products in prospect. Agriculture closed the calendar year 1929 with no depressing surpluses of food products to be worked off before the planting of the 1930 crops, according to the U. S. Department of Agriculture. Crops of 1929 showed an increased valuation of about \$85,000,000 over 1928, due mainly to the increased value of potatoes, and livestock sales showed an increase of about \$90,000,000, practically all of which was in hogs. The most striking increase in crop values was in potatoes, in that a crop nearly one-fourth smaller than in 1928 was valued at \$470,000,000, about double the value of the 1928 production.

Packers during the first ten months of the year paid \$936,000,000 for hogs slaughtered under Federal inspection, an increase of \$86,000,000 over the corresponding period in 1928. Cattle slaughtered under Federal inspection in the first 10 months of 1929 brought \$716,000,000 as compared with \$718,000,000 the preceding year, and sheep and lambs brought \$131,000,000, as compared with \$126,000,000 in 1928.

FEDERAL FARM BOARD. The Agricultural Marketing Act, approved June 15, 1929, declared the policy of Congress to be to promote effective merchandizing of agricultural commodities in interstate and foreign commerce, so that agriculture will be placed on a basis of economic equality with other industries. To that end, the act is designed to protect, control, and stabilize the currents of such commerce by minimizing speculation, by preventing inefficient and wasteful methods of distribution, by encouraging producer-owned and -controlled coöperative organizations for greater unity of effort in marketing, and by aiding in preventing and controlling surpluses in any agricultural commodity through orderly production and distribution.

The Federal Farm Board created by the act included in its initial membership Chairman, Alexander Legge of Illinois; James C. Stone of Kentucky, representing tobacco; Carl Williams of Oklahoma, cotton; C. B. Denman of Missouri, livestock; Charles C. Teague of California, fruits and vegetables; William F. Schilling of Minnesota, dairying; Charles S. Wilson of New York, general farming; and Samuel R. McKelvie of Nebraska, wheat, all members selected by the President; and the Secretary of Agriculture, member *ex-officio*.

The board was entrusted with important and varied functions in regard to production and marketing as a means of advancing general welfare. It was authorized to avail itself of the services and facilities of any executive governmental establishment and coöperation with State and Territorial agencies also was permitted. The agricultural colleges, experiment stations, extension services, and State agricul-

tural department officials all pledged their full cooperation in the enterprises of the board.

The board decided that the most useful and safest initial operation would be to further activities of established cooperative marketing agencies, feeling that such action would so simplify many problems that their solutions would be comparatively easy. Its aim was to encourage the eventual development of large-scale cooperative organizations which would be a stabilizing factor in marketing but not supplant local cooperatives. It considered its work as involving a long-time constructive programme rather than simply one dealing with emergencies. At the outset the board granted hearings to representatives of cooperative associations from every section of the country. The more than 50 groups heard were concerned with citrus fruits, cotton, raisins and grapes, terminal grain commission agencies, wheat pools, grain elevators, wool, rice, beans, fruit, and vegetables.

A revolving fund of \$500,000,000 authorized by Congress was intended to be drawn upon as needed for loans to cooperative associations and stabilization corporations and for the furnishing of insurance to cooperative associations against loss through a decline in prices. To obtain a loan from this revolving fund, the organization applying must be a cooperative organized under the provisions of the Capper-Volstead Act, handling an agricultural product and doing an interstate business. The money is loaned to the cooperatives at a limited rate of interest—"in no case shall the rate exceed 4 per cent per annum on the unpaid principal," according to the act.

The announced future policy of the board will be to loan money from the revolving fund to the national commodity marketing organizations as soon as they have been established. In the absence of these central associations or corporations, the board has advanced money to qualified cooperatives direct. Up to Jan 14, 1930, the board's commitments to farmers' cooperatives had totaled \$58,690,000, to be used by cooperatives in building facilities for the handling of farm products and for advancements to farmers on their crops. In most cases, the commodity loans have been supplemental to loans made by the Federal intermediate credit banks. Commodity commitments have been made on grain, cotton, fruits, livestock, wool and mohair, dairy products, rice, beans, honey, and seeds.

The Farmers National Grain Corporation, incorporated in October, 1929, was the first national commodity cooperative sales association to be set up under the guidance of the board. Central marketing agencies also were established for cotton, wool, and mohair and definite steps were taken to organize a central or national agency for livestock.

THE AGRICULTURAL SITUATION Agricultural conditions in the United States continued gradually to improve. Farm incomes in the crop season 1928-29 averaged higher than those of any season since 1920-21 except 1925-26. The movement of population from the country to the town declined, and the rate of depreciation in farmland values did likewise. The aggregate gross income from agricultural production in the United States for the crop season 1928-29 was estimated at \$12,527,000,000, or about \$225,000,000 more than in the preceding year. The cash income from the sale of farm products was estimated to have totaled \$9,949,000,000, or an increase of \$79,000,-

000 over 1927-28. The net income of the farmers did not increase proportionately, because farm operating costs, taxes, and interest on debts advanced somewhat. The income available for living on the farm, including the value of farm products used by farm families, was only about \$16,000,000 greater than in the previous season. The return earned on the current valuation of agricultural property was about the same, namely, 4.7 per cent, compared with 3.1 in 1922-23 and 1.4 in 1921-22.

Farm taxation continued to be a problem of major importance. Taxes on farm property still rose slightly during the year, the increase for the United States as a whole approximating 1½ per cent. As a measure of the tax burden on all farm properties, research results covering 14 States indicated that during five years taxes had taken about one-third of the net rent on rented farms. Estimates were that in 1928 farmers paid \$1.42 in taxes on each \$100 of actual value of their real estate. Since public expenditures tend normally to increase, reduction in farm taxes is not usually to be sought through general reductions in public expenditure, but rather through readjustments tending to equalize tax burdens among all taxpaying groups. Broadening the assessment basis of the general property tax, improved methods of collection, and increased reliance on revenues from intangibles have been suggested to relieve the burden on farm property.

Farm real estate values were appreciably nearer stability during 1928 and 1929 than at any time since the downward movement began. A survey by the Department of Agriculture for the year ended Mar 1, 1929, showed that for the country as a whole farm-land values declined by 1 per cent, the smallest loss in any year since the post-war depression began, and nominal compared with the declines of 1921, 1922, 1923, and 1924. For the country as a whole, more than three-fourths of the war-time gain over pre-war levels had been canceled. In the 12 months indicated, the rate of forced sales and related defaults approximated 19 farms per 1000 farms, as compared with 22.8 farms per 1000 in the preceding year. Much improvement was deemed necessary to restore normal conditions, the foreclosure rate being still very high, and the farm bankruptcy rate being seven times the pre-war figure. On the other hand, the transfer of farms by voluntary purchase or sale was far below normal. The total farm-mortgage debt for the United States on Jan 1, 1928, was estimated to be \$9,468,526,000; on Jan 1, 1925, \$9,360,620,000, and on Jan 1, 1920, \$7,857,000,000.

Prices received in August, 1929, by farmers for their principal products averaged 143 per cent of the pre-war level, compared to 139 per cent in August, 1928. The price level of commodities usually bought by farmers remained at about 156 per cent of the pre-war level. Compared with the corresponding figures for 1921-22, 119 per cent and over 150 per cent, respectively, the exchange value, or the purchasing power of farm commodities, improved. In reporting the foregoing, the Department of Agriculture observed that only when the farmer's net income increases more than the prices of things he must buy does he obtain an increase in purchasing power. In recent years, a substantial gain of this character actually had taken place. However, in the crop year 1928-29, more improvement occurred in the gross farm income and in the price

situation than in the net income of the farmers, because of increased costs, including higher taxes.

Farm credit remained costly in many parts of the United States notwithstanding the great improvement made in agricultural credit facilities during the last 10 or 15 years. Favorable changes of fundamental importance were brought about by the Federal Reserve Act of 1913, the Farm Loan Act of 1916, and the Intermediate Credit Act of 1923. It was felt that further progress might be expected from the financial provisions of the Agricultural Marketing Act of 1929. It was pointed out that in the improvement of agricultural credit, there is a broad field for action by the several States.

Tariff protection for the farmer has been more generally recognized in recent years as a necessary part of a sound policy. President Hoover in his message of December 3, stated

An effective tariff upon agricultural products, that will compensate the farmer's higher costs and higher standards of living, has a dual purpose. Such a tariff not only protects the farmer in our domestic market but it also stimulates him to diversify his crops and to grow products that he could not otherwise produce, and thus lessens his dependence upon exports to foreign markets. The great expansion of production abroad under the conditions I have mentioned renders foreign competition in our export markets increasingly serious. It seems but natural, therefore, that the American farmer, having been greatly handicapped in his foreign market by such competition from the younger expanding countries, should ask that foreign access to our domestic market should be regulated by taking into account the differences in our costs of production.

In his annual report to the President, Secretary of Agriculture Arthur M. Hyde observed

Hence the consideration by Congress of a tariff bill providing substantial increases on the duties of many agricultural products is a happy augury. This Nation is committed to the protective principle. The tariff legislation in prospect, coupled with the trend in our foreign trade, promises to make that principle more effective for agriculture.

He further pointed out that the tariff conspicuously assists producers of flax, sugar, beef cattle, sheep, wool, and dairy products, and that tariff protection can be effective on vegetable fats and oils, corn, and wheat.

The drift of population from the country to cities has continued, according to a survey by the Department of Agriculture, which shows that the farm population at the end of 1928 was the smallest in more than 20 years. Although the gross movement of persons from the farms was somewhat smaller in 1928 than in 1927 and 1926, it comprised the total of 1,960,000 persons. This was largely offset, however, by the movement of 1,302,000 persons from cities, leaving a net movement of 598,000 persons from the farms to the cities. Farm population, as of Jan. 1, 1929, was estimated at 27,511,000, compared with the census estimate of 32,076,900 for Jan. 1, 1910.

CROP PRODUCTION IN 1929. The area of crops harvested in 1929 was estimated to be 367,082,000 acres, an increase of more than 1 per cent over the acreage harvested in 1928. Hay made up a large part of the increase. However, crop yields were reduced by widespread drought, averaging 53 per cent less than those of 1928 and 2.2 per cent below the average during the preceding decade. The losses in production, however, were so evenly distributed for the country as a whole that no large area had either very bounti-

ful or very short crops. As a result of the lower yields, the production of principal crops was 4.8 per cent less than in 1928. For farmers, however, the reduced production appeared to have been so offset by higher prices that the increase in total value was nearly proportional to the increase in acreage harvested. The chief increases in valuation were shown by hay, fruits, vegetable and sugar crops, and the more important decreases by grains and cotton. The total farm value of the 50 principal crops in 1929 was estimated at \$8,580,731,000, an increase of about 1 per cent over the valuation in 1928.

The wheat crop, estimated at 806,508,000 bushels, or over 100,000,000 bushels less than the 1928 crop, slightly exceeded the average during the preceding five years. The greatest decline was in spring wheat, which produced only 228,172,000 bushels, as compared with 336,203,000 bushels in 1928. More than half the hard winter wheat, one-fifth of the hard spring wheat, and a smaller proportion of the soft winter wheat in the United States were harvested by combines. The world wheat crop in countries outside the U. S. S. R. (Russia) and China was estimated at 3,400,000,000 bushels, against 3,930,000,000 bushels in 1928. Canada produced 293,899,000 bushels, not much more than half the 1928 crop. Production in 24 European countries was reported to be slightly larger than in 1928. Indications were that the crops of Argentina and Australia would probably be less than 300,000,000 bushels, as compared with 500,000,000 bushels in 1928 and a five-year average of about 380,000,000 bushels. As the carry-over was larger than the previous crop year, the total world supply for 1929-30 was only about 360,000,000 bushels less than the supply available in 1928-29.

The production of corn for all purposes in 1929 equalled 2,622,000,000 bushels, or 7 per cent less than the 1928 crop and 4.6 per cent less than the average production of the five years 1923-27. The acreage, 98,018,000, was 2.6 per cent less than in the previous year and the acre yield averaged, 26.8 bushels, compared with 28 bushels in 1928. The crop was somewhat larger in the Southern and Western States than in 1928, but was smaller in the North Atlantic States and in the Corn Belt proper. Production of corn for grain was estimated at 2,191,135,000 bushels, for silage 29,908,000 tons, and for hogging, grazing, and forage, 11,113,000 acres. Increased production was reported from abroad, nine European countries reporting a total of 651,973,000 bushels, compared with 346,534,000 in 1928.

The oats crop, estimated at 1,238,654,000 bushels, was about 200,000,000 bushels below 1928. The decrease was due in part to smaller acre yields and partly to a decrease of more than 1½ million acres. Foreign countries reported oats totaling 2,109,586,000 bushels, compared with 2,168,780,000 in 1928. Barley production was below the record of the previous year, the estimate being 307,105,000 bushels for 1929 and 357,467,000 in 1928. The barley crop in foreign countries was reported to be 1,082,380,000 bushels, or about 25 million more than in 1928. About 738,000,000 bushels were produced in Europe, about 11 per cent more than in 1928.

The rye crop declined to 40,629,000 bushels in 1929, compared to 43,366,000 bushels in 1928 and 54,793,000 during the preceding five years, due largely to decline in acreage. In 24 European countries, the rye production was estimated at

884,259,000 bushels. Buckwheat produced 11,500,000 bushels which was 1,600,000 below the previous year. Rice made 40,217,000 bushels, about three million less than in 1928, but with higher yields on fewer acres. Seed flax, grown on increased acreage in 1929, made 16,838,000 bushels or about 3 million bushels less than in the previous year. Grain sorghums made reduced acre yields on smaller acreage, totaling 100,845,000 bushels, nearly 42,000,000 less than the crop in 1928.

The total hay crop was estimated at 114,639,000 tons, nearly 8 per cent more than in 1928 and the preceding five years. Nearly 102,000,000 tons was tame hay, featured by the phenomenal recovery of clover hay production from the small 1928 crop, a smaller recovery of mixed clover and timothy, a sharp reduction in timothy, by a further reduction of alfalfa acreage in Nebraska, Kansas, and California, more than offset by increases elsewhere, and a continued expansion of sweet-clover hay. There also was an increased acreage cut of wild and prairie hay.

Potato production was estimated at 357,451,000 bushels, about 23 per cent below the 1928 crop. The decrease resulted from both a reduction in acreage and a lower acre yield. The farm valuation on Dec. 1, 1929, nearly \$470,000,000, exceeded that of 1928 by more than \$218,000,000. Production of tobacco in 1929 approximated 1,500,891,000 pounds. A moderate expansion in acreage and a higher average yield per acre, especially in the bright flue-cured, burley, dark-fired and dark air-cured districts, accounted for the 9 per cent increase over 1928. Prices averaged 19 cents a pound, compared with 29.2 cent. in 1928. Exports of flue-cured tobacco, now constituting nearly three-fourths of the leaf tobacco exported from the United States, were largely taken by the United Kingdom and China.

The cotton crop, according to December 1 estimates, was 14,919,000 bales, as compared to 14,478,000 bales ginned in 1928. This output was grown on 45,981,000 acres, an area only slightly below the record of 1926, and 640,000 acres more than 1928. While yields were about average in the eastern part of the Cotton Belt, the dry summer helping to control boll weevil, drought greatly curtailed production in Oklahoma and in much of Texas. The 1928 crop suffered from disastrous storms in the Atlantic Coast States yet nearly 14,480,000 bales were harvested from the increased acreage. Cotton exports during the fiscal year 1929 exceeded those of the preceding year by about 7 per cent, greater quantities going from the United States to Great Britain, Japan, and Italy, and decreased exports to Germany, France, and U S S R (Russia).

See also articles on individual crops and States.

FARM MACHINERY. The substitution of mechanical power for human and animal labor continued during the year, especially in the Western grain-growing areas. The rapid development and adoption of improved farm machinery, particularly the all-purpose tractor and the new cultivating and harvesting equipment associated therewith, has tended toward reduction of farm labor forces required, toward enlargement of the size of farm, toward still further reducing the number of horses and mules, and toward releasing for other purposes still further acreages of crop and pasture land formerly required for their feed.

Improved mechanical methods now in use in

cotton production and others being developed, together with further expansion of producing areas, have threatened a problem for cotton growers on rougher lands less well adapted to machinery. More than twice as many tractors were turned out in 1928 as the 62,742 manufactured in 1927, which in turn doubled the production of 1916. The post-war rise of the combine (combined harvester-thresher) has been extremely rapid, increasing in Kansas alone from 8274 in 1926 to 20,000 in 1928. In many localities, farmers have increased the size of their implements and the area of land tilled by using larger teams. Such increases in the size of power units of farm equipment have been held the chief cause of the recently accelerated trend toward increase in farm size, especially in the Plains and Mountain States of the West.

MEDITERRANEAN FRUIT FLY. Early in April, the Mediterranean fruit fly, one of the worst fruit pests known, was found to be well established in central Florida. Appreciation of the far-reaching economic significance of this discovery was immediate and nation-wide and resulted in a general demand that the eradication of the insect should be undertaken at whatever cost. Stringent State and Federal quarantines and restrictions on the movements of all host fruits and vegetables, together with vigorous control measures, were undertaken at once. The clean-up and spraying work carried out so far in Florida strengthened the possibility of eradicating the fly. Fly abundance and fruit infestation have been diminished rapidly and new records of finding infested fruit and flies have been very few. See ENTOMOLOGICAL ECONOMIC.

AGRICULTURAL COOPERATION. The important functions assigned to cooperative associations in the programme of the Federal Farm Board greatly stimulated the American cooperative movement. Good progress was made in cooperative marketing in 1929 in general efficiency as well as in membership and in business transacted. Increased attention was paid to the development of large-scale organizations, to the centralization of sales, and to the formation of regional federations. In recent years, membership in cooperative associations and their volume of business have increased more rapidly than the number of associations. This tendency lessens selling competition and facilitates efficient distribution and is in line with the desire of the Federal Farm Board that cooperative development shall be effected primarily through a strengthening and closer integration of existing associations.

The movement, as seen by the Department of Agriculture, is still largely composed of unrelated units that inevitably conflict to a certain extent. More than 90 per cent of the associations now functioning are independent local or regional bodies having little contact with other cooperatives. Efforts toward coordinated production and marketing in one region often tend to be nullified by unregulated production and haphazard marketing elsewhere. Centralized organizations for coordinated marketing are indispensable if full advantage is to be taken of the agricultural marketing act. It is expected that rapid progress will be made in the coordination of cooperative marketing under the act, inasmuch as greater unity of effort among producers' organizations is a leading object.

Indicative of the status of the American cooperative movement was the fact that more than

PRODUCTION BY COUNTRIES IN 1928 AND 1929 OF WHEAT, RYE, OATS, BARLEY AND MAIZE IN BUSHELS

[International Institute of Agriculture and U S Department of Agriculture]

	Wheat		Rye		Oats		Barley		Maize (corn)	
	1928	1929	1928	1929	1928	1929	1928	1929	1928	1929
United States	806,508,000	914,876,000	40,629,000	43,366,000	1,238,654,000	1,439,407,000	357,487,000	2,622,189,000	2,818,901,000	2,818,901,000
Canada	293,599,000	566,776,000	12,919,000	14,618,000	297,787,000	480,413,000	136,991,000	5,053,000	5,241,000	86,000,000
Mexico	11,559,000	11,031,000					4,000,000	82,000,000	306,000,000	9,000,000
Argentina	307,860,000	238,161,000	7,666,000	6,614,000	65,172,000	52,291,000	16,818,000	14,560,000	3,000,000	4,248,000
Uruguay	15,215,000	15,397,000			3,967,000	3,299,000	139,000	116,000	3,000,000	9,000,000
Austria	11,681,000	12,917,000	19,023,000	19,821,000	80,637,000	31,841,000	11,777,000	12,852,000	4,149,000	4,248,000
Hungary	71,852,000	99,211,500	32,996,000	32,588,000	26,102,500	27,528,000	59,457,000	30,672,000	76,610,000	49,592,000
Czechoslovakia	48,065,000	51,499,000	63,596,000	70,047,000	94,139,000	94,054,000	58,692,000	64,988,000	9,797,000	6,765,000
Belgium	15,895,000	17,986,000	19,865,000	23,154,000	48,771,000	48,523,000	6,193,000	4,304,000	16,744,000	16,293,000
Bulgaria	33,140,000	50,691,000	7,712,000	9,220,000	10,341,000	7,210,000	10,766,000	15,000,000	51,000,000	38,069,000
Denmark	11,000,000	12,100,000								
Estonia	1,268,000	1,086,000	5,748,000	5,537,000	10,451,000	6,817,000	5,654,000	4,211,000		
Finland	1,095,000	998,000	12,909,000	10,999,000	38,782,000	39,275,000	6,279,000	5,767,000		
France	319,861,000	281,283,000	39,434,000	34,080,000	395,755,000	340,254,000	59,035,000	50,838,000	12,115,000	5,000,000
Germany	115,581,000	141,592,000	319,301,000	335,504,000	481,106,000	481,984,000	137,581,000	133,728,000	83,169,000	64,991,000
Greece	12,900,000	13,200,000		2,124,000	7,000,000	5,000,000	8,000,000	7,000,000		
Italy	260,657,000	228,596,000	8,663,000	6,535,000	49,284,000	46,431,000	11,851,000	13,124,000		
Lithuania	8,818,000	6,327,000	21,946,000	18,718,000	29,869,000	18,371,000	9,217,000	3,275,000		
Luxemburg	441,000	713,000	307,000	352,000	3,441,000	2,809,000	3,693,000	4,494,000		
Netherlands	4,666,000	7,935,000	13,283,000	17,351,000	25,254,000	14,680,000	5,393,000	5,134,000		
Norway	729,000	798,000	561,000	497,000	12,443,000	11,680,000	62,925,000	70,145,000	3,000,000	
Poland	60,259,000	59,218,000	246,447,000	240,546,000	174,991,000	173,077,000		1,513,000		
Portugal	11,000,000	7,700,000	13,068,000	93,937,000		3,876,000	125,717,000	69,403,000	240,148,000	108,514,000
Rumania	99,752,000	115,544,000	898,894,000	783,439,000	3,482,000	1,109,197,000	281,804,000	82,855,000	25,190,000	21,059,000
Spain	149,266,000	138,743,000	22,896,000	31,413,000	37,892,000	34,782,000	97,109,000	82,855,000	159,000	134,000
Sweden	18,724,000	18,355,000	16,373,000	17,153,000	82,000,000	83,000,000	11,000,000	10,000,000		
Switzerland	5,791,000	5,260,000	1,614,000	1,716,000	2,890,000	2,923,000	556,000	570,000		
United Kingdom	45,472,000	49,792,000			101,920,000	169,648,000	44,473,000	52,446,000	71,814,000	90,000,000
Yugoslavia	317,593,000	103,264,000	8,269,000	7,527,000	24,166,000	22,238,000	18,918,000	18,106,000	160,742,000	90,000,000
British India	317,593,000	290,864,000						98,000,000		
Japan	31,700,000	30,812,000						80,257,000	81,479,000	669,000
Syria and Lebanon	16,543,000	6,490,000			718,000	530,000	24,042,000	13,706,000	945,000	261,000
Algeria	39,987,000	30,302,000	47,000	58,000	14,606,000	14,492,000	40,878,000	39,719,000	183,000	6,864,000
Egypt	45,228,000	37,296,000					12,669,000	10,799,000	4,441,000	256,000
Morocco (French)	26,885,000	24,746,000			3,165,000	1,775,000	38,388,000	48,232,000	11,000,000	69,000,000
Tunisia	12,309,000	12,125,000			3,376,000	2,239,000	11,483,000	12,631,000		
Australia	159,725,000	118,200,000								
New Zealand	8,400,000	5,673,000			4,266,000	5,000,000	781,000	1,000,000		
Union of South Africa	6,930,000				7,598,000	6,000,000	994,000	808,000	86,000,000	69,000,000

* The production given for countries of the Southern Hemisphere is for the crop years 1928-29 and 1927-28

200 farmer-owned associations each transacted an annual business exceeding \$1,000,000. A further example of cooperative activity, the 215,000 fruit and vegetable growers, making up the membership of the 1270 cooperatives in the United States marketing fruits and vegetables, sent more than 200,000 cars of produce to the consuming centres in the 1928-29 marketing season. Nearly 48 per cent of the cooperative shipments were oranges, lemons, and grapefruit, about 15 per cent were potatoes, about 6 per cent, apples, and nearly 6 per cent, grapes.

Collective purchasing by farmers' cooperative business associations continued to increase. More than 20 of the large associations, independent or affiliated with farm organizations, did business amounting to about \$60,000,000 in 1927, and close to \$100,000,000 in 1928, and indications were that the 1929 figures would greatly exceed those for 1928.

The American Institute of Cooperation held its fifth summer session at Baton Rouge, La., in late July and early August. The meetings were featured by addresses by the Secretary of Agriculture on the Government's policy toward the cooperative movement and also by other members of the Federal Farm Board. The organization of a national cooperative council was undertaken by representatives of leading co-operatives in the country, with the aim to give the farmer a concerted voice in matters dealing with American agriculture. See COOPERATION.

WORLD AGRICULTURE. *Great Britain.* Depression in agriculture continued, conditions being especially severe in East Anglia, and prices in general were becoming unremunerative. The inclination of farmers to put cultivated lands into grass has resulted in reduced employment for farm laborers, who, however, have resisted attempts to cut down their wages. Benefits of unemployment insurance have not extended to farm workers. The greatest possibilities for relief appeared to lie in better marketing, held by many to be the branch of agriculture in which the greatest progress is being made. Activities of the British Empire Marketing Board are reviewed under AGRICULTURAL MARKETING STATIONS.

Italy. The Fascist government has promoted agricultural development by a coordinated series of technical, educational, fiscal, and financial measures. The agrarian policy directed toward enlightenment of the rural masses and the acquisition of newly reclaimed land by small land-owners has resulted in intensified production, especially of foodstuffs. The wheat campaign started in 1926 showed satisfactory results. The official returns placed the wheat crop of the 1929 season at over 7,000,000 metric tons (about 267,180,000 bushels), the largest so far recorded in Italy, compared with 6,200,000 metric tons in 1928 and with an average for the period 1909-1914 of about 5,000,000 tons. This increase was of economic importance in that it was essentially due to a larger yield, without displacing other major crops, whose output also has substantially increased. Land reclamation work under way was expected to bring some 5,000,000 acres of new land under cultivation.

Danube Basin. Recent expansion of corn acreage in the south Danube states and the increased shipments of hogs, pork, pork products, and lard up the Danube, together with the projected construction of packing plants in Bulgaria, with a direct line of steamships to western Europe, as

reported in a survey by the Department of Agriculture, centred attention on the potential importance of the south Danube corn belt as a hog-producing region and as a competitor to the hog industry of the United States. Production of wheat and wheat flour in southeastern Europe was badly crippled by the World War and the disastrous economic situation thereafter, by the breaking up of the Austro-Hungarian Empire, and by sweeping land reforms in which millions of acres formerly operated as large estates passed into the hands of peasant farmers. The former wheat surplus of the south Danube states, which during 1909-13 averaged more than 110,000,000 bushels, was reduced greatly during the five years ended 1925-26, in which period American wheat penetrated to the mountainous interior of Rumania. Now, both American wheat and flour are being forced back toward north central Europe, for wheat production and the milling industry in the Danube Basin have been recovering.

U S S R (Russia). Vast areas of fallow lands were placed under cultivation in 1929 by State organizations operating with modern machinery and large farms were collectively organized and operated by peasants pooling their lands. Such organizations accounted for a substantial part of the grain crop in 1929, the total area under such culture amounting to 18,360,000 acres, compared with 7,590,000 in 1928. Further expansion of these types of farming was proposed.

China. A food famine causing widespread suffering and death gripped the interior provinces of China, especially Shensi. One-half of the wheat crop in the spring of 1928 and practically all of the crop in the fall of 1928 and spring of 1929 were complete failures due to drought, the basic cause of the famine conditions. However, impoverishment by continuous civil warfare was a contributing cause. In Kansu Province, the famine, supplemented by banditry and civil disturbances, was of longer duration than in Shensi Province, but rains in midsummer were very helpful and the outlook was materially improved, according to the International Famine Relief Commission in Peking.

Statistics showing the crops of various countries so far as available are given in the table on page 26.

INTERNATIONAL AGRICULTURAL CONGRESS. The Fourteenth International Agricultural Congress was held at Bucharest, Rumania, on June 7, 8, and 10, 1929. The Rumanian Government invited all countries to participate in the Congress, which is held biennially under the auspices of the International Agricultural Commission. The subjects dealt with included agricultural economics, cooperation and marketing, horticulture, stock raising, and wool production, the sugar-beet industry, and fresh-water fisheries. One section was devoted solely to the position of women in rural life and the measures that should be taken for improvement.

AGRICULTURE, UNITED STATES DEPARTMENT OF. On March 6, Arthur Mastic Hyde of Missouri, a former Governor of that State, succeeded Dr. William Marion Jardine as Secretary of Agriculture and Renick W. Dunlap was continued in the position of Assistant Secretary under the incoming administration. During the year, Elton L. Marshall succeeded R. W. Williams as Solicitor of the department and M. S. Eisenhower followed Nelson Antrim Crawford as Di-

rector of Information, Lee A. Strong, Assistant Director of Agriculture of the State of California was made Chief of the Plant Quarantine and Control Administration heretofore under the direction of Dr. C. L. Marlatt, Chief of the Bureau of Entomology. On April 23 occurred the death of Dr. A. C. True, formerly director of the Office of Experiment Stations and of the States Relations Service and later Specialist in Agricultural Instruction, and on November 11, the death of Dr. E. W. Allen, Chief of the Office of Experiment Stations since 1915.

The report of the Secretary of Agriculture for 1929 reviewed the agricultural situation and dealt largely with production in its relation to agricultural conditions, trends toward greater farm efficiency by the use of improved implements and power machinery, the consequent increase in the size of farms, land values, farm taxation, farm credits, and methods of marketing. In addition the report described the activities of the Department in research, the control of the more threatening insect pests, and in regulatory and other lines.

AGRICULTURAL RELIEF An outstanding event of the year was the passage of the agricultural marketing act to improve the economic condition of agriculture by enabling the farmer to effect a better adjustment between production and demand and to set up a more efficient system of marketing his products. For the execution of its provisions, the act established the Federal Farm Board of which the Secretary of Agriculture is *ex-officio* a member and which is given broad powers and extensive resources. The Secretary pointed out that while the legislation stresses effective organization of cooperative marketing associations, it contemplates consideration of all major economic factors materially influencing farm incomes. The Federal Farm Board, he further explained, is not intended to supersede the Department of Agriculture or other existing agencies, nor are its duties to overlap those of established branches of government work, but that the activities of this new agency are to be coordinated with those of departments and bureaus already functioning. The necessity of close cooperation between the Board and the Department and the opportunity for cooperation with the Board of different public and independent forms of service was set forth. To facilitate the work of the Federal Farm Board, the Division of Cooperative Marketing in the Bureau of Agricultural Economics of the Department of Agriculture was transferred to the Board under presidential order.

FARM BY-PRODUCTS The Department gave increased attention to the utilization of agricultural by-products and the elimination of farm wastes and considered these matters as a part of the problem of farm relief. The principal by-products and wastes receiving attention were cornstalks, corn cobs, cereal straw, oat hulls, cotton stalks, cottonseed hulls, flax straw, peanut shells, and bagasse. These wastes constitute over 60 per cent of the gross tonnage produced from the soil in the crops represented. In studying the industrial uses of these by-products, consideration was given to the farm value of the raw material and whether under the conditions the value of these substances may be increased sufficiently to make their handling and processing profitable.

SOIL EROSION The report discussed the problem of soil erosion and described the plans for attacking it under the initial support of \$160,000 ap-

propriated by Congress. The loss of soil fertility and soil material through runoff, the pollution and silting of streams, reservoirs, and irrigation ditches, and the destruction of lands by overwash were mentioned as the principal aspects of the problem. The relation of soil erosion to flood control and the significance of reforestation in this connection were dealt with and the necessity of studying soil types and the various forms of land cover as affecting runoff, soil washing, and stream flow was pointed out.

ROADS In the fiscal year ended June 30, 1929, Federal assistance was extended to the construction of 7402 miles of initially improved roads which brought the total mileage of roads thus improved since the inception of the Federal policy up to 79,796 miles, including 28,991 miles of gravel roads, 20,618 miles of cement concrete roads, and 11,667 miles of graded and diamed earth roads, also 267 miles of bridges. Secondary improvements were completed during the year on 1988 miles of road. The total cost of the initial and secondary improvements for the year amounted to \$195,208,168 of which \$82,736,678 was contributed by the Federal Government. As for several years past the appropriations for road construction in the National Forests were limited to \$7,500,000, of which \$3,000,000 was used for building roads and trails within the forests and the remainder for main highways through the forest areas linking them with Federal-aid and State-highway systems. Design and direction signs of standard design for all routes of the United States highway system were adopted during the year.

EXPENDITURES The total expenditure of the Department during the fiscal year 1929 amounted to \$172,898,690. This was divided among the six general classifications of the Department's work as follows: Research, \$17,809,275; extension, \$9,890,499; eradication or control, \$12,267,299; service activities, \$25,137,116; regulatory work, \$10,954,570; and road construction, \$90,839,981.

APPROPRIATIONS The Department of Agriculture appropriations for the fiscal year 1930, which began July 1, 1929, amounted to \$157,455,030. This amount included \$82,000,000 for Federal-aid and forest road construction and approximately \$12,000,000 for payments to the States for the agricultural experiment stations and for extension work. In continuation of the policy of expanding and strengthening scientific research, the appropriation act as compared with the preceding year provided an increase of \$1,500,000 for research in the Department and \$495,000 for such work in the experiment stations of the States and Hawaii.

The new administration building of the Department which connects the two wings built in 1907-08 was nearing completion at the close of the calendar year 1929.

ATKINS, THE HON. SIR JAMES (ALBERT MANNING) Canadian lawyer and public official, died in Winnipeg, Manitoba, Mar. 1, 1929. Born in the County of Peel, Upper Canada, Dec. 10, 1851, he attended Upper Canada College, and the University of Toronto. Called to the bar of Ontario in 1878, he moved to the newly settled Province of Manitoba the following year and commenced practice at Winnipeg. He became solicitor for the Canadian Pacific Railway Company in 1881, and remained with that company until 1911. He was made Queen's counsel in 1884, and, in addition to his work with the Canadian Pacific, he main-

tained a private law practice. Sir James was elected a Conservative member of Parliament in 1911, from the Brandon constituency of Manitoba. Resigning in 1915, he became a leader in local politics and served as Lieutenant-Governor of Manitoba from 1916 until his retirement in 1926.

One of the founders of the Canadian Bar association, he also was its president, 1914-27, and continuing an active interest in the organization, was honorary life president from that time until his death. Sir James was president of the Conference of Commissioners on the Uniformity of Laws, 1918-23, and honorary president at the time of his death. He also had been honorary bursar and member of the council at the University of Manitoba, 1887-1916, and was honorary lieutenant-colonel of the 90th Regiment of Winnipeg Rifles, and honorary colonel of the 99th Regiment of Manitoba Rangers. The honorary LL.D. degree was conferred on him by the University of Manitoba, 1919, the University of Alberta, 1921, and by McMaster University, the University of Toronto, and Queen's University.

AIRCRAFT CARRIERS. See **VESSELS**.

NAVAL

AIRSHIPS. See **AERONAUTICS**, **NAVAL PROGRESS**.

AKRON, THE UNIVERSITY OF A coeducational institution of higher learning in Akron, Ohio, founded in 1872 as Buchtel College and taken over by the city and renamed in 1914. The enrollment for the summer session of 1929 was 543 students and for the autumn day session, 1170 students, distributed as follows: College of liberal arts, 409; home economics school, 12; teachers' college, 305; college of engineering and commerce, 384; 1761 students were enrolled in the autumn evening session. There were 90 faculty members. The amount of endowment was \$70,000 and the income for the year, including tax levy from the city, \$494,632. There were approximately 30,000 volumes in the library. President, George Frederick Zook, Ph.D.

ALABAMA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,348,174. The estimated population on July 1, 1928, was 2,573,000. The capital is Montgomery.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Cotton	1929	3,589,000	1,090,000 *	\$107,468,000
	1928	3,534,000	1,109,000 *	100,919,000
Corn	1929	2,676,000	37,464,000	36,715,000
	1928	2,650,000	30,475,000	33,522,000
Hay	1929	608,000	467,000 *	7,531,000
	1928	612,000	473,000 *	7,451,000
Sweet potatoes	1929	74,000	7,622,000	6,860,000
	1928	70,000	6,510,000	5,859,000
Peanuts	1929	408,000	224,400,000 *	6,732,000
	1928	402,000	225,120,000 *	8,780,000
Potatoes	1929	28,000	2,408,000	3,492,000
	1928	36,000	2,812,000	2,390,000
Oats	1929	119,000	2,320,000	1,763,000
	1928	70,000	1,225,000	919,000

* Bales * Tons * Pounds

MINERAL PRODUCTION. The yield of the coal mines of the State suffered a further reduction in 1928. The quantity of coal mined fell for that year to 17,821,302 short tons, from 19,765,866 tons for 1927. The product of 1928 had a value of \$39,601,000; that of 1927, a value of \$44,524,000. The production of coke, on the other

hand, virtually held its own. The by-product coke ovens produced in 1928, 4,327,324 short tons of coke, in value \$13,260,178, as against 4,364,354 tons, in value \$13,500,234, produced in 1927. The quantity of iron ore mined fell to 6,159,863 long tons for 1928, from 6,508,419 tons for 1927, the value of the iron ore mined declined to \$11,599,176 for 1928, from \$12,973,597 for 1927. The production of pig iron was on a reduced scale, the blast furnace output 2,525,812 long tons, in value \$42,194,441, in 1928, as against 2,705,240 tons, in value \$50,193,057, in 1927. Cement mills shipped 6,696,684 barrels of cement, in value \$8,233,782, in 1928, in 1927, 7,313,494 barrels, in value \$10,615,428. Clay products yielded 44,823,070 for 1927 and \$5,181,571 for 1928. Stone was produced in 1927 to the quantity of 1,238,750 short tons, as against 1,296,440 tons in 1926, in value, \$1,797,375 in 1927 and \$2,048,193 in 1926. The yield of lime was estimated at 193,000 short tons, in value \$1,441,000, for 1928, for 1927 it was 206,010 short tons, having a value of \$1,566,287. The total value of the State's mineral product, with allowance for duplication, was \$78,640,669 for 1927, \$83,709,894 for 1926.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 5281.72. No additional construction in 1929 was reported.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and dealing with operations of 1927, there were in the State, in 1927, 2355 manufacturing establishments. These employed 119,093 wage earners, whose wages totaled \$105,488,817 for the year. Materials and supplies used in production cost \$317,493,407. Manufactured products attained the combined value of \$550,372,126.

EDUCATION. A development of the year was the transformation of the two-year normal schools into teachers' colleges. Incident to this change, a plan was worked out for the revision of the certification of teachers, with a view to requiring standard preparation of all entering the public-school system of the State as teachers after June 30, 1931. There were enrolled in the public schools, in 1929, 638,368 pupils, of whom 517,600 were white and 329,146 were colored. Of the pupils, 329,787 white and 185,350 colored, or 515,137 in all, were in the elementary grades, and 106,972 white and 16,259 colored, or 201,609 in all, were in high schools. Expenditure in the academic year 1927-28 was current, \$15,752,232, capital outlay and debt service, \$1,000,000. Salaries of teachers averaged, for 1927-28, \$587 in elementary grades; they were more than twice as high for white, as for colored, teachers. For high-school grades, they averaged \$1106, being about 60 per cent higher for white than for the colored teachers.

CHARITIES AND CORRECTIONS. The State Board of Administration, constituted in 1923, was the central State agency in these activities. Among the State institutions in 1929 were Alabama Reform School (colored juveniles), Vocational School for Girls, at Birmingham; Jefferson Manley Faulkner Soldiers' Home, Mountain Creek; School of Trade and Industries, Gadsden; School for the Deaf, Talladega; Bryce Hospital (white insane), Tuscaloosa; Searcy Hospital (colored insane), Mount Vernon; Partlow State School (mental defectives), State Training School for Girls, Pinson; Boys' Industrial School, Birmingham.

ham; Industrial School for White Blind Men, Birmingham. The two mental hospitals were under a single self-perpetuating board of trustees.

POLITICAL AND OTHER EVENTS. The political antagonisms left by the "Hoovercrats" desertion of the Democratic presidential candidate, Alfred E. Smith, in the campaign of 1928, had their sequel in a movement to read those who had bolted the Democratic ticket out of the party. In December, the Democratic State committee ruled that Senator Heflin, an active former opponent of Smith, was not a Democrat in good standing, and might not appear as a candidate for reelection to the United States Senate in 1930. Owing to the prevalence of the Democrats in the State, success at the primary had in recent times been equivalent to election, and consequently the action taken against Heflin amounted to an effort to exclude him from all chance of another term in the Senate. Judge Hugh Locke, a prospective candidate for the nomination for Governor in 1930, was similarly excluded. The Democratic State Committee made no effort to bar the approximate 120,000 voters who had cast ballots for Hoover from participating at future primaries as voters. The State Prohibition Law was interpreted by the State Supreme Court in a decision of December 5 to render the purchaser of liquor, if he accepted delivery, equally guilty with the seller.

Severe floods occurred in the southern part of the State in the middle of March. Elba, on the Pea River, especially suffered. According to estimates of Governor Graves about 100 persons lost their lives and some 15,000 were rendered temporarily in need of aid. A fund for their relief was raised through an appeal issued by the Governor (See FLOODS). A project for serving territory south of Red Mountain with natural gas was undertaken by the Alabama Natural Gas Corporation, which applied to the State Public Service Commission for a certificate for this enterprise in October, alleging that it had industrial users for 5,000,000 M cubic feet of gas a year. At Birmingham the construction of the new Jefferson County Court House was carried well along toward completion, the total cost of the new building and site being estimated at \$2,750,000. A new industrial plant of the Pullman Car and Manufacturing Company at Bessemer was opened on October 1.

OFFICERS. Governor, Bibb Graves, Lieutenant-Governor, W. C. Davis, Secretary of State, John M. Brandon, Treasurer, W. B. Allgood, Auditor, Sidney H. Blain, State Superintendent of Education, A. F. Hainman, Attorney-General, Charles C. McCall, Commissioner of Agriculture and Industries, Seth P. Storrs.

JUDICIARY. Supreme Court, Chief Justice, John C. Anderson, Associate Justices, William H. Thomas, A. D. Sayre, A. B. Foster, Lucien D. Gardner, Virgil Bouldin, and Joel B. Brown.

ALABAMA UNIVERSITY. Of a coeducational State institution for higher learning at University, Ala., founded in 1831. For the autumn term of 1928 the enrollment was 3394, distributed as follows: Arts and science, 1571, engineering, 460, law, 141, medicine, 103, graduate, 68, education, 396, and commerce, 659. The summer-school registration was 1871. The faculty for 1928-30 numbered 145, of whom 10 were newly appointed. The productive funds of the University amounted to \$1,959,155, and the income for the year was \$1,154,354. The library contained

about 75,000 volumes, of which 20,000 were government documents. A new education building was completed during the year at a cost of \$250,000, as was also a woman's building (for art, music, and home economics) costing \$175,000; a woman's gymnasium, costing \$125,000, was under construction. President, George H. Denny, Ph.D., LL.D.

ALASKA. A Territory of the United States, the largest area under the American flag of any of the noncontiguous territories and possessions. It forms a great peninsula at the northwestern extremity of the North American Continent. Its total area is 586,400 square miles. The capital is Juneau, population at census of 1920, 55,036.

An increase in the production of the fisheries and mines of Alaska left it in an improved economic condition at the end of 1928, and Governor Parks reported at the end of the fiscal year 1929 that conditions continued satisfactory.

FISHERIES. The most conspicuous feature of the fishing industry in 1928 was the increase of the catch of salmon by about 86 per cent over that of 1927. This was due above all to heavy runs of the red salmon in Western Alaska and of pink salmon in the southeastern portion of the Territory. The product of the fisheries attained the value of \$54,545,588 for 1928, thus exceeding that of the year previous by \$14,382,288. The total in either year included added value imparted by such manufacturing processes as—

The value of the fish catch of 1928 as compared with the value of the fish catch of 1927 was as follows: The fishermen was placed at \$17,343,000 for 1928. Of this value, salmon and herring made up the chief part. There were landed in 1928, 517,069,403 pounds of salmon and 134,020,216 pounds of herring. The number of persons employed in the commercial fisheries, 31,086 for 1928, exceeded by 2214 the number so employed in the year preceding. The majority of these people, 17,326, were whites, the Alaskan native fishery employees numbered 5614, and the remainder of those engaged were Filipinos, Japanese, Chinese, Mexicans, and Negroes. The canned salmon produced in 1928 furnished 96 per cent of the value of the entire year's product of the fisheries.

In the canning of salmon alone were employed 24,428 persons. There were canned 6,083,003 cases of salmon, in value \$45,383,685. This was the product of 153 canneries, as against 145 canneries that operated in 1927.

Canning, there was a considerable industry in the curing of salmon. Fewer were treated by the mild-curing process than in preceding years, but a total of 5850 tierces, in value \$1,101,871, were produced. Progress was made in the utilization of the waste of the salmon canneries to yield by-products, and fertilizer to the value of \$44,109 and oil to that of \$10,420 were produced. The herring fishery made a higher yield in 1928 than in 1927, owing partly to the discovery of herring in large quantity near Dutch Harbor. There were produced in 1928, 16,165,595 pounds of Scotch-cured herring, which with other products of the herring fishery, attained the value of \$3,098,467.

A falling-off in the catch of the halibut fishery in 1928 attracted new attention to the efforts of the International Halibut Commission, which for some years had been engaged in study of the state of the fishing grounds adjacent both to Alaska and to the western shore of Canada. The probability was suggested by the Governor of Alaska that, for the restoration of the halibut, a protracted restriction of fishing would be re-

quired. Cod fishing in Alaska likewise fell off in 1928, as did also whaling. There were engaged in whaling in 1928, 230 persons. Whales taken numbered 402. The yield of oil was: Sperm, 93,760 gallons, other, 730,650 gallons. The entire value derived from the whale catch was \$454,274 for 1928, as against \$622,412 for 1927.

SEALING AND FURS The Bureau of Fisheries took its annual count of the fur seals at the Pribilof Islands in August, 1928. It reported 871,513 seals. This number indicated an increase of 62,623 over the total reported in 1927. As compared with 132,000 seals reported in 1911, at the time when the United States Government took control of the task of watching the herds, their numbers had multiplied about six fold. The policy of killing only the bachelor seals for their skins was continued. Restricted killing on this plan yielded 31,099 skins in 1928, a number greater by 24 per cent than the kill of 1927. Fewer skins were sold than were taken, sales in 1928 totaled 28,929 skins and yielded \$896,383.

MINERAL PRODUCTION. Gold and copper, the two dominant mineral products, were more actively mined in 1929 than in 1928. The increase in gold production followed on an increase for the year 1928, over that of 1927. In the case of copper, the value of the product of 1929 was about equal to that of the yield of 1927, and thus simply marked a recovery from the reduced total for 1928. Coal, third in point of yearly value among the mineral products, yielded less in 1929 than in 1928.

The value of the mineral output of the Territory for 1929, as approximated by the Department of the Interior, was as follows: Gold, \$7,748,000, copper, \$7,233,000, silver, \$240,000, coal, \$496,000, other minerals, lead, petroleum, marble, tin, and platinum included, \$388,000. Total, \$16,105,000.

The mineral products of the Territory attained for 1928 the aggregate value of \$14,061,000, as against \$14,304,000 for 1927. The yield of the copper mines fell off sharply for 1928, as to value, thus prolonging a decline that had gone on year by year from 1924 without halt. The value of copper mined in 1928 was \$5,965,000, as against \$7,250,000 for 1927. Copper mines were operated in but two localities, Kennecott, in the Copper River district, and Latouche Island. The diminished value of the product of 1928 was ascribed in part to the factor of price but also to the absence of newly discovered deposits of the grade requisite to take the place of the old. The production of gold, on the other hand, increased so much in 1928, as compared with 1927, as to make up the greater part of the aggregate loss in yearly mineral yield occasioned by the decline of the copper industry. There was produced in 1928, \$6,845,000 of gold, as against \$5,927,000, the value of the yield of 1927. The value of the gold production of 1928 thus surpassed that of the copper production and became for the first time in a number of years the chief element in the mineral yield. The year was remarkable in gold mining for the further reason that, while the placer yield of gold had long exceeded that from the lode workings, the position was reversed in 1928, the lode yield exceeding the placer. Production of silver in the Territory was adversely affected by the copper decline, as the greater part of the silver produced, normally some 75 per cent, comes from ores worked primarily for copper. The value of silver was estimated at \$273,-

000 recovered in 1928, as against \$356,000 in 1927. A limestone quarry capable of yielding several thousand tons a day was opened in 1928 on Dall Island, 50 miles west of Ketchikan, as a source of supply for a cement plant near Seattle, Washington. The production of lead, marble, tin, and platinum went on in 1928 on a small but increasing scale.

Coal Mining. There were mined in 1928 125,289 tons of coal, in value \$624,000. The total coal yield for 1928 was some 20 per cent in excess of that for 1927, which in its turn had surpassed that of any earlier year. The coal was mined almost entirely in the Matanuska field, near Anchorage, and in the Healy River area, near Fairbanks, both of which were served by the Alaska Railroad. The only petroleum production reported for 1928 was that from about Katalla, near the Bering River, where a number of shallow wells yielded an oil of paraffin base in small quantity, which was refined for the market near at hand.

FINANCE. The balance in the Territorial treasury on June 30, 1929, was \$1,059,163. The assessed valuation of incorporated towns in 1929 was \$23,444,571, and exceeded their assessed valuation of 1927 by \$753,885. Deposits in the territorial and national banks rose to \$12,754,500 at the end of June, 1929, from \$12,196,500 at the end of June, 1928.

TRANSPORTATION. As rendered in the Governor's report for the fiscal year 1929, the annual deficit of the Alaska Railroad, the great government-owned line of the Territory, increased anew. The receipts of the railroad for the year were less by \$950,712 than the expenditures, capital charges not included. The gross revenue was \$1,269,634. The rise in deficit was ascribable to decreased gross revenue. This in turn resulted from a decline in shipments of machinery and construction supplies, only partly overcome by heavier shipments of coal. In order to promote colonization along the railroad line, a representative was engaged to travel among farming communities of the western United States.

Roads and Trails. The Territorial and Federal authorities in cooperation built in 1928, 45 miles of road, 48½ of sled road, and 104 miles of trail, 65 miles of road were surfaced. There were under maintenance 1271 miles of road, 84 of tramway, 742 of sled road, 4389 of permanent trail, and 736 of telephone line. Airplane landings to the number of 27 also were maintained. Expenditures of 1928 for all these activities amounted to \$1,447,164.

Aviation. The steady progress made by commercial aviation as a method of transportation in the Territory had gone on for about seven years. It is encouraged by the Territorial government's expenditure of about 30 per cent of its road appropriation for the construction of landing fields. There were in 1929, 67 landing fields in the interior, and flying was maintained at all seasons of the year.

EDUCATION. For the needs of the Territorial schools in the two-year period, 1929-1930, an appropriation of \$1,074,300 was made by the Territorial Legislature. Out of this appropriation were drawn also the expenses of the Alaska Agricultural College and School of Mines. The Territorial school system was supplemented by Federal schools maintained out of government funds derived from taxes and other sources within Alaska. The number of schools operating in 1928-

20 included high schools, 15, elementary, 89 Teachers numbered 235, pupils, 5032 There were in addition a system of schools operated by the Federal Government for the special education of the natives; such schools numbered 97 and had 3832 enrolled pupils and 177 teachers

POLITICAL EVENTS The Territorial Legislature passed a resolution favoring the construction of an international highway passing through Canada and connecting Alaska and the United States The supervision of the reindeer industry of the Territory was transferred by order of the Secretary of the Interior, effective Nov. 1, 1929, from the Office of Education to the Territorial Government See **EXPLORATION**, also **EARTHQUAKES**

ALBANIA, *al bā'nī-a* A kingdom in the Balkans consisting of the former Turkish provinces of Scutari and Yania and parts of the Turkish vilayets of Monastir and Kassoia Capital, Tirana, reigning King, Zog I

The boundaries were fixed as a result of the work of an international commission appointed in 1922, which did not complete its labors, however, until 1925 The probable area of the country is estimated at about 17,347 square miles, the population is estimated at 833,618, of whom 563,729 were Mohammedan, 181,051 Greek Catholic, and 88,739 Roman Catholic The country is divided into eight provinces named after the chief towns The latter, with their estimated populations are as follows Tirana, 16,600, Scutari, 23,800, Korytza, 25,600, Elbasan, 10,400, Argirocastro, 12,000, Berat, 3500 Valona, 6300, and Durazzo, 5100 The principal race groups are the Illyrians in the North and the Turks in the South Agriculture is very primitive and large tracts of land remain uncultivated The chief products are tobacco, timber, hides, furs, wool, olive oil, corn, and cattle The mineral wealth is reputed to be considerable although almost entirely undeveloped Drillings for oil have seemed to indicate its presence in commercial quantities A coarse native cloth is manufactured from wool, but for the most part such manufactures as exist in the country pertain to the working up of agricultural products

Albania has been handicapped by natural conditions—mountains, primitive roads, lack of railroads, and undeveloped natural resources As an agricultural country, with practically no native industries, it is entirely dependent on imports of manufactured goods The latest returns for commerce, those for the calendar year 1927, showed imports of \$4,764,843 and exports of \$2,144,189, leaving an unfavorable trade balance of \$2,620,654 The chief articles of import for 1927 were cotton manufactures, woolen goods, sugar, rice, coffee, machinery, kerosene, gasoline, and leather The chief articles of export for the same year were cheese, grains, eggs, skins and hides, lambs, and wool Italy buys most of the exports and supplies most of the imports The budget for 1928-29 provided for expenditures of 26,984,422 gold francs and revenues of 28,045,000 gold francs (one gold franc = \$0.193 par value)

HISTORY. The independence of Albania from Turkey was proclaimed and recognized in 1912 and Prince William of Wied accepted an invitation to become King At the outbreak of the World War, he left the country, which then fell into a state of anarchy On June 3, 1917, it was again declared independent by General Ferrero, in charge of the Italian forces in the country, and a provisional republican government established

at Durazzo The Republic was changed to a monarchy by a constituent assembly on Sept. 1, 1928, and Ahmed Zogu, the President of the Republic, was proclaimed King with the title Zogu or Zog I He is also sometimes referred to as Scanderbeg III His régime was generally recognized by the European Powers, despite the continuance of a defensive alliance his former administration had concluded with Italy, Nov. 22, 1927 A new constitution, promulgated Nov. 22, 1928, provided for the Chamber of Deputies, elected on the basis of one deputy for every 15,000 inhabitants, and the Council of State of ten members chosen by the King from candidates presented by the Prime Minister, the President of Parliament, and the Minister of Justice

Albania, during 1929, was comparatively peaceful and a number of public improvements and financial reforms were carried out The severe drought of 1928, which destroyed many of the crops, adversely affected the budget for 1929 and the King secured a three-year moratorium on debt payments on the Italian loan of 1926 He also reduced the army, eliminated superfluous officials, and in general initiated a programme of rigid economy A civil code promulgated in March provided for the registration of all marriages and divorces with the civil authorities, abolished polygamy among the Moslem tribes, and provided for the regulation of religious rites and services throughout the country The Independent Albanian Orthodox Church was established by secession from the Ecumenical Patriarchate The Moslem Church elected an Albanian Caliph to replace the defunct Caliphate once vested in the sultans of Turkey The Moslem *hadjas*, or priests, were forced to recite the Koran in Albanian instead of Arabic

With religion thus nationalized, steps were taken to modernize the land system, which was still feudal in nature, much of the land being in the possession of a small land-owning class Efforts were also inaugurated to modernize methods of agriculture, to combine the two Albanian dialects into a common language, and to extend the public works programme Construction of a new royal palace, to cost \$1,000,000, was commenced and the first building constructed by the United States on foreign soil for the use of its diplomatic and consular representatives was completed at Tirana It was announced that the Government had granted a monopoly on oil sales to an Italian company, Agip, which privately agreed with the Standard Oil companies to purchase from them all of the oil sold in Albania

Political difficulties, arising in connection with Parliament in October, were summed up by the King A deputation of members of Parliament who presented a list of grievances to him was thrown into prison and several newspapers daring enough to publish comments upon a cabinet crisis were suppressed

ALBERTA, *al-bēr'ta* A northwestern province of Canada, formerly composed of a large part of the Northwestern Territory, bounded on the east by Saskatchewan, on the west by British Columbia, and on the south by the United States Area, 255,285 square miles, population in 1929, 646,000, as compared with 496,442 in 1916 The rural population in 1926 numbered 374,614 and the urban, 232,970 Chief towns with their populations according to the census of 1926 Calgary, 65,000 (the capital), 65,163; Lethbridge, 10,893; and Medicine Hat,

9536 The movement of population in 1927 was. births, 14,630; deaths, 5027; marriages 4703.

The chief occupation of the province is agriculture, but there are valuable deposits of coal, natural gas, and petroleum. Besides the raising of grain, livestock and dairying are the chief industries. The acreage under crop and the actual production of grains in 1928 were as follows: Wheat, 6,707,526 acres, 155,602,000 bushels, oats, 2,340,263 acres, 88,257,000 bushels, barley, 545,524 acres, 15,849,000 bushels, rye, 102,020 acres, 2,680,000 bushels, flax, 6182, acres, 61,000 bushels, peas, 1299 acres, 21,000 bushels, beans, 302 acres, 3500 bushels, mixed grains, 14,094 acres, 409,000 bushels. The total acreage under cultivation in 1928 was 15,320,155 and the total value of production was \$204,607,299. According to estimates, Alberta has 14 per cent of the coal reserve of the world. The 1928 production was 7,335,489 tons, the 1927 production, 6,934,162 tons, valued at \$21,982,058. In 1927 the value of the natural-gas output was \$3,586,533. The production of petroleum was 318,741 barrels, valued at \$1,185,948. The total value of all mineral production in 1929 was \$32,367,781 (preliminary figures).

The executive power is nominally vested in a lieutenant-governor appointed by the Dominion government, but it actually rests in an executive council, or cabinet. Legislative power is in the Assembly, which is elected by direct vote, including woman suffrage. Of the 59 members in the Legislature in 1927, there were 43 United Farmers of Alberta, 7 Liberals, 6 Laborites, and 5 Conservatives. Alberta is represented in the Dominion Parliament at Ottawa by 6 members in the Senate and 16 in the House of Commons. Expenditures in 1927 totaled \$12,479,381 and revenues, \$12,263,401. The bonded indebtedness in 1927 was \$90,890,458. Lieutenant Governor in 1929, Dr. W. Egbert, Prime Minister, John E. Brownlee.

HISTORY. Among the outstanding developments in the province in 1929 were the inauguration of an old-age-pension system, the development of a movement for extension of the northern boundary to the shores of the Arctic and the signing at Ottawa on December 15 of an agreement with the Federal government providing for the return to the province of its natural resources. The agreement was to be ratified by both Dominion Parliament and the Provincial Legislature before becoming effective. The severe drought in the Canadian prairie provinces during the summer was mitigated to a considerable extent in Alberta. See CANADA.

ALCOHOL. See CHEMISTRY, INDUSTRIAL.

ALCOHOLISM. See PROHIBITION.

ALFALFA. The production of alfalfa hay in the United States in 1929 was estimated by the Department of Agriculture at 29,847,000 tons as compared with 29,135,000 tons in 1928. The production by States for the year was not available. Largely due to diseases, especially wilt, the acreage of alfalfa and the production of alfalfa hay declined to some extent during recent years in some of the leading producing sections of the northern Mississippi Valley, but Nebraska, a leading . . . State, reported a yield of 2,717,000 . . .

hay in 1929, an increase of 84,000 tons over the yield of the preceding year. On October 15, the estimated average price of alfalfa hay received by producers was \$13.84 per ton, or \$1.02 above the average price on Oct. 15, 1928. A new market-news service on alfalfa

hay, established during the latter part of the year by the Department of Agriculture, consists in issuing each Tuesday reviews of market conditions in the leading producing areas and including prices of the principal grades at the most important markets in the West and Southwest.

The production of alfalfa seed in 1929 was placed at 717,800 bushels, as against 532,400 bushels the year before, representing an increase of 35 per cent. The average annual production is about 930,000 bushels. The average yield per acre was estimated at 2.78 bushels, or only 0.1 bushel above the average acre yield in 1928. The area devoted to the crop in 1929 was 258,400 acres, while the preceding year the area was only 198,900 acres. The highest average yield per acre, 4.5 bushels, was reported from Arizona and the lowest, 1.9 bushels, from Utah. Idaho and Colorado each reported an average yield of 4 bushels per acre for the State. All leading seed-producing States except Utah reported increased yields. The leading States and their yields were as follows: Utah, 107,000 bushels, Arizona, 100,000 bushels, Idaho, 92,000 bushels, Montana, 72,000 bushels, South Dakota, 58,800 bushels, and Kansas, 50,000 bushels. These States produced about two-thirds of the year's yield. In acreage, Utah led with 55,000 acres, followed by Montana with 30,000, South Dakota with 28,000, Idaho with 23,000, and Arizona with 22,000 acres. On October 15, the estimated average price received by growers was \$11.68 per bushel, as against \$10.71 on Oct. 15, 1928. During the fiscal year ended June 30, 1929, the imports of alfalfa seed amounted to 1,146,000 pounds, including 465,200 pounds from Estonia, 317,900 pounds from Argentina, 198,500 pounds from Germany, but practically all of Turkish origin, and 154,000 pounds from Canada. During the same period, 817,000 pounds were exported.

ALGERIA. A colony of France forming politically a part of France itself, situated in northern Africa. It comprises the two great divisions of Northern and Southern Algeria, which in turn are divided as follows: Northern Algeria into the departments of Algiers, Oran, and Constantine. Southern Algeria into the territories of Ain Seira, Ghardaia, Tougourt, and the Oases of Sahara. Of the total area estimated at 1,069,000 square miles, all but 222,200 square miles are desert, population, including military forces, according to the census of Mar. 7, 1926, 6,063,496, of whom 5,521,271 were in Northern Algeria. In 1927 the estimated population was 6,130,000. The Europeans numbered 833,359. All but a small fraction of the population inhabited the towns and cities. Chief towns with their populations for 1926: Algiers, 226,218; Oran, 150,301; Constantine, 93,733 (these three being, respectively, the capitals of the provinces of the same name); Bône, 51,895; Tlemcen, 26,758; Sidi-bel-Abbes, 43,148; Blida, 24,758; Tizi Ouzou, 2044; Philippeville, 29,242; and Sétif, 26,677.

The race groups in the native population are principally Arabs, Berbers, and Kabyles, and the prevailing religion is Mohammedanism. The chief Christian church is the Roman Catholic which maintains an archbishop and two bishops. In 1927 there were 1380 primary and infant schools, public and private, with 114,250 pupils. There were also 17 establishments for secondary education with 9135 students. For higher education, there is a university at Algiers which had 1720 students in the fall of 1927, and there are special

schools of commerce, hydrography, agriculture, and the fine arts. There are also higher Moslem schools at Algiers, Constantine, and Tlemcen.

PRODUCTION. Algeria is primarily an agricultural country. Arable land in 1928 totaled 15,798,000 acres, natural and improved pasture, 11,021,000 acres, and the area under productive trees and shrubs, 534,000 acres. The area and production of the principal crops in 1927 and 1928 is shown in the accompanying table.

ALGERIAN CROPS AREA AND PRODUCTION

Crop	Area *		Production *	
	1927	1928	1927	1928
Wheat	3,469	4,656	28,323	30,302
Barley	3,360	3,411	34,555	39,718
Oats ..	527	601	10,607	14,492
Corn	24	23	241	261
Potatoes	24	27	1,389	1,666
Grapes/vines	533	548	212,169	361,032
Olive orchards	100	101	5,359	4,113
Tobacco	79	65	58,461	58,000
Cotton	12	13	1,912	3,346
Dates			253,066	

* Thousands of acres

* Thousands of units—bushels except as indicated

* Unit, gallon of wine

* Algiers and Oran

* Unit, gallon of oil.

† Unit, pound

As indicated by the table, cereals are by far the most important crops, followed by grapes. Uncertain climatic conditions result in a large export surplus of cereals in some years, while in others imports of cereals are required to make up for crop shortages. In 1928 the agricultural situation was generally satisfactory, the cereal crop exceeding local requirements and the wine crop being of record quantity, although below average in quality. The government was encouraging the development of silk cocoon production. Livestock in 1928 included 887,000 cattle, 5,397,000 sheep, 2,920,000 goats, 89,000 swine, 164,000 horses, 164,000 mules, 279,000 asses, and 173,000 camels. Wool production in 1928 totaled 38,764,000 pounds, as compared with 36,800,000 pounds in 1927.

The chief mineral products are iron ore and phosphates. The output of iron ore in 1928 was 2,023,000 metric tons (2,029,000 in 1927), of phosphates, 817,000 metric tons (847,000 in 1927). Iron pyrites, zinc, lead, copper, coal, and petroleum are other products.

COMMERCE. Foreign trade in 1928 reached its highest level in eight years, exports amounting to \$156,631,000 and imports, to \$194,751,000. The imports were 13 per cent higher than in 1927 and the exports, 14 per cent higher. The trade balance had been unfavorable every year since 1919. The chief imports in 1928 were cotton fabrics, metal manufactures, automobiles, sugar, wheat, chemicals, and coal, the chief exports, wine, iron ore, fish, sheep, phosphate rock, barley, groats (pearled grain), peas, and tobacco leaf. About 79 per cent of the imports came from France and 70 per cent of the exports went to that country. Cork was the principal export to the United States. Total declared exports to the United States in 1928 amounted to \$4,379,000, a slight decline from 1927.

FINANCE. Government receipts in 1928 amounted to 924,000,000 francs (\$36,200,000), while real expenditures were 796,500,000 francs (\$31,200,000). Receipts and expenditures in the 1929 budget balanced at about 1,320,000,000 francs (\$51,700,000). The budget for postal, tele-

graph, and telephone operations balanced at 153,060,000 francs. The sum of 1,017,000 francs was included in the general budget for agricultural experimental stations. On Jan. 1, 1929, the public debt amounted to 830,000,000 French francs (\$32,536,000). On the same date, the total cover of bank notes was approximately 670,000,000 francs and the note circulation was 1,777,484,000 francs, as compared with 1,335,310,000 francs on the same date in 1928.

COMMUNICATIONS. Transportation facilities are of primary importance, particularly in view of the vastness of the country. As the railways are inadequate, the highways provide the only means of reaching many localities. Accordingly, their upkeep and the creation of new roads form one of the major items of the budget. Expenditures on national highways, which in 1927 extended 3325 miles, and on local and departmental roads and paths, totaling another 12,898 miles, were 46,400,000 francs. There has been an encouraging increase in the length of the railways, which in 1927 totaled 2853 miles, of which 1905 miles were state owned. Gross receipts during 1928 amounted to 300,293,000 francs. In 1928, 4585 vessels of 7,758,000 net registered tons entered Algerian ports and 4915 vessels of 8,288,000 tons cleared.

GOVERNMENT. The central executive authority of the local government is the governor-general who directs all the services with the exception of the non-Muslim departments of public instruction, justice, worship, and the treasury, which are each under a separate ministry. The governor-general, with the minister of the interior, prepares the budget which is voted by the so-called financial delegations and by the Superior Council. The colony sends to the home Parliament one Senator and two Deputies from each of the three departments. The Parliament at Paris has the sole right to legislate for Algeria. Governor-General in 1929, Pierre L. Bordes, appointed in November, 1927.

ALLEGHENY COLLEGE. A coeducational institution of higher learning in Meadville, Pa., nonsectarian in policy but under the patronage of the Methodist Episcopal Church, founded in 1815. The enrollment for the autumn of 1929 was 642, distributed as follows: Seniors, 102, juniors, 138, sophomores, 185, freshmen, 212, and special, 5. The registration for the 1929 summer session was 156. The faculty in the autumn of 1929 numbered 41. The productive funds of the college amounted to \$1,400,000, and the income for the year 1928-29 was \$786,061. Two new buildings were completed in 1929. Ater Hall, a recitation building, the gift of the late Frank A. Arter of Cleveland, Ohio, and Calhoun Memorial Hall, a freshman dormitory for men, the gift of Mrs. Margaret E. Calhoun of Union City, Pa. W. E. Reis of Pasadena, Calif., gave the college \$50,000 for the enlargement of the Reis Library, which in 1929 contained 74,000 volumes. President, James A. Beebe, D.D., LL.D.

ALLEN, Edwin West. American agricultural chemist, died Nov. 11, 1929, in Chicago, Ill. He was born Oct. 28, 1884, in Amherst, Mass., and was graduated from the Massachusetts Agricultural College and Boston University in 1885, studying later at the University of Göttingen. In 1890 he entered the service of the U. S. Department of Agriculture, becoming assistant director in the Office of Experiment Stations in 1893 and chief in 1915. From 1895 to 1924, he was editor-in-chief of the *Experiment Station Record*, and

in 1926 he became editor of the *Journal of Agricultural Research*. With Dr. Alfred Charles True (q.v.), Dr. Allen organized and conducted the agriculture department of the NEW INTERNATIONAL YEAR BOOK from its foundation in 1899. He was also an editor in the department of agriculture of the NEW INTERNATIONAL ENCYCLOPEDIA and its SUPPLEMENT, also contributing many of the articles.

ALLIANCE FRANÇAISE, FÉDÉRATION DE L' An association of clubs and groups formed for the purpose of encouraging and furthering the study and cultivation of the French language, literature, art, and history in the United States. It was established in 1902, and in 1929 comprised more than 250 local branches, including French Alliances, affiliated societies, and French clubs in universities, colleges, and schools. Six new groups were added to the federation during 1929. Each year the Alliance Française brings from France one or more lecturers who are prepared to speak before all the affiliated societies and clubs wishing to hear them. It also organizes lecture tours for distinguished French travelers and for French lecturers who live in America, assists in organizing courses in the French language and literature in cooperation with the leading universities, and encourages its groups to engage in dramatic performances and debates in French. The official lecturers from France during the season 1928-29 came under the auspices of the Fédération de l'Alliance Française, the France-America Society, and the American Society of the French Legion of Honor. They were Daniel Michenot, professor of diction and lecturer at the University of Strassburg, and Frantz Funck-Brentano, member of the Institut de France, who has acquired a wide reputation as a historian, his best known works being *La Vie à la Bastille*, *Légendes et Archives de la Bastille*, and *Les Lettres de Cochet*. The federation's Assemblée Générale, attended by representatives of the various groups, was held at the Hotel Plaza, New York City, April 6, 1929. The official periodicals of the organization are *L'Echo de la Fédération* and *Bulletin Officiel*. Officers in 1929 were Frank D. Pavey, president, William Nelson Cromwell, general vice president, Albert Blum, president of the executive committee, James N. B. Hill, treasurer, and Félix Weil, general secretary. Headquarters are at 32 Nassau Street, New York City.

ALLOYS. See CHEMISTRY, INDUSTRIAL; METALLURGY.

ALSACE-LORRAINE, al'zas'lor'ain'. The provinces taken from France by Germany after the Franco-Prussian War of 1870-71 and restored to France after the Armistice of Nov. 11, 1918, constituting at present the three French departments of Bas-Rhin, Haut-Rhin, and Moselle. Total area, 5005 square miles, total population in 1926, 1,795,100. The area and population are distributed among the three departments as follows: Bas-Rhin (formerly Lower Alsace), 1848 square miles and 670,985 inhabitants, Haut-Rhin (formerly Upper Alsace), 1354 square miles and 490,054 inhabitants, Moselle (formerly Lorraine), 2403 square miles and 633,461 inhabitants. Alsace-Lorraine contains the only petroleum fields of commercial importance in France, but supplies only about 10 per cent of the total consumption. Iron ore is mined in large quantities. Potash production was affected favorably by the agreement between the Alsatian and German

mines for a division of the world market. In January, 1926, the autonomy of the port of Strassburg was established.

The autonomist movement in Alsace reached a critical stage early in 1929, as a result of elections held in the department of Haut-Rhin January 13 and 20. Autonomist candidates were elected by large majorities to the two seats in the French Chamber of Deputies left vacant by the refusal of the Chamber to seat the Alsatian deputies, Ricklin and Rossé, who were convicted at Colmar in May, 1928, of engaging in an autonomist conspiracy. The elections were followed by a two weeks' debate in the French Chamber on the Alsatian question, in which Premier Poincaré said that while France would respect the existing connection between Church and State in Alsace, she would insist upon the maintenance of the *status quo*.

ALUMINUM. The value of new aluminum produced in the United States during 1928 was \$47,899,000, an increase of 22 per cent, as compared with 1927, when primary metal to the value of \$39,266,000 was produced. The principal producing plant was at Massena, N. Y., where approximately 45 per cent of the metal made in the United States was recovered. During 1929 there was erected at this plant a blooming and structural mill capable of producing, in the strong aluminum alloys, structural shapes 14 inches in depth and 90 feet in length. In this mill, it was possible to handle blooming ingots up to 21 feet to 3000 pounds. The casting technique, as large as these and heat-treating equipment and methods for large structural shapes were important developments in this field. Besides the large plant mentioned, other important works were at Niagara Falls, N. Y., Alcoa, Tenn., and Badin (Whitney), N. C. New production in 1929 totaled 225,000,000 pounds, valued at \$51,804,000.

In addition to the new aluminum produced in 1928, secondary metal to the value of \$22,083,000 was produced. The domestic price obtained for aluminum ingot in 1929, as in 1928, was 24 3/4 cents a pound. The reason for the increased production of aluminum in 1928 was due to its increased consumption by the automotive industries and particularly the wider adoption of aluminum pistons and connecting rods. Also aluminum furniture had acquired a position of prominence and many railroads had adopted aluminum chairs as standard equipment in dining cars, while installations were being made of aluminum furniture in offices and libraries.

The imports of aluminum metal, scrap, and alloy in 1928 were 48 per cent less in quantity than in 1927, and imports of hollow ware were 13 per cent less than in the previous year. In 1929 the imports of metal, scrap, and alloys of aluminum amounted to 48,370,921 pounds valued at \$8,973,233, as against 37,895,832 pounds in 1928. Manufactures in the form of plates, sheets, bars, etc., amounted to 22,010 pounds, valued at \$8724, hollow ware amounted to 123,024 pounds valued at \$71,046, while other manufactures of aluminum were valued at \$872,908. The exports of aluminum, including bauxite, and other ores and concentrates, in 1929 were valued at \$11,897,368, as compared with \$12,102,402 in 1928. There were also included ingots, scrap, and alloys amounting to 613,366 pounds and valued at \$117,345, plates, sheets, bars, strips, and rods amounting to 16,418,751 pounds and valued at \$4,032,104, tubes,

moldings, castings, and other shapes amounting to 2,466,508 pounds and valued at \$738,376, table, kitchen, and hospital utensils valued at \$708,467, and other aluminum manufactures valued at \$2,374,703

With the advent of large structural shapes, new uses for aluminum were found in street cars and motor trucks and also in the construction of cranes where a 50 per cent saving in weight was reported in connection with a 10-ton crane. In architecture, important applications of aluminum were made in the Chrysler Building in New York City and in the Cathedral of Learning of the University of Pittsburgh, Pittsburgh, Pa. Aluminum for cables and tanks was being extensively used in the oil field, as well as aluminum paint for oil tanks. Aluminum foil also was used in the oil fields and refineries of preserving steel and wood. Naturally, with the increased aircraft construction in the United States, greater quantities of aluminum and aluminum alloys found their way into this industry than ever previously. See METALLURGY

AMERICA. See ANTHROPOLOGY
AMERICAN ASSOCIATIONS AND SOCIETIES. For various scientific and other organizations whose official titles begin with the word American, see under the important descriptive word of the title.

AMERICAN CHEMICAL SOCIETY. See CHEMISTRY, INDUSTRIAL.

AMERICAN LEGION. An organization of World War veterans chartered by Congress in 1919. Its purpose is "to uphold and defend the Constitution of the United States, to maintain law and order, to foster and perpetuate a 100 per cent Americanism, to preserve the memories and incidents of association in the Great War; to inculcate a sense of individual obligation to the community, State, and nation, to combat the autocracy of both the classes and the masses, to make right the master of might, to promote peace and good will on earth, to safeguard and transmit to posterity the principles of justice, freedom, and democracy, to consecrate and sanctify the comradeship of the members by devotion to mutual helpfulness."

The eleventh annual convention of the Legion was held Sept 30 to Oct 3, 1929, in Louisville, Ky. There was an accredited delegate attendance of 1148, representing every State, the District of Columbia, five territorial, and five foreign, Legion departments. The retiring national commander, Paul V. McNutt, in his annual report to the convention, cited the carrying out of the Legion's objectives for the year, as fixed by the preceding national convention. The recovery of monetary rewards for disability compensation, death compensation, insurance, adjusted compensation, and retirement claims for veterans totaling \$4,127,225 for the 12-month period—the largest total for a similar period in the history of the Legion, progress in inducing States to pass legislation of benefit to the orphaned and needy children of World War veterans; the participation of more than 300,000 boys under 17 years of age in the junior baseball programme sponsored to the extent of \$50,000 by the American and National Baseball leagues, the enactment of amendments to the Adjusted Compensation Act and of legislation providing \$9,250,000 for the construction and improvement of the Veterans' Bureau hospitals, the nation-wide campaign in favor of the adoption by Congress of the Wain-

wright-Reed Resolution, which provides for a commission to draft legislation looking to a more equal distribution of burden in time of war, as summed up in the universal-service bill, and the passage of a measure sponsored by the Legion providing for Gold Star mothers and widows of American soldiers buried in France to visit the graves at government expense. The national convention reaffirmed the Legion's stand on promoting an adequate national defense and the bringing about of world peace, and voted to continue its interest in military and commercial aviation and other broad programmes of endeavor.

Among the distinguished speakers at the convention were Maj. Gen. Peyton C. March, U. S. A., retired, who served as chief of staff of the U. S. Army during the World War, Admiral Hugh Rodman, U. S. N., retired, Gen. Charles P. Summerall, U. S. A., Serg. Samuel Woodfill, selected by Gen. John J. Pershing as one of the greatest outstanding heroes of the World War, Frank T. Hines, director of the U. S. Veterans' Bureau, Peter Brady, representing the American Federation of Labor, Judge Kenesaw M. Landis, and Gov. Flem D. Sampson of Kentucky. A distinguished Polish delegation headed by Col. S. Zahorski attended the convention.

The official publication of the national organization is *The American Legion Monthly*, published at 2457 East Washington Street, Indianapolis, Ind. The membership of the Legion on Aug. 31, 1929, was 782,117. The American Legion Auxiliary, composed of mothers, wives, daughters, and sisters of Legion members, had a membership of 329,213. The officers of the Legion, elected for the year 1929-30, were O. L. Bodenhamer, El Dorado, Ark., national commander, Milt D. Campbell, Cincinnati, Ohio, John J. Dugan, Wilmington, Del., Frank Schoble, Jr., Wynnewood, Pa., Willis M. Brewer, Pontiac, Mich., and Morton M. David, Denver, Colo., national vice commanders, the Rev. George F. Kettell, D. D., Macedon, N. Y., national chaplain. The following four national officers continued in office: James F. Barton, Fort Dodge, Iowa, national adjutant, Scott W. Lucas, Havana, Ill., national judge advocate, Bowman Elder, Indianapolis, Ind., national treasurer, and Eben Putnam, Wellesley Farms, Mass., national historian. The permanent headquarters of the Legion are in the War Memorial Building, Indianapolis, Ind.

AMERICAN REVOLUTION ANNIVERSARIES. See CELEBRATIONS

AMHERST COLLEGE. An institution for the higher education of men in Amherst, Mass., founded in 1821. For the autumn term of 1929, approximately 720 students were enrolled, including Fellows, 11, graduate students, 13, seniors, 153, juniors, 171; sophomores, 159, freshmen, 201, and provisionally enrolled, 14. The active faculty, exclusive of administrative officers, emeritus professors, and those on leave, numbered 73. The productive funds of the college amounted to \$7,594,777, and the income for the year was \$741,847. The library contained 162,000 volumes. During the year, the George William and Kate Ellis Reynolds Lectureship Fund was established by a gift of \$142,000. President, Arthur Stanley Pease, Ph.D.

ANEMONIA. See FERTILIZERS

ANEMIA, PERNICIOUS. In the *Munchener medizinische Wochenschrift* for August 16, Hofferber compares human pernicious anemia to the

infectious anemia of the horse. The parallel is very close, although thus far the characteristic tongue in the human form has not been encountered in the horse. The alterations found after death in the equine form, although scanty, agree with the few changes found in man, and are not at all specific. The blood picture differs but slightly in the two forms. Thus far, only three equine cases have been subjected to the liver treatment and apparently the results were equal to those seen so freely in mankind. Blood production was stimulated while blood disintegration was checked. The principal difference naturally is in the mode of origin, but while in the horse it is due to infection and nothing comparable has yet been found in man, it is not unlikely that the study of the equine disease may in the end throw light on the human form. Transmission from horse to horse is extremely irregular, follows no definite laws. In discussion, Dr Hesse pointed out that the liver treatment was of value in other than pernicious anemia in mankind, so that in claiming identity we should not place too much stress on response to treatment.

NATURE OF THE CURATIVE ACTION OF LIVER EXTRACT. This subject was discussed at length at the session of the Biological Section of the Hamburg Medical Union, June 4 (*Klinische Wochenschrift*, September 10). Even in healthy subjects, liver extract will increase the number of the red cells of the blood. Fahr was unable to believe that the extract can prevent the causes of the solution of the red cells which characterizes the disease and to him, the principle of the cure suggests that involved in the action of vitamins in deficiency diseases. Lichtwitz yet did not feel assured that all cases of pernicious anemia are permanently curable by liver extract. Wohlwill, speaking as a pathologist, notes that pernicious anemia is less frequently seen in the dead house than before the liver treatment was introduced. Pashen mentioned one case in which pushing the extract in large doses was responsible for a very great increase of red cells, and Reye reported a similar experience. Schottmüller had seen but one failure in 50 cases treated. Extirpation of the spleen is no longer practiced in this disease, but according to Ehlecker it is well to add transfusions to liver extract in severe cases, a view which was accorded the support of Hegler.

ANALYSIS, CHEMICAL. See CHEMISTRY.

ANAPLASMOSIS. See VETERINARY MEDICINE.

ANDORRA, an-dō'r'a. One of the smallest republics in the world, under the joint suzerainty of the French President and the Spanish Bishop of Urgel, situated in a valley of the Pyrenees Area, 191 square miles, population, 5231, scattered in six villages. The inhabitants speak Catalan and are Roman Catholics. The government is under a council of 24 members which nominates the First Syndic in whom is vested the executive power. A good road runs from the Spanish frontier to Andorra. In 1929 it was reported that an attempt of the Spanish Government to levy troops in Andorra was met with a threat of armed opposition from the inhabitants. The little Republic maintains a standing army of 50 men.

ANDOYER, MARIE HENRI French astronomer, died June 12, 1929. He was born in Paris, Oct. 1, 1862. He entered the École Normale Supérieure in 1881, and devoted himself to the study of

pure mathematics. From 1885 to 1892, he was attached to the observatory at Toulouse and was also a professor in the faculty of science. He was recalled to Paris in 1892 to deliver a course of lectures on mathematical astronomy and celestial mechanics and to share in the teaching of mathematics in the faculty of science. He was appointed professor at the Sorbonne in 1903. In 1910 he succeeded to membership in the Bureau des Longitudes, and on the death of Radan in 1911 succeeded him as editor of the *Connaissance des Temps*. The substance of Andoyer's teaching is embodied in two works, *Cours d'astronomie* (vol. 1, 3d ed., 1923, vol. 2, 2d ed., with A. Lambert, 1924) and *Cours de mécanique céleste* (2 vols., 1923, 1926). His last important work was *Sur la théorie analytique du mouvement de la lune*. Andoyer's chief interest was in the mathematical aspect of astronomy, and in addition to his strictly astronomical writings, he recomputed and published, between 1911 and 1928, fundamental logarithmic and trigonometrical tables. He was elected an associate of the Royal Astronomical Society in 1914. He was also an Officer of the Legion of Honor.

ANDRÁSSY, JULIUS Hungarian diplomat and statesman, died June 11, 1929, in Budapest. Count Andrássy was born June 30, 1860, the son of a Hungarian statesman. He entered the Reichstag when 24 and later was successively Under-Secretary of the Interior, Secretary of Education, and one of the leaders of the coalition which brought about the fall of the Liberal Sisy ministry, and from 1906 to 1909 was Minister of the Interior in the compromise Wekerle cabinet. Three years later, he represented Austria in a diplomatic endeavor to prevent the outbreak of the Balkan War, and in 1915 urged the making of peace and the extension of the franchise in Hungary. As Foreign Minister of Austria-Hungary in 1918 he declared the alliance with Germany dissolved and undertook to conclude a separate peace, he retired from office the same year, but in 1920 returned to the National Assembly and assumed leadership of the Christian National party. While attempting to aid King Charles to regain his throne, Andrássy was captured and imprisoned for a time in 1921, but in 1922 he was returned to the National Assembly. He attacked the Horthy régime in Hungary in 1926 and advocated a return to a legitimate democracy, but was defeated. Count Andrássy wrote several books on political subjects, the most important *Die Diplomatie und Weltkrieg*, an impartial

responsibility for the World War. Though always pro-German, he published in 1915 *Wer hat den Krieg verbrochen?* in which he belittled German and Austrian charges against Great Britain as the prime belligerent Power.

ANEMIA. See ANEMIA.

ANGINA PECTORIS. "Treatment with Purin Base Diuretics." An article with this title by Gilbert and Ker appeared in the *Journal of the American Medical Association* for January 19. The aim of the treatment is limited to the relief of pain, although it may also have other remedial properties. The total number of cases treated was 86, covering a period of 12 years and the number of patients to die in the interval was 21, many of whom were notably relieved by the treatment. A number of the purin base diuretics have been used at various times, but apparently there is little choice between the individual drugs which comprise theobromine, theophyllin

and caffeine, which the authors found efficacious in the order named. In the present series, theobromine salts were used in the great majority of cases. Results are classed as negative, slight, moderate, and marked. Percentages under these heads are not given, but several cases of remarkable benefit were noted, as in the case of a man of 72 who was kept free from paroxysms of former daily occurrence for three years, save on some occasions when he had been too active after eating. Those who received moderate benefit were satisfied to continue the remedy, which was given for four or five days at a stretch with intermissions of the same length. It is not denied that the drugs cause various unpleasant symptoms at times.

ANGOLA, *ân-gô'la*, or **PORTUGUESE WEST AFRICA**. A colony on the west coast of Africa, belonging to Portugal since 1575, with the exception of the years 1641 to 1648, when it was held by the Dutch. Its present boundaries were assigned by conventions of May 12, 1886, Dec. 30, 1886, May 25, 1891, and June 11, 1891, separating it from the French Congo, Southwest Africa (afterward united with the Union of South Africa), Belgian Congo, and British South Africa (now Union of South Africa), respectively. An agreement settling a boundary dispute with the Union of South Africa was ratified by Portugal and the South African Parliament in 1926. Area, 484,800 square miles; population (1926) 2,481,956 natives and about 10,000 whites, Capital, São Paulo de Loanda (population, about 23,000). Other important towns, Kabinda, Ambriz, Novo Redondo, Benguela, Lobito, Mossamedes, and Port Alexander. The interior plateau lands are fertile and well watered and promise to become a great agricultural region. Lobito, considered the best natural port on the west coast of Africa, has replaced Benguela as the shipping point for southern Angola. A government wharf was completed in 1928 and further harbor improvements were under way in 1929.

In 1928 there were 52 government schools, seven municipal schools, and two private schools, with about 4752 pupils altogether. The principal products are coffee, rubber wax, sugar, vegetable oils, coconuts, ivory, oven, and fish. Mineral products include malachite, copper, iron, petroleum, and salt, and gold also has been found. In 1927 the imports were valued at 272,941,374 escudos (\$13,817,655) and the exports at 204,622,176 escudos (\$10,358,997). The chief imports of the province are textiles and the chief exports are coffee, maize, diamonds, and dried fish. The bulk of both the export and import trades is with the mother country. Angola has its own budget, the revenues for which are largely derived from taxation and customs duties, although from time to time the home government grants a subsidy. Budget receipts in 1927-28 were 167,559,700 angolares, expenditures, 166,217,050 angolares (one angolar equals \$0.0625). In 1928, 818 miles of railway were open to traffic. The Benguela Railway from Lobito Bay reached the border of the Belgian Congo in 1927 and was expected to reach the Katanga mining district in August, 1930, opening up a rich mining and agricultural area. There were also 2420 miles of roads and 7452 miles of telegraph lines. The government is in the hands of a high commissioner vested with large powers, whose seat of government is Loanda. The colony, according to the charter of Oct. 15, 1926, is divided into 12 administrative districts, each

under a governor. High Commissioner in 1929, Filomeno Camara.

ANHALT, *ân'hàlt*. A German free state, formerly a duchy of the German Empire, bounded by the Prussian provinces of Brandenburg and Saxony. Area, 888 square miles; population, according to the census of 1925, 351,045. Capital, Dessau (71,272 inhabitants in 1925). Other cities with their populations in 1925 are Bernburg, 34,305; Köthen, 26,595; Zerbst, 19,470. Rossau, 12,520, and Coswig, 10,103. The majority of the population adheres to the Protestant religion. The estimated revenue and expenditure for the fiscal year 1928-29 balanced at 31,549,000 marks. The public debt on Mar. 31, 1928, was 18,599,000 marks and the value of state property on that date, was 350,000,000 marks (one mark equalled \$0.2382, par value). The government under the constitution of the Free State of Anhalt dates from July 18, 1919, and by the law of Nov. 6, 1922, the administration is carried on by a ministry of state consisting of the Prime Minister or Minister-President and either one or two other ministers. As a result of the election held on May 20, 1928, the following parties were returned to the Legislature: Socialists, 15; Middle Class party, 15; Democrats, 2; Communists, 3; National Socialists, 1.

ANIMAL DISEASES. See **VETERINARY MEDICINE**.

ANNAM, *ân-nam'*. A protectorate belonging to France, forming a part of French Indo-China (see **FRENCH INDO-CHINA**). Annam's present status was established by the Treaty of Feb. 23, 1886. Area, about 39,758 square miles. Population in 1927, 5,308,374, including 2654 Europeans (exclusive of military forces). Capital, Hué with a population of 4275 in 1927. Largest town Binh-Dinh, with a population of 147,199. The principal port is Tourane, from which 278 ships, with a tonnage of 934,477, cleared in 1927. The population is Annamite in the towns and along the coast, while Moi tribes inhabit the highlands. The products include cotton, rice, corn, and other cereals, the mulberry, the areca nut, cinnamon, tobacco, sugar, betel, manioc, and bamboo. The forest products include coffee, dye, medicinal plants, caoutchouc, and cardamoms. Raw silk also is produced. Probably the most important product is rice. Of the minerals, copper, zinc, coal, hematite, iron, gold, and salt are worked to some extent. Exports in 1927 totaled 88,325,936 francs, imports, 84,049,942 francs. In 1929 there were 920 preparatory, elementary, and secondary schools with a total of 50,401 pupils. The nominal head of the government is the King, but actual power is vested in the French Resident Superior. French troops are in occupation of a part of the citadel in the capital. King in 1929, Bao-Dai, who succeeded to the throne Nov. 6, 1925. During his minority, the government is in the hands of the Regency Council. A Chamber of representatives of the people was established in 1926.

ANNELIDS. See **ZOOLOGY**.

ANNIVERSARIES. See **CEREMONIES**.

ANSCHLUSS. See **AUSTRIA**, under *History*.

ANTARCTIC EXPLORATIONS. See **POLAR**

RESEARCH.

ANTHROPOLOGY. There was somewhat greater publication of research in 1929 than in the preceding year, especially in America, but it cannot be said that much of it was fundamentally significant. The outstanding theoretical work was the second volume of Schmidt's *Ur-*

sprung der Gottesidee (Vienna), elaborating his view of religious development according to the kulturkreis theory. Two new journals were inaugurated: *Oceania*, devoted to Australia, New Guinea, and Melanesia, and published by the Australian National Research Council, and F Krause's *Ethnologische Studien* (Leipzig).

The number of deaths during the year of prominent figures of an older generation is noteworthy. Avebury and Boyd Dawkins of England, Capitan of France, were among the founders of prehistoric studies. Baldwin Spencer in Australia, von den Steinen (Germany), and Culin (United States) were ethnographers whose work had a profound influence in the development of modern anthropology. With the exception of von den Steinen, none of them, however, had been active in recent years. See separate biographies.

THEORETICAL ETHNOLOGY. Discussion of fundamental problems was not sustained during the year. There were, however, several contributions of interest. The "History of Ethnological Theories" presented by P. Radin (*Amer Anth*, 31, 9), while woefully biased, is valuable for the attention it draws to the standpoint of the psychoanalysts. Their views can be integrated with those of culture-historians who hold that there have been independent origins of culture, if we assume "that none of these beliefs, etc., become socially functional until 'simple' peoples had come into contact with some immigrant culture." In a discussion of "Problems Arising from the Cultural Position of the Havaupai" (*Amer Anth*, 31, 213), L. Spier declares that generalized culture-histories are unnecessary and misleading. His preference is for investigating the conditions that give rise to new cultural forms. From this angle, "An Enquiry into the Question of Cultural Stability in Polynesia" (*Columbia Univ Contr Anthro*, 9), by M. Mead, holds interest. Discussing the relative stability of ritual, techniques, etc., and their interrelations, she finds that technique is most stable, form and decorative elements least so.

A contribution to the "functionalism" of Radcliffe-Brown and Malinowski is "The Morphology and Function of Magic," by E. E. Evans-Pritchard (*Amer Anth*, 31, 610). One has again the impression that the "functional view" is merely a reexpression of the descriptive facts in generalized, and often loose, form. At any rate, this comparison of Trobriand (New Guinea) and Azande (Sudan) magic brings out as essential that magic is not regarded as a force of nature, but as a tangible tool of culture, part of the cultural heritage.

Some years ago, Lowie, Gifford, and Spier pointed out that North American kinship systems were distributed in well-defined areas. In discussing "Kinship Origins in the Light of Some Distributions" (*Amer Anth*, 31, 710), A. Lesser makes a showing for a positive correlation of rules of descent, residence, and marriage with two of these areas. The novelty of his presentation lies in his emphasis on marriage rules: the Omaha type-system, grouping a patrilineally related series of males, is coupled with, and would follow from marriage with the wife's brother's daughter, the Crow type analogously grouping matrilineally linked females, with marriage with a husband's sister's son. These correlations were checked in East Africa and Melanesia, where the systems also occur. These types of marriages are credibly viewed as extensions of the sororate and

levirate. Further, "it [is] probable that the systems with their descent emphases are favorable conditions to the appearance of definite exogamic organizations, rather than that the full development of the kinship system is a reflection of the social organization."

E. M. Loeb maintains in "Tribal Initiation and Secret Societies" (*Univ Calif Publ Amer Ethn Arch*, 25, no. 3) that at the bottom of such customs the world over lies the use of the bull-roarer, the impersonation of spirits, the death and resurrection of the novices, and giving a permanent distinguishing mark. These can be recognized even when of vestigial form. His contention is that the complex of these traits, the boys' tribal initiation, spread anciently from a single source. Secret societies, on the other hand, arose independently in several foci.

Although there was less tendency than a decade previously to interpret culture traits of greater distribution as older than those of less, W. D. Wallis took up the cudgels again to disprove the hypothesis (*Amer Anth*, 31, 755). The history of Old World traits shows that magnitude of distribution is no criterion of age. Further, he contends the present centres of elaboration cannot be held the points of origin nor the centres of diffusion. This would be true only if geographic distance were alone concerned, but relative cultural receptivity of neighboring regions is a more potent determinant. While Wallis is motivated by a desire to show that culture historical reconstruction by inference is impossible, he neglects to show that the accepted principle does not hold where two functionally linked traits, or a relatively limited area are concerned. It is also unlikely that his strictures will influence the dyed-in-the-wool reconstructionists.

LINGUISTICS. The American Council of Learned Societies had authorized several years previously a committee (Boas, Sapir, Bloomfield) to undertake the recording and analysis of those American Indian languages hitherto neglected. Many native languages have disappeared, in fact whole stocks are now extinct. In some cases, as Chinook (Oregon-Washington), there is only a solitary survivor. The work of recording these languages therefore demanded the utmost expedition. A résumé of the researches conducted under this committee available in 1929 showed rapid progress in the few years of its functioning.

The seventeen stocks studied are distributed from northern Canada to Texas, in Mexico and Peru. By stocks and languages, these include Angaité (northern Argentina), Aikén (northern Argentina), Liak (northern Argentina), Athapaskan stock, Mattole, Wailaki (northern California), Chipewyan and Hare (northern Canada), Weltfish and Lesser on Caddoan Pawnee (Nebraska) and Kitsai (Oklahoma); Andrade on Chimakuan Quileute (Washington), Jacobs on Chinookan Clackamas (Oregon-Washington), Olbrechts on Iroquoian Huron (New York), and Cherokee (North Carolina), Jacobs and Angulo on Kalapuya (Oregon), Angulo and Harrington on Karok (northern California); Jacobs and Phinney on Sahaptin Kliektat (Washington) and Nez Percé (Idaho), Reichard and Adamson on Salishan, Coeur d'Alène (Idaho) and Nootak (Washington), Speck and Deloria on Siouan Catawba (North Carolina) and Dakota (South Dakota), Holjer on Tonkawa (Texas), Jacobs on Wailatpan Molala (Oregon);

Radin on Wappo (central California); and Wagner on Yuchi (Georgia). Most of these investigations were made among languages of the Pacific Coast States, where the greatest linguistic diversity existed. In addition, Radin studied Zapotec of southern Mexico and Dijour the Kachua of Peru. During the year 1929, much of the recording of texts and grammatical analysis was brought to a conclusion.

One stock consolidation was announced incidentally to a presentation of a "Vocabulary of the Kiowa language" (*Bull Bur Amer Ethnol*, 84), J. P. Harrington remarked that this hitherto isolated linguistic stock of Oklahoma is genetically related to Tewa, spoken in the northern pueblos of New Mexico.

PHYSICAL ANTHROPOLOGY. There was the usual quota of discussions of the geological age and significance of ancient semi-human types, and several announcements of new finds bearing on the descent of man. Only a few of these were to be taken seriously. The current inference that man had his origin in the Old World derives in part from the occurrence there of the only known anthropoid apes; hence, the importance of a reputed New World specimen reported by G. Montandon (*Comptes Rendu Acad Sci*, Paris, 188 815). A Kieth is convinced that the animal is nothing more than a spider monkey, perhaps of a new species (*Man*, 100).

The opinion was offered by H. F. Osborn that *Pithecanthropus* (the ape-man of Java), long regarded as of Upper Pliocene or Early Pleistocene age, actually pertains to Middle Pleistocene, a much later period. On the other hand *Eoanthropus* (Pildown man) is said to be unquestionably Upper Pliocene. Thus, the geologic age of these specimens is reversed and their significance wholly disturbed (*Science*, Feb. 22, 216). Further fragments of teeth and jaws of *Sinanthropus* of northern China were reported by D. Black (*Science*, June 28, 674), who finds the architecture of the jaw far less hominoid than the teeth, paralleling the *Eoanthropus* case. He concludes that the distinctive hominoid character of the teeth were evolved in the human family long before the jaw lost its anthropoid form.

Two petrified human brains were reported found near Moscow in association with woolly mammoth remains. They were, therefore, the oldest human brains preserved. Hindze reports that these are slightly smaller and less developed than modern human brains in the same area. A series of "Contributions to the Craniology of Central Europe" was initiated by H. L. Schapiro with a study of crania from Carinthia (*Anth Papers, Amer Mus Nat Hist*, 31, pt. 1).

An interesting survey of pathological conditions found in ancient remains by H. V. Williams (*Archives Pathol*, 7, 839) shows rickets and perhaps dental caries to have been rare in ancient times, but arthritis as common as today. Tuberculosis is demonstrable in Egypt as early as 2700 B.C., smallpox in 1250 B.C. A brief report, "Dental Pathology in Aboriginal California" was published by R. W. Leigh (*Univ. Calif. Publ. Amer. Arch. Ethn.*, 23, no. 10).

"Materials for the Study of Inheritance in Man," by F. Boas (*Columbia Univ. Cont. Anthro*, 6) was issued, being the data on which his famous study of immigration (1911) was based. It was then demonstrated that the children of immigrants developed in United States a physical type distinct from that of their parents. The

point has far-reaching importance, not only for its demonstration of the relative influences of heredity and environment, but because schemes of race classification are based on the assumption that racial types are stable whatever the environment. During 1929 L. Spier showed, although not conclusively, that similar changes have occurred in the Japanese population of the United States (*Univ. Wash. Publ. Anthro*, 3, no. 1). American-born Japanese children are distinctly taller, wider faced, and rounder headed than comparable groups in Japan.

PREHISTORY. The year's record in prehistory is exceptionally scanty, yet quite as much work was under way as in previous years. The most important item concerns the numerous caves northeast of Bagdad inspected by D. A. E. Garrod. In one at Larzi was found a culture practically identical with the Aurignacian (Upper Palaeolithic) of western Europe. The extraordinary feature is that these remains show no affinity with the contemporary Caspian industry of northern Africa, as might have been expected. Further, they are succeeded by, and grade off into, Mesolithic forms, without passing through the intermediate stages (Solutenian and Magdalenian) of the West. Mousterian remains of an earlier period were found in another cavern.

Recent years have seen some controversy as to whether Palaeolithic remains had been found in Ireland, with conclusions in the negative. E. K. Tratman had discovered a human skeleton in Southern Ireland beneath remains of late Pleistocene animals. However, no remains of industry were found.

Continued investigations of the cultural and geological position of "Early Man in East Africa" (*Nature*, July 6, 9, Sept. 14, 413) lead L. S. B. Leakey and J. D. Solomon to redefine the situation. They outline three pluvial phases (roughly corresponding to the Pleistocene glaciations in the Northern Hemisphere) and one post-pluvial wet phase. The earliest pluvial period has associated an Acheulean culture, the second and third Mousterian and Aurignacian (cf. *Man*, July).

Reports of human remains dating from Pleistocene times continue to come from southwest United States. One of the most promising, according to W. A. Bryan, consists of human skeletons associated with Pleistocene animals in a deep bone cave at Bishop's Cap, N. M. This is not far from the finds at Folsom, N. M., which promises to be the best authenticated case for Pleistocene man in America.

Boule, Breuil, Lécuyer, and Teilhard published a general work on *Le Paléolithique de Chine* (Paris), and de Loe, the first volume of *La Belgique Ancienne* (Brussels) summarizing the Stone Age cultures.

OLD WORLD ETHNOGRAPHY. No convenient summary of the writer of *Peoples of Asiatic Russia* (New York) was available in English prior to the appearance of W. Jochelson's handbook in 1929. M. A. Czaplicka's special studies, published a decade previously, covered the field only in part. While Jochelson offered no new general view of their relationships, his work will undoubtedly serve as the standard guide to available data for years to come.

A succinct description of Arctic and sub-Arctic geographic conditions, prepared by W. Bogoraz (*Amer. Anth.*, 31, 579), demonstrated their importance for understanding the *Elements of the Culture of the Circumpolar Zone*. The first vol-

ume of *L'Indochine* (Paris), published under the editorship of G. Maspero, offers a survey of the primitive, as well as the cultured, peoples.

A brief account is the "Mentawai Religious Cult." by E. M. Loeb (*Univ. Calif. Publ. Amer. Arch. Ethn.*, 25, no. 2), adding on one of the ruler tribes off the Sumatra coast. Communal festivals follow a simple form of sacrifice, hepatoscopy, with intercession by tabu. Dr. Loeb also published "Mentawai Myths" (*Bygd Taaliland- og Folkenskynd v. Nederlandisch-Indië*, 85). *The Races of Java* appeared from D. J. H. Nyssen (Weltvrede, D. E. I.) dealing with the influence of geographical environment on their physique. W. Kaudein published further *Ethnographical Studies in Celebes* (Göteborg).

Several Melanesian studies appeared. B. Malinowski continued his exposition of special phases of culture in *The Sexual Life of Savages in North-Western Melanesia*. To his earlier account of their physical anthropology, F. Sarasin adds the *Ethnologie der Neu-Caledonier und Loyalty-Inulaner* (Münch).

The ethnography of western Polynesia was enriched by the appearance of E. W. Gifford's voluminous report, "Tongan Society" (*Bull. Bishop Mus.*, 61). Gifford finds, contrary to older views, that there was originally no division of secular and priestly authority in Tonga, such separation being due to the supplanting of the sacred high chief by others of lesser rank. For comparison, A. Hocart also has published his account of the Tonga race culture in the *Lau Islands, Fiji* (same series, 62). For eastern Polynesia, K. von den Steinen brought out the two later volumes of his study, *Die Marquesaner und ihre Kunst*, completing what is undoubtedly the fullest account of Oceanic art.

"A Working Classification of the Bantu Peoples of Africa," prepared by I. Schapera (*Man*, no. 63), may be compared with Herkovits' earlier culture areas of Africa. The groupings now proposed set off the peoples of the Lake Victoria region, Kenya, Tanganyika to Zambesi, Southern Rhodesia and southward, Angola to eastern Belgian Congo, and Kamerun to Kasai.

An astonishing report of P. Schebesta puts the number of pygmies in the Ituri region (Belgian Congo) at about fifty thousand. Like others, he was unable to find any pygmy language proper. P. Boesch published an account, *Les Banyamwesi* (Vienna), of central Africa.

The half-century of controversy over the Zimbabwe ruins of Southern Rhodesia since their discovery in 1868 seems adequately settled following their reexamination by G. Caton-Thompson. It has been contended that they are the ruins of an ancient Phœnician civilization of 2000 to 3000 B. C., that they were an outpost of the mediæval Sabaean civilization of southern Arabia, and finally that they are of native Bantu construction, not older than the fourteenth or fifteenth century A. D. Miss Caton-Thompson endorses the stand of Randall MacIver as to their Bantu origin, finding nothing to favor the romantic Semetic hypothesis (*Nature*, Sept. 7, 390, Oct. 19, 621).

The Manners and Customs of the Ruwala Bedouins, by A. Musil (New York) is a valuable monograph on the little-known central Arabians. *West African Secret Societies* was published by F. W. Butt-Thompson.

NEW WORLD ETHNOGRAPHY. An index of the growing maturity of anthropological research in the Americas is afforded by the regularity with

which comparative studies on a continental scale are now undertaken. This was, of course, impossible until most of the local areas had been fairly thoroughly covered. K. Birket-Smith's discussion of the distribution of "Drinking Tube and Tobacco Pipe in North America" (*Ethnologische Studien*, Leipzig, 20), while not important in itself, is symptomatic. S. Linné's *Darien in the Past* (Göteborg) also is grounded in extensive comparisons.

The discovery of the Caribou Eskimo west of Hudson Bay several years before seemed to confirm the theory of Boas, Steensby, and others that the highly specialized culture of the ice-hunting Eskimo arose from just such an inland caribou-hunting people presumed to exist in this region. K. Birket-Smith now provided not only an excellent account of these people (*Rept. Fifth Thule Exped.*, Copenhagen, 5), but elaborated the theory. From a proto-Eskimo culture, now represented by the Caribou Eskimo, rose a culture adapted to the sea-ice, specialization appearing in the East and the West. The Western form was the Thule culture, known only in the central Arctic and displaced by a secondary reversion to earlier types of culture. K. Rasmussen published on the *Intellectual Culture of the Iglulik Eskimo* (same series, 7). D. Jenness suggests that the Beothuk of Newfoundland, long extinct and somewhat mysterious, formerly lived to the north in Labrador in contact with the early Eskimo (*Bull. Nat. Mus. Canada*, 56, 36).

Credit was due F. G. Speck for his continued study of remnant groups of the Atlantic seaboard. In "The Ethnology of the Pohowatan Tribes of Virginia" (*Indian Notes and Monographs*, 1, no. 5) he suggests that these Algonkians moved southward recently to the borders of the southeastern culture area, where they took over typical culture elements but gave to them a novel phrasing. They also served as transmitters of much of this culture to tribes even as far north as southern New England.

Due to the extensive dislocation of tribes in the Southern States in the period of settlement, relatively little was known of them until J. R. Swanton published his impressive study of the Creek Indians in 1928. To this he added "Social and Religious Beliefs and Usages of the Chickasaw Indians" (*44th Ann. Rept. Bur. Amer. Ethnol.*, 173). The social structure seems to have included at once a dual division, totemic clans, and local groups, the last being of greatest social importance.

While E. C. Parsons has undoubtedly made a case for "Ritual Parallels in Pueblo and Plains Cultures" (*Amer. Anth.*, 31, 642), the fact remains that many of these elements were known over far wider areas of North America. Much that is Plains is also part of Eastern Woodlands and Southeastern culture, indeed much can be matched on the southern Northwest coast. Hence, it is preferable to view Pueblo ritual as a highly specialized form of a more general North American ritual basis, with some specific parallels to such Southern Plains tribes as the Pawnee.

On theoretical grounds, it was to be expected that types of songs should be characteristic of definite regions like other elements of culture. G. Herzog has now established the area in "The Yuman Musical Style" as in Arizona-California, sharply set off from other Southwestern music, and marked by an unusual degree of stylistic

integration (*Jour of Amer Folk-Lore*, 41, 183)

Great activity continues in the archaeology of the Southwest. Investigations of "Time-Relations of Prehistoric Pottery Types in Southern Arizona," by E. F. Schmidt, indicated that the characteristic ware of the lower Salt Valley is earlier than that of the central Gila to the east and the Little Colorado to the north (*Anthro Papers, Amer Mus Nat Hist*, 30, pt 5). Successions of cultures were also reported from the ruin at Artec, N. M., by E. H. Morris, where a long occupation by a people with Charco Cañon culture was followed after an interval by another of Mesa Verde type (same series, 26, pt 5).

The earliest of the Southwestern cultures, Basket Maker, was discovered by E. B. Renaud in a primitive form far to the northeast of the hitherto known centre in Arizona-New Mexico. Even more significant is that the rich deposits excavated in *Lovelock Cave* (western Nevada) by Loud and Harrington reveal an ancient culture affiliating with that of central California and, unexpectedly, with Basket Maker. There is some suggestion of culture sequence, with the Basket Maker types earlier than the Californian (*Univ Calif Publ Amer Arch Ethn*, 25, no 1).

A distinctive contribution was made by E. M. Hawley, who by chemical analysis of "Prehistoric Pottery Pigments in the Southwest" (*Amer Anth*, 31, 730), showed that the technique of this pottery has been far more stable than the designs, which have heretofore served archaeologists as criteria of chronology. It appears that pigments of only two types were in use throughout the whole of Southwestern history, their use falling in broad areas. Roughly, the northwestern sector was set off from most of Arizona-New Mexico through the whole period, but later made inroads into the middle Gila River region. Northward extensions of the Western pottery area were made by A. H. Gayton, who reports it among the tribes of eastern-central California (*Univ Calif Publ Amer Arch Ethn*, 24, 239), and L. Schellbach in ancient sites in Idaho.

The widely varying "Petroglyphs of California" have been reduced to order by J. H. Steward (same series, 24, no 2) who finds definite areas determined by individual styles. These are eastern California with Nevada and Baja California, southwestern California, extreme southwestern California, and Arizona with Utah.

A valuable regional survey from the same area was W. D. Strong's "Aboriginal Society in Southern California" (*Univ Calif Publ Amer Arch Ethn*, 26), noteworthy for the detail obtained from these missionized peoples. An extended study, "Coiled Basketry in British Columbia," by H. K. Haeblerlin, J. A. Teit, and H. H. Roberts, under the direction of F. Boas (*1st Ann Rept Bur Amer Ethnol.*), shows that this art had its centre in the southern interior of British Columbia, spread southward on both sides of the Cascade Range, and, in Washington, westward toward the sea. F. Boas points out that certain folk-tale incidents show unexpected connections of the Southwest with the Northwest coast ("Keresan Texts," *Publ Amer Ethn Soc*, 8, pt. 1).

Studies of cultural relationships where the several factors entering into the composite are known historically, are especially valuable. R. Redfield wrote "The Material Culture of Spanish-Indian Mexico" (*Amer Anth*, 31, 602) from this viewpoint. In southern Mexico, pos-

sibly half the material traits remain pre-Columbian in type, with comparatively few combined Spanish-Indian forms, but the pre- and post-Columbian cultures are thoroughly integrated in the native mind. Similarly, R. B. Hall analyzed the secret societies, really work-groups, of the Ile à Gonave (Haiti). These seem to be bodily transplanted from Africa, with but slight French and Indian admixture, and while not assignable in origin to any particular African prototype, bear the characteristics of secret societies of that continent in general (ib., 685).

The archaeological investigations of H. W. Krieger in northeastern Santo Domingo confirm earlier reports of a pre-Arawak cave-dwelling population in the Antilles (*Bull U S Nat Mus*, 147).

Investigations in Yucatan, which in the past have been somewhat haphazard, were being co-ordinated by the Carnegie Institution of Washington under the direction of A. V. Kidder. Early in the year, a joint expedition with the Harvard Medical School was dispatched to Chichen Itza to investigate the possible relation of native disease to the downfall of Mayan civilization.

An analysis of its cultures in *Darien in the Past*, by S. Lunné (Göteborg) leads to the conclusion that the routes of influence, north and south, crossed from the Atlantic to the Pacific sides in the narrow Isthmus of Panama. Cultural elements represented locally were found to have extensive distributions through Mexico, Central America, and South America.

The reputed connection of South American with Oceanic cultures, having again been raised, principally by P. Rivet, E. Nodenskiöld applies himself to the problem. A discussion of the split-drum in middle America (*Ethnographische Studien*, 17) leaves no doubt that this instrument has been invented independently in America and Melanesia. Similarly, he proves that apiculture was developed in Central, and South America independently of the Old World (*Journ Soc Amer Paris* 31, 169).

Several special studies in the South American field were made available in K. T. Preuss's work on stone monuments of the upper Magdalena River, Colombia (*Monumentale vorgeschichtliche Kunst*, G. A. Gaidner's *Rock Paintings of . . . : Obdoba, Argentina* (Oxford), and G. Montell's *Dress and Ornaments in Ancient Peru* (Göteborg). A change in designs painted on Patagonian cloaks was shown by S. K. Lothrop as possibly due to Araucanian influence from the West (*Contr Mus Amer Ind.*, 7, no 6).

EXPEDITIONS, NEWS, PERSONALIA. Activities during the year have been as full as in the past. S. Hedin visited Mongolia to make general ethnological collections for the Naturhistoriska Riksmuseet (Stockholm), accompanied by G. Montell of the Gothenburg Museum. S. Bergman was collecting in the Kurile Islands for the former, where K. G. Lindblom had been appointed curator. G. Hatt left the Danish National Museum (Copenhagen) for the University of Copenhagen, K. Birket-Smith being appointed in his place. The first systematic survey of Eskimo archaeology in Greenland was begun in cooperation with this museum by T. Mathiasen. C. C. Uhlenbeck (Holland) continued his studies of Basque and Algonkian languages. The Koloniaal Instituut (Amsterdam) also enlarged its collections from the Dutch East Indies. J. P.

Kleiweg de Zwan became president of the Dutch Geographical Society.

The Staatliche Museum (Bremen) expanded its collections from Egypt, Persia, and eastern Asia, in part through the expedition of Dr. Trinkler to Chinese Turkestan. Renewed activity appeared in Leipzig on the opening of the Neues Grassmuseum (Museums für Völkerkunde). C. Nimuendaju visited the Apinayé and neighboring Gê-people of eastern Brazil for that museum and those of Hamburg and Dresden. P. Germann left for northern Siberia in cooperation with the Forschungsinstitut für Völkerkunde (Leipzig), and E. von Kuckstadt concluded his expedition to the primitive peoples of southern Asia. A new Gesellschaft für Völkerkunde was founded in this city under the presidency of F. Krause, who was also responsible for the appearance of a new journal, *Ethnologische Studien*. The Staatliche Museum of Berlin dispatched H. Koenig to the Labrador Eskimo. W. Lehmann to Argentina, Bolivia, Peru, and Chile, Dr. Findeisen to the Lapps and Crim Tartars, and an expedition to southern Angola (Portuguese West Africa). W. Krickeberg, H. Baumann, E. Walschmidt, and F. T. . . . ed appointments to the staff. . . . Museum of Dresden had Herr Stötzner among the Solonen (Outer Mongolia) and Dr. Heydrich among the Spanish Basques.

The Psychoneurological Institute of Ukraina reports continued investigations of local somatology, begun in 1922 especially the effects of famine on the growth of children.

An expedition of the Museo Nazionale di Antropologia e Etnologia (Florence), under L. Cipriani, obtained facial casts and archeological material in Natal Transvaal, and Bechuanaland, and studied the Batonga (Northern Rhodesia).

The *Anthropos* group in Vienna supported several expeditions. P. Schebesta visited the pygmies of the Ituri region (Belgian Congo), P. Vannoverbergh the negritos of Luzon (Philippines), and D. J. Wolff the Canary Islands in connection with the Guanche problem. A new centre of activity was founded as the Institut für Völkerkunde of the University of Vienna under the leadership of W. Koppers.

J. R. Mou was elected president of the Ipswich Museum in England. The Huxley Medal of the Royal Anthropological Institute was conferred on A. H. Savage.

Activities in Australia flourished under the organization effected by the Australian National Research Council several years previously. S. D. Porteus carried on psychological investigations among the natives of northwest and central Australia. A. P. Elkin completed two years' work among those of the Kimberley district (Western Australia). G. Laves studied the Kumbingeri language (New South Wales), and C. W. M. Hart, the natives of Melville and Bathurst Island (North Australia). In Melanesia, R. F. Fortune investigated in the Admiralty Islands and H. Powdermaker, in Lessu, New Ireland. R. Frith, who recently completed a year's research in Tikopia (British Solomon Islands), was appointed to the University of Sydney. F. Wood Jones accepted a professorship of anatomy at the University of Melbourne.

The Dirección de Arqueología of Mexico continued excavations at San Juan Teotihuacán and Tonayuca, beside clearing and preserving ruins found in many localities of the country.

The National Museum of Canada (Ottawa) supported investigations by D. Jenness of the Parry Sound Ojibwa, H. I. Smith among the tribes of southern British Columbia, C. Osgood of the Hare on Great Bear Lake, and the anthropometric studies of J. C. B. Grant among the Cree and Beaver of the Peace River district. M. Barbeau completed his study of the Tsimshian (British Columbia), having reached thirty tribes in his seven seasons in the field. W. J. Wintemberg traced ancient Eskimo culture of the Cape Dorset type considerably to the south of its hitherto known range on the western coast of Newfoundland.

Archaeological investigations for the Bureau of American Ethnology (Washington) took M. W. Stirling to Tampa Bay (Florida) and F. H. H. Roberts to eastern Arizona. J. R. Swanton studied the ethnology of the Choctaw (Mississippi), and J. N. B. Hewitt, that of the Iroquois (New York-Ontario). The linguistic studies of T. Michelson and J. P. Harrington bore respectively on the relations of Kickapoo to Fox, and Zuni and Keresan to Kiowa. Of the U. S. National Museum staff, W. Hough visited western Texas, H. W. Krieger the Rio Yaque, Santo Domingo, H. B. Collins St. Lawrence Islands, Alaska, for archaeology, and A. Hrdlička the Yukon River (Alaska) for physics. . . . as well.

G. C. V. . . . used his stratigraphic study of Zacatenco (Valley of Mexico) for the American Museum of Natural History (New York), and R. L. Olson made an archaeological survey of the Southern Plains. E. H. Mearns excavated at Canyon del Muerto (Arizona) and southeastern Utah. M. Mead studied child development at Manus, Admiralty Islands (Melanesia). A joint expedition with Columbia University left for the Congo to procure specimens of gorillas, etc. for anatomical study. H. J. Spinden was appointed curator at the Brooklyn (New York) Museum. The Museum of the American Indian (New York) acquired the C. B. Moore collection of Southern archaeology. It also had E. F. Coffin in southwestern Texas on cave-excavation, with similar work by L. Schellbach in Idaho. F. G. Speck made ethnological investigations of the Nascapoe of Labrador, F. Johnson of the Algonkin of Lake Barriere, Quebec, E. H. Davis of the Klamath (Oregon), and S. K. Lothrop of the Araucanians of Chile. The Field Museum of Natural History (Chicago) sent expeditions to Central America, Africa, and Mesopotamia. J. E. Thompson, who excavated three Maya sites in western British Honduras, found culture stratification. He also found the pre-Maya culture previously discovered in Guatemala. W. D. Hambly collected in Portuguese West Africa and Nigeria. A joint expedition with Oxford University, under L. C. Watelin, continued excavations at Kish (Mesopotamia). P. S. Martin was appointed in charge of North American archaeology.

The Peabody Museum (Cambridge) had H. J. Spinden studying the ruins . . . and adjacent regions, H. B. Roberts those of Utah, and C. B. Cosgrove in west-central New Mexico. The ethnological expedition of P. T. L. Putnam visited northeastern Belgian Congo, W. Cline the Siwa and Gara Oases in the Libyan Desert and south Arabia. Anthropometric . . . extensive scale were made . . . by M. Luther, in Liberia by G. Schwab, and in Cuba by F. S. Hulse.

The Bishop Museum (Honolulu) conducted a survey of the Society and Tuamotu groups (eastern Polynesia) by K P Emory, J. F Stimson, and H L Shapiro, and of Hawaiian archaeology by W Bennett and G McAllister

The Laboratory of Anthropology at Santa Fé, N M., conducted the first extended summer school of field work in the United States. Students under A L Kroeber studied the ethnology of the Walapai (Arizona) those under E Sapir, the Navaho language, while A V Kidder conducted the section at Pecos, N M.

The University of Chicago had O Klineberg investigate the psychological differences of Negroes and Dakota Indians, R Bunzel the religion and economic life of the Zuni (New Mexico), and G Herzog, the music of the Yuma, Pueblo, and Navaho. The University of Pennsylvania continued its projects of an archeological survey of the State and of Algonkin ethnography. F G Speck studied the languages of Wampanag (Massachusetts), Algonkin (Quebec), and Catawba (South Carolina). V J Fewkes studied the archeology of Czechoslovakia and Pennsylvania. The anthropological work of the University of Chicago was recognized by the creation of a separate department. Their archeological survey of Illinois was continued. L Spier visited the Maricopa and Hualchidoma (Arizona), while E Sapir and G Herzog studied the Gweaho (Liberia) language. The University of Nebraska was added to those supporting anthropological work by the appointment of W D Strong. The academic part of the University of Michigan's establishment was severed from the museum. This organization had Hinsdale and Kimey elaborate Michigan archeology and M R Gilmore ethnobotany. For Northwestern University, M J Herskovits again visited the Negroes of upper Surinam River, Dutch Guiana. As usual, the University of California was active in the local field. E W Gifford among the Yuma and Yavapai (Arizona), L O'Neale the Karok, T McCown the Kawaiisu, D Demetrikopoulos and C Dubois the Wintun, R Beals the Southern Maidu, A H Gayton the Yokuts and C D Forde the Cocopa. The University of Washington combined the State Museum with the department of anthropology under L Spier and appointed E Gunther. M Jacobs continued his linguistic studies among Molala and Kalapuya (Oregon).

NECROLOGY. Anthropology lost several outstanding figures of an older generation during 1929. Sir Walter Baldwin Spencer of the University of Melbourne died in Patagonia in July, aged 69. His books on the central Australian aborigines have probably been more frequently cited than any other. Sir William Boyd Dawkins, of Manchester, died Jan 15 (aged 91). While primarily a geologist, he was with Lord Avebury (Sir John Lubbock) one of the founders of European prehistory. The latter died March 26, aged 70. Dr Louis Capitan, of the Ecole d'Anthropologie de Paris, who died September 1, was responsible for some of the more precise work in French prehistory. Dr Karl von den Steinen, director of the Berlin Ethnological Museum, (died Nov 6, aged 74), was in the first rank of German ethnographers. In the same country, Prof O Nuoffer, curator of the Staatliche Museum, Dresden, died September 12 in the United States. Stewart Culin, curator of the Brooklyn Institute died April 8 (aged 71) and Dr John M Tyler, professor of biology, Am-

herst College, died April 12 (aged 78); and in Canada, Sir Bertram Windle, professor of ethnology, University of Toronto, died February 14.

ANTIGUA. See LEEWARD ISLANDS

ANTIOCH COLLEGE. A nonsectarian, co-educational institution in Yellow Springs, Ohio, founded by Horace Mann in 1853. The number of students enrolled for the autumn term of 1929 was 602, of whom 456 were men and 206 were women. The faculty had 76 members. The productive funds of the institution amounted to \$255,476, and the operating income for the year was \$301,732. The library contained approximately 30,000 volumes. During 1929, 700 acres were added to the campus and several new buildings were under construction, including a science building costing approximately \$360,000, a gymnasium costing \$80,000, and a central heating and power plant costing \$135,000. Approximately \$350,000 was contributed to establish research foundations in physics, chemistry, and biology. Antioch College is conducted on the belief that academic training alone does not fit the student for life, and is based on the principle that the student divides his time between liberal and professional studies at college and practical work in the professional, industrial, and commercial institutions of the Central and Eastern States. An extramural faculty supervises location of students in about 200 firms and institutions in 12 States during these working periods, which alternate with study periods in six-week intervals. President, Arthur E Morgan, D Sc.

ANTI-SALOON LEAGUE OF AMERICA

A federation of churches and temperance organizations in the United States, united against the beverage liquor traffic. It was established in 1895 by a coalition of the Anti-Saloon League of four States and the District of Columbia and was the outgrowth of the Anti-Saloon League movement started in Oberlin, Ohio, in 1893 by Dr Howard Hyde Russell. At the end of 1929, it embraced 49 State or Territorial Leagues and had affiliations with 40 other national temperance organizations, as well as with the World League against Alcoholism (qv). In 1929 it became affiliated with the National Association of Organizations Supporting the Eighteenth Amendment.

During 1929 the activities of the Anti-Saloon League were carried on by more than 1500 representatives and were devoted more to educational activities than to any other phase of the work. With the possible exception of the year before the submission of the Eighteenth Amendment, the league published and distributed more literature than in any other twelve months of its career. It also made wide use of the radio, moving pictures, traveling exhibits, lecturers, and posters. It organized oratorical and essay contests in the public schools, high schools, colleges and universities in which many thousands of students participated and conducted many forums in institutions of learning where it secured the authoritative presentation of both sides of the beverage liquor problem in order to insure its thoughtful consideration by students.

The official organ of the league is the *American Issue*, published in Westerville, Ohio, the monthly circulation being about 1,000,000 copies. A national edition and many State editions are published. In 1929 the periodical was reorganized, being given not merely a new format but a new character and style. The officers of the league in 1929 were: President, Bishop E Nicholson, 370

Seventh Avenue, New York City, honorary treasurer, Foster Copeland, Columbus, Ohio, comptroller and acting treasurer, H. B. Sowers, Westerville, Ohio; general superintendent, F. Scott McBride, Washington, general manager of publishing interests and of the department of education, Ernest H. Cherrington, Washington, attorney, Edward B. Dunford, Washington. The national headquarters of the Anti-Saloon League are at 30 Bliss Building and 7 Driscoll Building, Washington, D. C.

ANTI-SEMITISM. See JEWS

APPENDICITIS. False diagnosis of appendicitis and the confusion of the latter with affections of the lower chest and urinary and other organs has influenced W. K. Fraenkel of Berlin to eliminate the sensibility of the abdominal wall on the one hand and of some of the abdominal viscera on the other hand by ordinary local and conduction anaesthesia and by paravertebral anaesthesia. These resources may be used in an ordinary office examination since it requires but a few moments to obtain the anaesthesia, and the author insists that all need of an exploratory incision or trial laparotomy may be abolished thereby. A patient subjected to abdominal palpation and deep pressure is found to be very sensitive, but after ordinary local injection and infiltration anaesthesia over the appendix sensibility of the abdominal wall is inhibited and deep pressure over the appendix is no longer felt. By going further and blocking certain nerves, as the eighth dorsal and first and second lumbar, sensibility may be abolished in the gall bladder and urinary organs and affections of these structures will have no chance to pose as appendicitis. Paravertebral conduction anaesthesia cuts off all communication between the spinal and sympathetic nerves and thus eliminates certain forms of sensibility which are at times attributed to appendicitis. (*Altschne Wochenschrift*, September 24)

APPLES. See HORTICULTURE

AQUEDUCTS. While no great aqueduct works, not previously noted in earlier YEAR BOOKS, had been actively brought forward during the year 1929, the necessity for great works of this kind continued clearly to be recognized and some important trends were to be noted.

LEGAL PROBLEMS. The demand for increased supply in the cases of New York City and Boston led to plans being prepared for great aqueducts which would divert water from interstate streams. A new legal problem thus was brought to the fore and it became necessary to call upon the U. S. Supreme Court to clarify the interstate water rights situation in certain Eastern States. In the West, this problem had a totally different legal background based on Imperial rights and had led to the priority rights solution which was obviously inequitable and economically unsound, but nevertheless prevailed. In the East, with a riparian-rights background, the problem is new, and the decisions of the Supreme Court will vitally affect future developments.

NEW YORK. On April 17, Judge Charles E. Hughes and John W. Davis submitted opinions to the water-supply authorities of the city stating that the city had a legal right to take flood waters from tributaries of the Delaware River within New York State for an additional supply for Greater New York. While the Delaware is a tri-State stream and New Jersey and Pennsylvania also are interested, it was held that the

U. S. Supreme Court was unlikely to bar such diversion by New York.

Later, New Jersey brought the matter to the Supreme Court by asking for an injunction to prevent New York from going ahead with these plans, described in our previous YEAR BOOKS. Pennsylvania had not taken sides on the question but asked to attend the hearing which was to take place Jan. 20, 1930. In the meantime, New York was proceeding with studies and surveys. These plans guarantee to the Delaware the minimum flow from those tributaries which would be used for the new supply and also a four months reserve, for low-flow conditions. In other words, New York proposed to use only flood water and only part of this. This proposal was accepted by a tri-State board of commissioners but the New York Legislature alone ratified the compact. This case was likely to set a precedent as regarded the conditions under which diversions might be made from interstate streams and was thus of far-reaching importance to the eastern United States.

BOSTON. In reaching out westward for additional supply for the growing metropolitan district of Boston, the engineers of that city followed a natural and normal line of development, which, however, brought them into the Swift River and Ware River areas. These rivers join and are tributaries of the Connecticut, which they reach at Springfield, Mass. The War Department had given tentative approval for part of this diversion as it might possibly affect navigation in the Connecticut. The State of Connecticut, however, questioned this action and brought the problem into the Supreme Court where a hearing was scheduled for the same date which had been set for the similar Delaware River hearing noted above. The Massachusetts water-supply problem was further complicated by the necessity for apportioning available sources within the State so as not only to give Boston her needed supply but also to reserve part of available sources for the growing cities of Worcester and Springfield.

CONSTRUCTION PROGRESS. With the water-supply tunnel No. 2 under construction in New York City, the Mokelumne supply in California practically completed, and the Hetch Hetchy works for San Francisco nearing completion after years of labor, attention naturally turns to new projects.

NORTH JERSEY. The gates of the great Wanaque Dam were closed on Mar. 23, 1928, and by Mar. 4, 1929, the reservoir had been filled and water was passing over the spillway. Rapid progress has been made on the aqueduct line, which was long delayed by litigation and which would deliver water to eight North Jersey cities.

LOS ANGELES AQUEDUCT. The organization, under which this aqueduct (see 1928 YEAR BOOK) was to be constructed to bring water some 300 miles from the Colorado River, was extended and made permanent with the formation of the Metropolitan Water District of Southern California with a nucleus of eleven cities. While Los Angeles is by far the largest city included in the district, this gives the other interested cities a voice in this great project which it is expected will now move forward.

PIPE-LINE CONSTRUCTION. The *Engineering News-Record* published during the year a series of articles on the current practice in the construction of large water pipes which show clearly

the trends in large pipe design. While cast iron had been used in the past for mains up to 48 inches and over in diameter, it was clear from these articles that many engineers were limiting the use of cast iron to the smaller sizes, 20 to 24 or perhaps 30 inches and under, and were using steel and reinforced concrete for the larger diameters. In this connection, the siphons on the Yakima Project of the United States Bureau of Reclamation also were of interest. This work involves 25 siphons and reinforced concrete pipe was being used under exceptionally high heads. Steel, of course, was the only material for the higher heads, but the change from concrete to steel in the Morrison Canyon siphon on this project was not made until a head of 108 feet was reached, at Horacehoe Canyon until a head of 135 feet was reached, and the Hayward Canyon siphon, operating under a head of 153 feet, was constructed entirely of reinforced concrete.

An extensive use of steel pipe in connection with main water-supply lines and even in distribution systems also has been noted in recent YEAR BOOKS. It is clear that economic changes, the need for aqueduct pipes of larger size and greater strength, and a growing confidence in newer forms of construction were bringing new types of pipe into this field. There will undoubtedly be further important developments in this direction in the near future. Welded pipe has, of course, continued to find new and important applications and has already become practically a standard form of construction.

BIG CREEK LINE, CALIFORNIA. The pipe line supplying the Southern California Edison Company's hydroelectric power plant at Big Creek, Calif., is one of the most extraordinary ever built. A single pipe operating under the remarkable static head of 2418 feet supplies 540 cubic feet of water per second to two 56,000-horse-power impulse wheels. The line consists of 1855 feet of quadruple-riveted pipe varying from 108 to 84 inches in diameter and from $\frac{3}{16}$ to $1\frac{1}{16}$ inches in thickness, 3042 feet of forge welded pipe branded with seamless steel bands shunk on the outside and varying from 84 to 66 inches in size and from $1\frac{1}{4}$ to $2\frac{1}{2}$ inches in thickness, and 1764 feet of seamless forged pipe, practically all 66 inch in diameter and $2\frac{1}{2}$ to 3 inches thick. The last type of pipe is used for the portion where the head exceeds 1642 feet.

See also WATER SUPPLY.

ARABIA. A peninsula in southwestern Asia situated to the south of Syria, Palestine, and Iraq and between the Red Sea and the Persian Gulf. The area is estimated at from 1,000,000 to 1,200,000 square miles, the higher figure including the Syrian Desert and the Sinaitic Peninsula. A mountain barrier, parallel to the Red Sea, runs the length of the western part of the peninsula from which the terrain slopes uniformly to the Persian Gulf, with the exception of the Oman district in the extreme southeastern section of Arabia, where a mountainous area with 10,000-foot peaks is found. Barren and sparsely watered, the peninsula nevertheless has numerous large oases. Estimates of the population range from 4,000,000 to 7,500,000, the inhabitants representing every stage of transition from the purely nomadic Bedouin tribes, occupying a large part of the interior, to the well-developed civic life of the large towns. Freed of Turkish control by the World War, the Arabs were at liberty to work out their own political destiny. After six years of

internecine warfare, the Ibn Saud dynasty of Nejd emerged as the ruling power, controlling all the peninsula except several small states along the southern coastal fringe. During this period, the divisions of the country became defined as follows:

(1) **HEJAZ or HEDJAZ.** The Kingdom of the Hejaz was an outgrowth of the World War and after a very precarious existence was compelled to submit to the domination of Abdul Aziz Ibn Saud, Wahabi leader and Sultan of Nejd, at the very end of 1925. During its rather brief career as an independent state, its frontiers were always in a state of flux, never being definitely defined except on the west. It occupies the western coast of Arabia between Trans-Jordan on the north and ASIR on the south, the latter boundary touching the coast at 20° north latitude. The estimated area of the country is about 150,000 square miles and its population variously estimated at from 800,000 to 900,000. The population is largely nomadic, although in recent years some villages have been settled where it has been possible to cultivate the soil successfully. The principal cities are Mecca, with a population of about 70,000 (this is the holy city of Islam, and attracts about 100,000 pilgrims annually, these pilgrims represent the chief source of income of the Government), Medina, also a holy city and the site of Mohammed's tomb, with a population of 20,000, and Jeddah, the seaport for Mecca, with about 30,000 inhabitants.

Agriculture in the Hejaz is not generally practicable, on account of the excessive heat, but in the oases, there are large crops, the chief one of which is dates, and in the plateau region wheat, corn, barley, millet, lentils, coffee, and tobacco are raised. Bedouin products are hides, wool, and clarified butter. The famous horses, many of which are sold abroad are raised here. The chief exports are hides, wool, and gum, the chief imports, foodstuffs and building materials. The southern section of the Hejaz Railway from Auman to Medina was put out of commission in 1925 under the régime of Ibn Saud. A new silver currency of *riyals* was introduced in 1928 in place of the Turkish currency (1 *ryyal* equals \$0.486). The king in 1929 was Abdul Aziz Ibn Saud, with the title of King of Hejaz and Sultan of Nejd and its dependencies.

(2) **SULTANATE OF NEJD.** This state is considered the most important unit in the Arabian peninsula and occupies the highland of central Arabia between the Persian Gulf on the east and the Hejaz on the west. It is ruled by the Ibn Saud dynasty, which represents the old Wahabite empire, founded in 1745. In 1929 the population was estimated at 3,000,000. The chief products of Nejd are dates, wheat, barley, fruits, hides, wool, horses, camels, donkeys, and sheep, while the chief imports are piece goods, tea, coffee, sugar, and rice. Capital, Riyadh; reigning Sultan in 1929, Abdul Aziz Ibn Saud.

(3) **JEBEL SHAMMAR.** An emirate north of Nejd and since 1921 an integral part of the Sultanate of Nejd, by which it was captured and annexed. Population, estimated at 250,000, Capital, Hail.

(4) **ASIR.** The Province of Asir, geographically a part of Yemen, lies on the west coast between the Hejaz on the north and Yemen on the south. The estimated population is 1,000,000. Since 1920 the capital, Abha, and much of the uplands of Asir have been under control of Ibn Saud. The coastal region, which is still independent, is ruled

by the head of the Idrisi family, Seyyid Ali Muhammad, whose headquarters are at Sabiyah.

(5) **IMAMATE OF YEMEN.** An independent state about 75,000 square miles in area, occupying the Red Sea coast between Asir and the British protectorate of Aden. The population is variously estimated at from 2,000,000 to 3,000,000. The capital is Sana, with a population of about 25,000. Cereals and coffee are produced extensively. Hides form one of the chief articles of export. Ruling Imam in 1929, Yahya Mohammed Hamid ed-Din. In August, 1927, the Imam established an irregular airplane service between the seaport, Hodeidah, and Sana.

(6) **SULTANATE OF KOWEIT.** This territory, sub-sidized by the British, is on the northwestern coast of the Persian Gulf and has an estimated population of 50,000. Sultan in 1929, Ahmed Ibn Jabir al Subah.

In addition to the above, there are comprised within the limits of Arabia the British protectorate of Aden, the Sultanate of Oman, Hassa, and the Emirate of Nejak or Trans-Jordan. See ADEN, OMAN, TRANS-JORDAN.

A considerable tract of fertile valleys lying to the east of the Aden protectorate is known as The Hadramaut. It is ruled by the rival Qa'ati and Kathiri dynasties and is under a loose British protection and control.

HISTORY. Raids into Iraq and Trans-Jordan by tribes under control of the Wahabi ruler, Ibn Saud, continued throughout 1929, arousing him to a number of expeditions in which he meted out drastic punishment to his unruly subjects. On January 21, Wahabis, said to be of the Ajman tribe, fired on a group of Americans traveling between Basra and Koweit and killed the Rev. Henry A. Birkerd, an American missionary at Basra. Sir Gilbert Clayton, the British High Commissioner in Iraq, stated that he did not hold Ibn Saud responsible for this and subsequent raids. It was thought probable the raiders, whose sheik had been deposed by Ibn Saud, were attempting to embroil him with the Iraq authorities.

Raids into both Iraq and Trans-Jordan were reported in March and a raid into Trans-Jordan in April was said to have resulted in the killing of 400 members of the Howeitat tribe. Ibn Saud then advanced on a force of 5000 rebellious tribesmen with some 40,000 followers, according to reports, and severely defeated them, killing 750 and capturing three sheiks who led them. One of these, Ibn Ithilam, said to have caused the death of the Rev. Mr. Birkerd, was reported slain. The King then returned to the Hejaz in triumph and joined the annual pilgrimage to Mecca. In September, Ibn Saud conducted another expedition against the rebellious Sheik Faisal al-Dowish of the Mutair confederation. In November, another serious revolt under the same leader resulted in a general mobilization of Ibn Saud's forces, it was reported. The exchange of resident diplomatic representatives between the Hejaz and Great Britain was agreed upon in June. King Ibn Saud during the year extended to the Nejd, of settling Bedouin tribesmen in agricultural colonies of not less than 2000 persons each. The age-old economic system of Arabia promised to be transformed by the plan. On August 3, a treaty of friendship between Turkey and the Nejd-Hejaz was signed at Mecca.

While the Imam Yahya of Yemen continued at odds with both Great Britain and the Hejaz, it

was announced in January that he had signed a commercial treaty with Soviet Russia, Egypt, insisting that Egyptian troops should be allowed to accompany the *Mahmal* (Holy Carpet) from Cairo to Mecca, persisted in its refusal to recognize either Ibn Saud or the Imam Yahya. At a conference at Beirut, regulations were adopted requiring Mohammedans making the pilgrimage to Mecca to be immunized against smallpox and cholera and to obtain certificates of good health.

ARBITRATION. INTERNATIONAL. The first meeting of the Tripartite Claims Commission was held on Jan. 25, 1926. The Government of the United States has been represented before the Commission throughout by Robert W. Bonyne, of New York, as its agent, he also has been serving as agent of the United States before the Mixed Claims Commission, United States and Germany, since June 16, 1923. The Government of Austria was represented by Dr. Ludwig Kleinwächter, Counselor of the Austrian Legation in Washington, as its agent until some time after the second meeting, and by Dr. Ernst Prossnigg, of Vienna, as Austrian Agent since that time. The Government of Hungary appointed John Pelenyi, Counselor of the Hungarian Legation in Washington, as its agent *ad interim* for the first few months, and he was succeeded by Dr. Alexis de Boer, who later served as Hungarian agent. Each agent has had the assistance of his own staff of counsel and clerks. Upon the suggestion of the Commissioner, acquiesced in by the three governments, the Commissioner's law clerk, Ephraim P. Bowyer, of South Dakota, in the interest of economy and efficiency, also served throughout as secretary of the Commission in lieu of the three joint secretaries contemplated by the agreement.

In addition to the 32 formal meetings held, for the announcement of rules, decisions, and opinions, the calling of the calendars of unsubmitted cases, and the hearing of arguments, the Commissioner held numerous sessions in chambers to hear the views of the agents and their counsel on particular cases or questions. The Commission sat at Washington. The agents were encouraged to submit cases on agreed statements of the facts so far as possible, and most of the claims were thus presented, which further simplified procedure and expedited their disposition. In addition to the 39 opinions and administrative decisions rendered by the Commissioner in writing, from time to time he announced numerous oral opinions for the guidance of the agents.

All of the claims submitted were presented on behalf of American nationals, none being asserted by the Government of the United States on its own behalf. Except for a comparatively small number of cases arising under the reparation provisions (Part VIII) of the treaties, the claims came under the economic clauses (Part X) of the treaties and were based on debts owing to American nationals by Austria or Hungary, or Austrian or Hungarian nationals, or on damage or injury alleged to have been inflicted in the territory of the former Austrian Empire, or the former Kingdom of Hungary. No case was presented in which the Commissioner found that the claimant had discharged the burden resting on him to prove a loss, damage, or injury proximately caused by the application, by Austria or Hungary, of exceptional war measures or measures of transfer (as those terms are employed in the treaties) to such property, rights, or in-

terests, including debts, credits, accounts, and cash assets

Claims aggregating 1631 in number were filed with the Commission through Jan 25, 1927, when the time for filing expired under the terms of the agreement. Many of these have been divided into separate cases. A considerable number of claims based on private debts, many involving comparatively large sums, were withdrawn from consideration by the Commission or dismissed because the debts had been discharged and extinguished through private settlement between claimants and debtors.

The first decisions were rendered on Mar 17, 1927, and the adjudication of all the cases presented to the Commission was completed on May 11, 1929, so far as concerned claims asserted against Austria and on Sept. 27, 1929, so far as concerned claims which were asserted against Hungary.

It was considered necessary for the Commission to continue to function for a time in order to make certificates looking to the payment of the awards and judgments against Hungary when the conditions warranting the execution thereof have been met. The records of the Commission were to be delivered to the Secretary of State of the United States in order that they may be preserved in such place as may be agreed upon by the three governments.

Edwin B. Parker, who was the War Claims Arbitrator under the Settlement of War Claims Act of 1928, died Oct 30, 1929. He had advanced the work to a point where all of the claims for the value of German vessels taken over by the United States during the World War were submitted for final determination and had laid down most of the rules governing the determination of outstanding claims. The claims for the value of the Sayville, L. J. radio station had not been submitted for decision up to the end of the year. A successor to Judge Parker had not been appointed by the end of December. There remained for decision approximately 900 cases involving about 3500 patents, most of which were on behalf of German nationals, a few on behalf of Austrian nationals and a few on behalf of Hungarian nationals.

TACNA-ARICA. On May 17, 1929, President Hoover announced that a settlement had been reached in the dispute between Chile and Peru over the provinces of Tacna and Arica. A treaty incorporating the terms of the settlement was signed at Lima June 3 and went into effect 30 days after the exchange of ratifications on July 28. By consent of all parties, the text of President Hoover's proposals, submitted to both governments on May 15 and immediately accepted by them as the final bases of solution, was given out by Secretary of State Henry L. Stimson, in part, as follows:

1 The territory will be divided into two parts—Tacna for Peru and Arica for Chile. The dividing line shall start at a point which shall be designated with the name "Concordia," situated ten kilometers to the north of the bridge over the River Luta, and shall continue parallel to the Arica-La Paz Railroad, following, as far as possible, the topographic features which may make easier the demarcation of the line.

The sulphur deposits of Tacna shall remain in Chilean territory, and the canals of Uchusuma and Hauri, also known as Aucarero, shall remain the property of Peru, with the understanding, however, that whenever these canals pass through Chilean territory they shall enjoy the most complete servitude in perpetuity in favor of Peru. This servitude includes the right to widen the actual canals, change their course and appropriate all

waters that may be collectible in their passage through Chilean territory.

The boundary line shall pass through the centre of La Guna Blanca, dividing it into two equal parts. Peru and Chile shall each designate an engineer and the necessary assistants to proceed to the demarcation of the new frontier in accordance with the points hereon agreed upon and shall indicate the dividing line by means of boundary monuments.

In case of disagreement, such disagreement shall be decided by a third person designated by the President of the United States, whose decision shall be final.

2 The Government of Chile will grant to the Government of Peru within 1575 meters of the Bay of Arica a wharf (molecón), a customhouse and a station for the railroad from Tacna to Arica, where Peru shall enjoy independence within the most ample free port. All the aforementioned works shall be constructed by the Government of Chile.

3 The Government of Chile will deliver to the Government of Peru the sum of \$6,000,000.

4 The Government of Chile will deliver without cost of any kind to Peru all the public works already constructed, together with all government owned real property, in the Department of Tacna.

5 The Government of Chile will maintain in the Department of Arica the franchise granted by the Government of Peru in the year 1852 to the Arica-Tacna Railroad Company.

6 The Government of Chile shall proceed to deliver the Department of Tacna thirty days after the exchange of ratifications of the treaty.

7 The Governments of Chile and Peru will respect private rights legally acquired in the territories that remain under their respective sovereignties.

8 The Governments of Chile and Peru, in order to commemorate the consolidation of their friendly relations, agree to erect on the Morro de Arica a monument, the design of which shall be the subject of agreement between the parties.

9 The children of Peruvian nationals born in Arica shall be considered as Peruvians until they attain the age of twenty-one years, at which age they shall have the right to elect their definitive nationality, and the children of Chileans born in Tacna shall enjoy the same right.

10 Chile and Peru will reciprocally release any obligation, engagement or indebtedness between the two countries, whether derived or not from the Treaty of Ancón.

A complementary protocol to the treaty, apparently intended to block Bolivia's aspirations for a corridor to the Pacific, was made public upon the exchange of ratifications on July 28. It read as follows:

1 The governments of Chile and Peru cannot under the previous agreement cede to a third power the whole or any part of the territories mentioned in the treaty of that date. The territories will remain under their respective sovereignty, and, because of this provision, it is agreed that they shall not construct on them new international railway lines.

2 The facilities of the port treated in Article V of the agreement gives Peru absolute freedom of transit of passengers, merchandise, and armaments to Peruvian territory and from there across Chilean territory. The embarkation and disembarkation operations, while the works indicated in Article V are being constructed, will be effected along the harbor of the Arica-La Paz Railroad.

3 The Arica port will be dismantled and the Chilean Government will construct on the coast a monument as agreed to in the treaty.

The present protocol forms an integral part of the treaty from this date and in consequence it will be ratified and ratifications exchanged in Santiago, Chile, as soon as possible.

The final settlement as described came as a result of direct negotiations between Chile and Peru, fostered under the friendly auspices of the United States State Department. The only note of discord was the fact that land-locked Bolivia, a belligerent in the war that created the Tacna-Arica dispute, was ignored in the final settlement. Although President Hoover's good-will trip to South America provided the immediate and dramatic background for this willingness to settle the dispute, the foundation for accord was laid by former Secretary of State Kellogg. It was he who succeeded in bringing about the renewal of diplomatic relations between Chile and Peru after

years of disruption. The terms agreed to by the governments of the two South American countries involved were substantially those suggested by Mr Kellogg.

The territory over which these two republics had been squabbling for almost fifty years, has few natural resources of value. It is an arid region slightly larger than Massachusetts, with a population of less than 40,000. In 1922 it was decided to submit to the arbitration of the President of the United States the question of whether or not the plebiscite should be held under the Treaty of Ancón (1883). Chile favored this method of solving the problem, but Peru argued that failure to hold a plebiscite at the end of the ten-year period had nullified the provisions of the treaty. Peru further argued that the results would not be fair, since Chile had taken advantage of her occupation to colonize the provinces with Chileans and to persecute Peruvians. Three years later, the President of the United States handed down a decision, which was favorable to the Chilean contention. Due, however, to the obstructionist tactics of Chile, the commission appointed to carry out the provisions of Article III of the Treaty of Ancón was unable to hold a plebiscite.

Although a minority group of Peruvians protested against the 1929 decision, the general feeling expressed throughout Chile and Peru was one of satisfaction at the conclusion of a controversy that for so many years prevented profitable commercial intercourse and friendliness. Protest was also voiced by Bolivia, who in the War of the Pacific lost her seacoast as well as rich nitrate deposits in the Province of Antofagasta.

There was nothing in the original Tacna-Arica agreement to prevent Bolivia from coming to a direct agreement with either Chile or Peru for a strip of land leading to a port on the Pacific. It was found, however, during the Tacna-Arica negotiations, that there was no suitable spot for the construction of a new port in the Province of Tacna, north of Arica, and Bolivia would, therefore, have to seek its outlet through Chilean territory. The complementary protocol to the treaty appeared to block this possibility.

With the settlement of the Tacna-Arica question, Chile's last boundary was delimited. Peru, however, was still in dispute with Ecuador as to its northern boundary. In a treaty signed in Quito in 1924, Peru and Ecuador agreed that as soon as the Tacna-Arica question should be solved they would try to reach a settlement of their differences by direct negotiations, submitting to the arbitration of the President of the United States any points on which agreement could not be reached. See CHILE, PERU, and BOLIVIA, under *History*.

ARBITRATION, LABOR. See LABOR ARBITRATION AND CONCILIATION.

ARCHÆOLOGY. At Kish in Mesopotamia, the Field Museum and Oxford University continued their thorough exploration of the city site. They succeeded in reaching the virgin soil at a depth of 60 feet and as a result were able to establish by the discovery of copper objects and implements that the place was occupied as early as 3500 B.C. Among the things recovered were copper mirrors, necklaces, shells used for lamps, a stone drinking cup mounted in bronze, a spear-head, a dagger, and a toy five-horse chariot.

The finds afford an accurate chronology for the site reaching from the beginning of civilization

to the Neo-Babylonian times, as indicated by the great temple of Nabonidus which was erected at the close of the sixth century B.C. Many inscriptions were found of a date so early that no inflectional forms for verbs or nouns appear. It is thus established that the real founders of the city were a proto-Sumerian people who were also responsible for the founding of other cities in this locality. It is probable that the earliest of these settlements reach back to 4000 B.C.

In all, seven layers were found, the earliest of which contained among other things sculptures belonging to the first dynasties of Kish. From 3100-3000 seems to have been a period of decadence which was followed by the Sargonic rule.

The site of Ur continued to be a place of amazing interest. In 1929 the work was concentrated upon the necropolis and the great temple. In the necropolis, tombs of the time of Sargon (2700) were found. Of special interest was the uncovering of a royal tomb which resulted in remarkably rich finds. Part of the burial consisted of a sacrificial pit in which were discovered forty-five bodies of which thirty-nine were women. From the fact that the tomb proper suggests the form of a residence it is believed that these unfortunate victims met their death as the result of a primitive belief that life in the next world would prove to be much the same as that in this and that the prince would as in this world require in the next the service of the servants who were thus slain that their souls might accompany his into the next world.

In the burial pit were found also the remains of a chariot with two wheels and two asses. Many vases of gold, silver, and pieces with enamelled flowers and other objects were recovered. It is interesting to note that the lines of the harness with its mountings of silver and lapis lazuli were still traceable. This chariot rested upon a matting under which were the bodies already alluded to. With these bodies of the women who had been slaughtered were found thirty-six headdresses quite as fine as that taken from the tomb of the princess Shubad in the previous year. Besides the many necklaces found, the excavators discovered in one corner of the pit the gold and silver mounts of the poles that supported the canopy that seems to have been raised over the victims. In another corner were found some harps which were mounted with broad bands of mosaic. One had silver mountings, inlaid with shell.

Another shaft opened contained a wooden box in which gold-handled daggers and a seal cylinder bearing the inscription "Mes-Kalam-dug the King." This person is probably a relative of Prince Mes-Kalam-dug, whose golden helmet was found in 1928. Below this find appeared a coffin burial along with which were found copper and clay vessels spread over the whole area occupied by the brick building which filled the pit. At the bottom of the shaft, which was filled with many strata containing various objects, was discovered a stone-domed chamber in which were six bodies. One was that of the owner of the tomb, the others of four men and a woman. The usual conventional funeral headdresses were found, besides rings, beads, ear-rings and an unusual, long gold pin, as well as a gold tumbler with fluted sides. The burial was that of a royal princess. Another burial found was that of a child princess in whose grave were found, besides the regulation headdresses, a miniature set of silver dishes.

Work on the site of the temple of Nannar

showed that the original building goes back to 3000 B.C. The present ziggurat is of the time of King Ur-Unger, who laid the foundations of the temple. The superstructure was completed by his son, Durgu, who also built the gateway and the chambers surrounding the courtyard. After the fall of the dynasty, work on the building was continued by Sinidinnan a King of Larsa (c. 2000). About 1400 B.C., Kuri-Galgu II of Babylon restored the temple, after which there seems to have been a cessation of reconstruction until in the seventh century Sin-balad-ankbi did some work on the building. In the year 600 B.C., Nebuchadnezzar added two sanctuaries to the tower.

Among the most interesting facts emerging from the work at Kish is that the deep stratum of clay found there as well as at Ur, seems to account for the Babylonian story of the flood.

At Nihawand in Persia, Herzfeld discovered rich finds of axes, spearheads, jewelry, seals, and pins belonging to the bronze age (c. 2000 B.C.). Some relationship with Sumerian and European cultures seemed to be indicated by the pottery which shows geometric and naturalistic patterns. Some of the black and red ware appears to be like that of Egypt. Other specimens, of polished dark red or gray ware, resemble the ware of Anatolia.

On the coast of Northern Syria, not far from the site of Antioch, was found a subterranean passage which conducted to an underground vaulted chamber in which were found some objects of gold together with thirteenth-century pottery of Cypriote and Mycenaean manufacture. A royal necropolis was also discovered by the French expedition. It belonged to some unknown dynasty of the 13-14th century B.C. Within an area of 3000 meters were found eighty funerary deposits. Various wares in a local style, Cypriote or Mycenaean, were found. In one instance were found a number of pebbles with their equivalent weight of an Egyptian mina. Many small Egyptian objects were also recovered.

One large subterranean chamber had the floor covered with large, rectangular flags most carefully laid. Under the floor was discovered another tomb with a passage leading down to the burial chamber. Many lamps left burning in the corridor had smoked the walls. The burial had been rifled in the remote past with the result that the four bodies had been stripped of their ornaments. The finds included many Cypriote and Mycenaean vases, goblets in glass, and Egyptian alabaster jugs. In one of the tombs was an interesting ivory casket which had on the lid a seated Mycenaean goddess with a goat on either side of her which she was feeding. In richness, the finds equal those of the royal tombs at Isopata and Zafer in Crete. Not the least interesting was the discovery of a complete library of terra cotta tablets covered with cuneiform script. They appear to be of a diplomatic character. Much of the script, however, is unknown. The tablets were found in position on their shelves.

On the slopes of Mt. Carmel in Palestine, evidence of prehistoric man has been uncovered. The finds include a sort of baton carved from the shoulderblade of a deer and a figure in the round of a young deer carved on the end of a long bone. Much material of flint was found. These figures are comparable to the carvings of the Magdalenian times. At Tel Nasbeh, north of Jerusalem, the Pacific School of Religion came upon remains of the bronze age (5000-3000 B.C.). The finds throw important light on the character of pre-Semitic

inhabitants of Palestine. The remains were discovered under the floor of a limestone cave which had been buried since the days of Amos. The place has been identified as the Mirpah sanctuary of Samuel from an inscribed seal bearing the letters MZA.

At Beth Alpha, the southern part of the synagogue was entirely laid bare. The apex of the southern wall is most interesting as having served previously as a the ark. A new section of the pavement south of the already uncovered pavement of the signs of the zodiac reveals a picture of the ark flanked by branched candlesticks, lulabrim, ethrogim, lions, etc. From the edge of the roof of the ark is suspended a lamp. Nearby are shown the steps leading up to the ark. Two more genii symbolizing the seasons of the year have been found. They are marked "The Season of Tebeth" (Winter) and "The Season of Tamuz" (Summer). The epigraphs of the synagogue may be of help in discovering the origin of the Jewish race.

At Jerash, the site of ancient Gerasa, Yale University and the British School of Archaeology have continued their work. Here they have found a circular church dating around 531 A.D., dedicated to St. Theodore. The building is like the round church of Bustra. In one apse was found a detailed map of the city of Alexandria. Adjoining the church to the north and the south are two others which make a connection with the common atrium. The southern church is dedicated to St. George. Altogether thirteen churches have been found. One is dedicated to SS. Peter and Paul.

At Shiloh, the Danes were occupied with work on the tabernacle. It was learned that a special sanctity attached to Shiloh in early Christian times. Excavations on the site of the earliest town brought to light houses of the earliest Israelite times (c. 1200 B.C.). The tabernacle still was standing at that time. Remains belonging to the Canaanite period (c. 1600 B.C.) also were found. This is the time of the Hebrew patriarchs.

In southern Palestine, Sir Flinders Petrie has identified Tell Fara with Beth-pelet of the Old Testament. Here a stone fort of the time of Vespasian has been discovered. At the south end of the town, an embankment 300 feet long and 30 feet thick protected the town from the floods which came down the gully in the rainy season. In the town itself, a palatial residence has been uncovered. It dates from Roman times. In it is a bathroom with the tub sunk in the floor. Below the Roman city was found the Greek, while the Jewish period was revealed in a building some twenty feet down in the mound. About 932 B.C. King Shishak invaded this territory and built himself a residence at Beth-pelet. Disaster seems to have swept over the place in the time of Joshua. Traces of the Hyksos rule were found on the site and evidences of connection with the Aegaeon.

At Beisan, ancient Bethshan, has been found a basalt tablet which offers the first clear proof of a common civilization in the East and the West before the fourteenth century. The tablet, which is in two parts was found at the southern end of the temple of Mekal. In the upper part is represented a dog fighting a lion; in the lower, a lion of Nergal, the god of the plague and death. The dog is a classical Mesopotamian creature. The lion suggests a parallel with the lion of Shekead, one of the primitive sculptures of Carchemish, and the art of Tel Halaf of Mesopotamia.

In the delta of the Nile on the western border

were discovered traces of an extensive neolithic settlement. The inhabitants of the site lived chiefly by agriculture and the raising of cattle. It is interesting to note that the burials were so disposed near the settlement that the bodies were faced toward the site as if they were considered as participating in the life of the community. This practice differs from that of Upper Egypt.

The Metropolitan Museum of Art continued its explorations on the site of Deir el Bahari. After searching in the quarry for further statues of Hatshepsut, digging was begun on the hillside north of the temple where shale chips pointed to a burial. In clearing out the ravine back of the temple, the excavators came upon an eighteenth dynasty tomb, which, it was found, had been opened three times in antiquity. The last entry was for the burial of Princess Entiun, the daughter of Payudjem, who died before 1000 B.C. The coffin had been left hastily at the entrance to a pit well along the corridor which the bearers had been unable to cross. Beyond this pit, the excavators found the burial chamber of Princess Mery et-Amun, who was the ranking daughter of Thothmes III. Her mummy had been rifled about 1049, in the nineteenth year of the reign of Payudjem.

On the east side of the pyramid of Cheops, the expedition of the Vienna Academy uncovered the small pyramids of the royal wives. In front of them were the graves of the children. To the west lay a large cemetery 500 meters wide in which were buried other members of the royal family and other important people. Parallel to the west side of the pyramid was a long row of mastabas separated from the pyramid by a wall. This cemetery was built in the time of Mykerinus.

At Sakkarah was recovered a colossal head of the Pharaoh Usekf, the first king of the fifth dynasty. The torso had been found last year.

Work at Tel el-Amarna has been confined to the northern suburb. Here have been laid bare plans of a complete architectural unit. It is now known that this part of the town was cut through by two main roads which ran north and south. The main thoroughfares were reserved for large estates with the small properties and craftsmen sandwiched in between. In the house were found objects connected with every sphere of life.

In the island of Cyprus has been discovered a torso of Septimius Severus. It was found near Nicosia. This year, the Swedes concentrated on the plan of the excavations on the site of the palace at Vouni. Tombs of the archaic and classical periods were also explored. It has been found that the palace was built about 500 B.C. and abandoned about 400 B.C., when it seems to have been partly destroyed by fire. The building is quite unusual as an example of secular architecture. The building covers nearly 10,000 square yards, although only the walls of the lower story are left. The upper part of the structure was of sun-dried brick and rested upon the well squared blocks of the ground story. The floors were made of a kind of concrete composed of sand, gravel, and lime.

Some idea of the size of the original structure can be obtained from the fact that the ground plan shows over one hundred rooms. In the centre of the building was a central court three sides of which were surrounded by a covered portico. A grand staircase extending over the whole width of the court led up to a reception hall about 24 by 62 feet. Its proportions are therefore about the same as those of Mycenaean palaces. To the south

of the main rooms are the kitchen quarters and a series of magazines opening on to another large court.

At the Dipylon Gate in Athens, the German Archaeological Institute conducted excavations which have produced interesting results. Sixteen feet of the debris which filled in the area between the gate and the sacred way have been removed. Here were found many jars which indicate that a granary occupied this site. Graves dating about 1000 B.C. were also discovered.

The chief object of the American excavations at Corinth was the clearing of the theatre. The central part of the cavea, as high as the eighth stairway, was freed of dirt. On one seat was found scratched "Nika, Nika, Nika" (Conquer, conquer, conquer), in another a carefully cut inscription "of a girl" implying that the latter part was in the fourth century B.C. reserved for girls. Near the surface of the area were found many archaic terra cottas which seem to be a dump of votive objects cast out in antiquity. Behind the stage a large rectangular area was discovered. It was paved with marble and was probably surrounded by a stoa.

From the sea, near Cape Artemesios at the north end of Euboea, has been recovered a bronze Poseidon or Zeus, a large amphora, a bronze head of a horse, and the figure of a child of the Hellenistic period.

At Aquileia, near the Gulf of Trieste, many house mosaic pavements were found. The draining of the lagoon near Comacino revealed a cemetery dating from the fifth to the fourth century B.C. The majority of the 460 tombs so far opened date on the fourth. At Gioiosa Ionica on the coast of Calabria, the excavation of the theatre brought to light the use of terra cotta jars as amplifiers of sound. This is the first time that this device mentioned by Vitruvius had been found. Excavations at Herculaneum were concentrated on the second street of the "Decumanus Minor." In one house was found a wooden partition perfectly preserved in a carbonized state. The iron fittings and copper nails were almost as if new. In another house were recovered fine frescoes splendidly preserved. One of them showed Venus with a bull. In still another house was found a life-sized bronze bust which seems to be that of the tutelary deity of the house.

The lowering of the lake of Ledro for certain hydroelectric works brought to light the most extensive pile-dwelling settlement in Italy. The town exposed is over 2000 square yards in area and shows over 1000 spiles of larch and chestnut. Stone implements, rough, handmade, and polished ware and vessels with and without inscriptions were discovered. Work still goes on at Lake Nemi. It has now been found that the hull of the uncovered barge was divided by bulkheads into watertight compartments. There is also evidence that there was once a superstructure something like that of a modern ocean liner. The second ship lies about 200 yards to the south of the first. The first is 197½ feet long by 60 wide, the second 233 by 80.

The chief discoveries this year at Ostia have been made in the centre of the town. In the centre of the forum facing the temple of Vulcan were found the remains of a temple to Rome and Augustus. In it was a statue of Roma Dominatrix and a statue of Victory offering the goddess a crown of laurel.

Excavations on the site of the temple of Rome

and Augustus at Pola show from inscriptions that the temple was dedicated 2-14 A.D. At Pompeii, the latest excavations have been in the Via dell' Abondanza. In the commercial quarter in the upper part of the street, two- and three-story houses have been uncovered. This is where the merchants and bankers had their homes and offices. Here also were found factories, shops, and taverns, occupying both sides of the streets.

On the side of the Alban Mountain, a well-preserved bit of Roman road was cleared. On the Via Flaminia was found an interesting rock-cut tomb with paintings in the early Christian style. In the city of Rome itself, excavations in the Largo Argentina have been vigorously carried on. Here has been found what may be a head of the goddess Bellona. The demolition of the Via Sacra has revealed the existing structure of the second century A.D. in the west bay of the Forum of Trajan.

Near Grantham in Lincolnshire, England, the hypocaust of a Roman villa was excavated. At Lydney in Gloucestershire was discovered an iron mine underlying post-Roman earthworks. The marks of the picks of the Roman miners were still to be seen. In Hampshire at North Wainborough, excavations revealed a furnace chamber and flues for heating the floors of a villa. Near Norwich, the site of Caistor Camp (the Venta Icenorum of the ninth century of Antoninus (c. 200) was perfectly revealed by aerial photographs. Excavations traced the walls of twin temples. Coins of Faustina Valens or Valentinian, a bone pin, a weaving weight, two bronze nugs, a house key, and the head of a bronze eagle were discovered.

ARCHITECTS, THE AMERICAN INSTITUTE OF The national organization of the American architectural profession, founded in 1857. Its objects are to organize and unite in fellowship the architects of the United States, to combine their efforts so as to promote the aesthetic, scientific, and practical efficiency of the profession and to make it of ever-increasing service to society, and to spread an understanding of art and service among the people. Its activities include devising methods for improving and extending architectural education, not only in the universities but in the lower schools, securing proper laws for the registration of architects in the various States, developing a service for architects which will give them for their actual problems data relative to building materials and methods obtainable from no other source, maintaining a public information service to tell the prospective builder the financial, as well as the aesthetic, service of the architect.

The institute is governed by officers and a board of directors elected by, and responsible to, the delegates from the 64 chapters assembled at the annual convention. The directors and executive committee hold quarterly meetings in various parts of the country, and the regional directors keep in active touch with the work of local chapters throughout the year. The membership in 1929 numbered more than 3000 of the 10,000 practicing architects in the United States.

The sixty-second annual convention, held April 23-25 in Washington and April 26 in New York City, was dedicated to the National Capital and Its Development. Various speakers cited the progress made by the institute in its extended efforts to effect measures to insure the future beauty and greatness of Washington along lines conceived by L'Enfant, Washington, and Jefferson. Among the

projects urged was the passage of the Cramton Bill, providing that the Treasury lend \$16,000,000, without interest, for the purchase of park lands within the District of Columbia. In addition to the foregoing, the bill authorized an appropriation of \$7,000,000 for the outer park system, for the purchase of lands along the Potomac River, for the development of the boulevards from Great Falls to Mt. Vernon and Fort Washington, for the extension of the Rock Creek Park system, and for other outlying lands which it seemed desirable to acquire before any destruction took place.

The control of private building within Washington to prevent the inharmonious development of the national capital also was advocated, the board of directors urging the passage of the Shipstead-Luce Bill for the regulation of the height and exterior design and construction of private and semi-public buildings in certain areas of the capital. Local chapters were asked to continue their efforts to arouse public opinion to the need of the proper development of Washington.

In the report of the committee on education, an extension of adult education to free members of the profession from the narrowing tendencies of their intense business activities was demanded. A warning also was issued as to the nature of many so-called courses in architecture given in trade and high schools, which were misleading and called for the drawing of a definite line between the purely vocational and the professional. In addition to the reports of the various committees, the following lectures were given: "Long-range Planning of Public Works," by William T. Foster, "Architectural Leadership from the Producer's Standpoint," by Thomas D'A Brophy, "Architecture," by Charles Evans.

The Architect in the Small Community," by Nat G. Walker, "The Architect and His Opportunity—A Layman's View," by Frederick Paul Keppel, "Street Traffic and the Office Building," by Miller McClintock, "The Plan of Washington," by Horace W. Peaslee, "Public Works," by Milton B. Medary, and "The Harmonious Development of the National Capital," by Col. Ulysses S. Grant, 3d, U. S. A. The gold medal of the institute was awarded to Milton B. Medary for distinguished achievement in architecture, the fine arts medal, to Diego Rivera for distinguished achievement in painting, and the craftsmanship medal, to Cheney Brothers for distinguished achievement in textiles. The following were made honorary corresponding members: William Symes Richardson, an American living in Rome, Raymond Unwin of London, Charles Lefevre of Paris, Alejandro Christophersen of Buenos Aires, Paul Bonatz of Stuttgart, Fritz Schumaker of Hamburg, Paul Leon of Paris, and Howard M. Robertson of London, while eight honorary members were announced.

The endowment fund capital of the institute in 1929 amounted to approximately \$75,000, the income being devoted to the maintenance of the Octagon House in Washington. The organization's property and funds totaled \$428,823, of which \$52,385 belonged to the Waid Education Fund, the income being used to defray expenses of lectures sent to various States and to preparatory schools. The institute publishes the *Octagon*, a *Journal of the American Institute of Architects*, *Handbook on Architectural Practice*, *Structural Service Book*, *The Significance of the Fine Arts*, *Standard Contract Forms*, which are

in widespread use throughout the United States, and documents on the ethics of the profession Headquarters are in the Octagon, Washington

ARCHITECTURE. UNITED STATES. Two definite trends were evident in the year's American architecture. The first, in connection with buildings of a public character, was the continuity of traditional conceptions, either classic or medieval, as the case may be, with details becoming continually freer and more imaginative. The second was the tendency in almost all buildings of a commercial or industrial type to become increasingly modernist. Domestic work was still without any ruling lines of development; modernist influences, the historical styles, local types and traditions all modify house design in varying proportions.

The first tendency is well illustrated in the Hartford County Building, Hartford, Conn., by Paul Cret and Smith & Bassett, Associated. This is distinctly Greek in feeling, delicate yet monumental, but every detail is non-archaeological and shows a distinct modern French influence. The Cook County Court House in Chicago, by E. E. Hall of Hall, Lawrence & Ratchliffe, Inc., is likewise in a classic style with modern details. More Roman than Greek, it gains monumental effect by a colonnade of great scale with statues against the attic, over the columns, modeled by Peter Toneman. The Civil Courts Building in St. Louis, designed by the Plaza Commission, which is crowned by a colonnade and a pyramidal top, has detail of a more archaeological type, but the whole composition reveals the same attempt to interpret classic traditions in a twentieth-century manner. The Caddo Parish Court House, Shreveport, La., by Edward F. Neill, is a monumental building in modernized classic, which well realizes the competition drawings. The designs for the United States Embassy at Tokyo, by H. van Buren Morgan and A. Raymond, Associated, shows the same freedom applied to the Italian Renaissance. It is an interesting group of a chancery at the street entrance, employees' residences and offices on either side behind, and at the top of a hill, closing the main axis, the ambassador's residence. It is significant and encouraging to see such an adequate and beautiful plan adopted for an embassy of the United States.

The Bok Singing Tower in Florida, by the late Milton B. Medary, with sculpture by Lee Lawrie, treats a Gothic tradition with equal freedom. Its simple upward sweep is magnificent. The belfry openings are filled with polychrome faience grilles, and the whole is capped with an openwork balustrade of conventionalized foliage and birds.

The modernist tendency in commercial buildings appears in its most bizarre forms in the Union Trust Building in Detroit, by Smith, Hinchman & Grylls. Not only are all the forms new, with a great use of stepped shapes, but also the whole blazes with color, practically all of the detail being of colored terra cotta, orange, black, white and gold for the upper portions, and green, buff, cream, orange red, and blue below. The treatment of vertical breaks gives beautiful vertical shadows. The same stepped forms that are used outside control the interior detail and the whole constitutes a building of power, interest, charm, and significance. The Chicago Daily News Building and the office building at 333 North Michigan Avenue, Chicago, both by Holabird & Root, are full of a more quiet, structural, and logical modernism. The Daily News Building is chiefly

impressive because of the effective use of terraced setbacks on the river front and the strong composition of the piers and windows above. In New York, the Fuller Building, by Walker & Gillette, has an interesting top of black and white, but the composition is absolutely cut in two where the base of black marble and glass gives way to the white brick above. The most effective of the New York modernist skyscrapers is the Lefcourt National Building, by Shreve & Lamb, which makes stunning use of setbacks and vertical breaks. The success of its white brick tower shows the desirability of pure white as a color for the smoky New York atmosphere.

Other important high buildings in New York are the Arnold Constable Building, by Ludlow & Peabody, with a graceful outline and refined Renaissance detail, and the much discussed, pretentious and over-elaborate New York Central Building by Warren & Wetmore.

Outside of New York, the Smith Young Building at San Antonio, Tex., by Atlee & Robert Ayres, is a polygonal Gothic tower, the Northern Life Tower at Seattle, Washington, by Albertson & Wilson and Paul Richardson, Associated, has well proportioned setbacks and a beautiful brick texture, and the Fidelity Philadelphia Trust Co., in Philadelphia, by Simon & Simon, is remarkable because of its lower portions, which are designed in an Italian Renaissance style of great scale and unusual power.

The race to build the highest building in the world between the Bank of the Manhattan Co., by H. Craig Severance and Yasuo Matsui, Associated, and the Chrysler Building, by William Van Allen, both in New York and both under construction at the end of 1929, after much *opera bouffe* secrecy, was won by the Chrysler Building by means of the simple expedient of substituting a framed *flèche* for the flag pole originally planned. The futility of such publicity-seeking efforts could not be better exposed, and the whole mad race to develop congestion and to erect buildings without regard for street areas and transit facilities can eventually lead only to bankruptcy or disaster—half-empty buildings of street and transit congestion unbelievable and indecent.

There were many interesting smaller commercial buildings. The Canal Street Branch of the National City Bank, New York, by Walker & Gillette, is in a simple modernist classic, as is also the American Bank & Trust Co. of Philadelphia, by William Pope Barney. The Integrity Trust Company in Philadelphia, by Paul Cret, uses metal, marble, and glass in a fresh manner. The First National Trust Company, Holmesburg, Pa., by H. H. Barnet & Barney, is simple and colonial. Grace Nicholson's Treasure House, Pasadena, Calif., by Marston, Van Pelt & Maybury, is a delightful and amusing American interpretation of southern Chinese precedent, with just the right fairyland character for an oriental shop.

In New York, the Stewart Building, by Warren & Wetmore, has a distinguished and beautiful use of simple stone work in the walls and proportions that are subtle and effective. The whole has "style," but the metal work of the main entrance is confused, involved, and entirely out of character with the rest of the building. Ralph B. Benker, in Philadelphia, designed several original and charming branch buildings for Horn & Hardart, and in Chicago the Baskin Building, by Holabird & Root, is a slim and delicate composition of great *chic*.

Among industrial buildings, the warehouses for Sears Roebuck in Milwaukee, Wis and Cambridge, Mass., by Nimmmons, Carr & Wright, stand out in their bold composition, magnificent massing, and simple, straightforward detail. The printing plant for the Los Angeles Down Town Shopping News, by Morgan, Wells & Clement, is rich, with slim vertical lines and a lavish frieze at the top, in an interesting modernist interpretation of Spanish baroque, for which this firm is famous. The Philadelphia Wholesale Drug Co Building, by Rankin & Kellogg, is utterly simple but effective in its proportions; the Plaza Sub-Station of the Union Electric Light & Power Co of St. Louis, by La Baume & Klein, has a rich street façade in a powerful early Italian Renaissance style. A new addition to the Bamberger department store in Newark, N. J., by Jarvis Hunt, has a picturesque mass.

Theatres, as usual, fall into two classes, those in which extreme lavishness of materials, often with little or no composition, is used to give an effect of gaiety, and the so-called "atmospheric variety," with all sorts of stylized forms of fairy tale character. The Pickwick Theatre of Park Ridge, Ill., by McCaughy & Zook, and the new Paramount Theatre in Brooklyn, by Rapp & Rapp, belong to the first class, the Netoco Theatre in Boston, by Eisenberg & Frier, is of the second, in a wild and amusing ancient Egyptian style, the Alhambra Theatre at Sacramento, by Starks & Flanders, uses a fantastic and delicate Spanish-Moorish style. The Convention Hall in Atlantic City, by Lockwood Greene & Co and Cook & Blount, Associated, is an enormous curved-roof structure, comprising an exhibition hall and a vast auditorium; the façade toward the board walk is decorated with an arcade.

The most remarkable church of the year is the Boston Avenue Methodist Episcopal Church, South, Tulsa, Okla. by Rush, Endicott & Rush, Bruce Goff, and Miss Adah Robinson. It is an astonishing and daring composition of forms imaginative and fresh, in which vertical lines predominate, there is an effective, slim tower and great richness of detail around the entrance. The interior is less significant. The Glencoe Temple, Glencoe, Ill., by Alfred S. Altschuler, is a simple and charming synagogue with modernist detail and a lovely use of brick surfaces.

Of the more conventional ecclesiastical buildings, the most impressive is the Church of the Heavenly Rest and the Beloved Disciple, New York, by Mayers, Murray & Philip (formerly the Goodhue Associates), an exquisite work in that rich and free Gothic, much modernized, which is a logical development from the work of Bertram G. Goodhue. Particularly effective is the use of great plain surfaces of stone contrasted with small areas of delicate tracery that solve so well the problem of the scale of a city church. The Hilton Memorial Chapel, of the Chicago Theological Seminary, by Herbert Hugh Riddle, is a small and delicately detailed, timber-ceiled building in English Perpendicular. In Chattanooga, Tenn., the Ochs Memorial Temple, by Bearden & Crutchfield and H. B. Herts, Associated, is a synagogue unusual in being a beautiful interpretation of the colonial style. Temple Emanu-El, New York, by Kohn, Butler & Stein is the largest and most lavish synagogue of the year—a beautifully composed and freshly detailed building in a modified Romanesque style, with a magnificent, polychromed, open-trussed ceiling.

The largest American hotel of the year, said to be the largest in the world, is the New Yorker, in New York, by Sugarman & Berger. It is a vast pile in gray brown brick, with an effective use of setbacks. The Hotel Lexington, New York, by Schultz & Weaver, is a picturesque mass with over elaborate detail in the Tudor manner, the Hotel Governor Clinton, New York, by Murgatroyd & Ogden, is a picturesque, towered, mass, and the Molly Pitcher Hotel at Red Bank, N. J., by N. Harris and Harris & Solin, represents the best type of conventional, rural colonial hotel. "Mir-algo," in No Man's Land, Ill. (near Chicago), is a delightfully unconventional and frivolous inn and road house, by G. F. Keck. Not meant to be serious, it is vivid, fantastic, occasionally garish, but always amusing. Although not in the United States, the Royal York Hotel in Toronto, Canada, by Ross & Macdonald and Sprout & Rolph, Associated, is a hotel of purely American type, elegant, monumentally classic, with tall, setback wings.

Clubs worthy of note are The Shawnee Club, Wilmette, Ill., by Burnham Bros., a simple building of stone and half timber, the Casino Club in Chicago, by Graziop & Raftery, especially on account of its circular hall room, with tall, slim columns, and the San Clemente Beach Club, San Clemente, Calif., by V. Westbrook. A notable example of the typical southern plantation style in stucco and tile. The new Tammany Hall Building in New York, by Thompson, Holmes & Converse, is a dignified and monumental structure in a formal colonial combination of brick and stone.

At the University of Wisconsin, Madison, Wis., a new Memorial Union Building, by Arthur Peabody, combines, in a whole both monumental and yet intimate and inviting, an enormous common room, cafeteria, several dining rooms and the Alumni Hall. The Italian Renaissance style is handled with feeling and delicacy. It was opened late in 1928. The University School for Boys, Cleveland, Ohio, by Walker & Weeks, is characteristic of a type that is becoming continually more common, the suburban country day school. The buildings are in an austere colonial style with a high, slim tower. The Brearley School, New York, by B. W. Morris, is an interesting attempt to adapt a riverside site of several levels, and a strictly urban modernist style of uncompromising rectangularity, to school uses. A more intimate solution of the city-school problem has been achieved by R. H. Dana, Jr., in the Dalton School, New York, noteworthy for its unconventional plan and the charming variety of its interiors. The Castle School, New Rochelle, N. Y., by McGill & Hamlin, is in a much modernized colonial style.

A large amount of apartment-house building all over the country, particularly in the higher-priced class, remained generally absolutely conservative, real estate operators are not experimental. The outstanding exception is the Beaux Arts Apartments, New York, by Kenneth Murchison and Raymond Hood, Godley & Founthous, Associated. This shows a strong desire to follow purely European influences, particularly those of Mendelssohn in Germany and Le Corbusier in France. It has many setbacks and a simple treatment of alternate bands of white stucco and brick and steel sash. Corner windows of steel are used effectively in the Roerich Museum and Master Apartment Building, by Corbett, Harrison & Macmurray, and Sugarman & Berger, Associated,



THE CHRYSLER BUILDING
NEW YORK CITY
WILLIAM VAN ALLEN, ARCHITECT



THE UNION TRUST BUILDING
DETROIT
SMITH, HINCHMAN & GRYLLS, ARCHITECTS

AMERICAN TOWER BUILDINGS OF 1929

with an interesting use of brick in graded colors.

Excellent domestic work was produced by Julius Gregory, Delano & Aldrich, and F. J. Forster, near New York, by H. T. Keyes, and R. F. Swanson, near Detroit, by Miller & Reeves of Columbus, Ohio, by L. Duhing, near Philadelphia; by Bogner & Billings in New England, and by Marston, Van Pelt & Maybury in southern California. Especially interesting houses are those of Charles W. Oliver, Houston, Tex., designed by the owner, in a freely interpreted Spanish style, of W. A. Knight, at Baltimore Forest, N. C., by W. W. Dodge, Jr., a picturesque composition in local stone with a conical tower, of Garrett Van Pelt in Pasadena, Calif., designed by the owner in a particularly winning, modernized Gothic, the hunting lodge of Col. H. H. Rogers, by the office of John Russell Pope, a large and meandering composition in a simple farm house colonial style, the Auchincloss house in Fairfield, Conn., by Roger H. Bullard, a dignified and formal colonial mansion, and Meridian House, Washington, D. C., by the office of John Russell Pope, in a palatial, yet restrained interpretation of the Louis XIV manner.

The most significant and encouraging event in the year's housing was the completion of the first portion of Radburn, N. J., by Clarence Stein and Henry Wright, and Robert Kohn, consulting architect. This is the most carefully thought out community plan which has yet been produced in America, for the first time, the automobile has been considered, not only as a traffic element, but as an integral part of the necessary surroundings. Paths, passing under roads, have been so arranged that it is possible to get anywhere in the development without crossing a road, and roads themselves have been minimized. The resultant increase in parked areas adds enormously to the charm of the whole. The individual houses are simple and dignified, in a modified and modernized English cottage style. Each house has its own garage.

GREAT BRITAIN The outstanding public building of the year in England was the Royal Horticultural Hall, by Easton and Robertson, significant in the frank expression of its structure, especially imposing is the interior with its great but delicately detailed parabolic, concrete arches. The stepped outline of the exterior, although perfectly expressive of the internal design, is less effective. Quite different in character is the extremely classic Nottingham Exchange Building, by T. Cecil Howitt, which is also the home of the Nottingham Council. This building shows obviously the influence of the American State Capitol type, its dignified colonnades are beautifully detailed, but the crowning dome could have been larger. The interiors are the best part of the whole, uniformly simple, dignified, and lavish.

The Northeast Coast Exhibition buildings at Newcastle-on-Tyne, by W. and T. R. Milburn, with Richardson & Gill consultants, was in a charmingly modernized, simplified classic style. The festival hall with an Ionic colonnade at the entrance and the palace of arts were particularly noteworthy. The Bournemouth Pavilion, by Home & Knight, with Sir E. Owen Williams as consulting engineer, combines a concert hall, ballroom, tea room, and restaurant into a plan of great cleverness. The Manchester Masonic Hall, by Thomas Worthington & Sons, obtains definite monumental effect in a modified classic manner.

A great deal of commercial building distin-

guished the year, especially in London. Much of it is in the usual rather complicated Renaissance, which has become almost the typical London style, such as Beaver House, by Williams & Cox, Royal Mail House, by Sir Edwin Cooper, and the River Plate House, by the Messrs. Joseph Lloyds Bank, by Sir John Burnett & Partners, and Campbell Jones, Sons & Smithers, as befits its situation near the Mansion House, interprets the same late Renaissance style in twentieth-century terms, it is strong, monumental. Somewhat similar in style, the Imperial Chemical House in London, by Sir Frank Baines and Alfred Cox, Associated, is even more successful. It avoids the dangers of complexity and incoherence, too common in London, and its tremendous street frontages allow unusual monumental magnificence. The simplicity of the wall and window treatment is beautiful, a colonnade forms a frieze at the top, and the reveals are deep enough to give the amount of shadow that such a powerful conception demands.

The central offices of the London Underground, by Adams, Holden & Pearson, form a whole as distinguished, but based on an entirely different psychology, the attempt to achieve classic dignity with forms absolutely modern. Its effect is due to the careful design of setback wings buttressing a central tower, and shows that the beauty of certain American skyscrapers is due less to brute height than to easily grasped form relationships. Even more unconventional is the Radiator Building, by Gordon Jeeves and Raymond Hood, Associated, the exterior designs of which were almost entirely produced in America in the office of Raymond Hood. The whole exterior is in polished black granite enlivened by a polychrome frieze and polychrome ornament around show windows and door of modernist type, predominantly orange and gold and largely in enameled bronze—a daring but successful experiment.

Outside of London, Arkwright House at Manchester, an office building, by Harry S. Fairhurst, has a dignified, classic front, and the new offices at Bellingham for the Imperial Chemical Industries, Ltd., and Synthetic Ammonia and Nitrates, Ltd., by L. H. Bucknell, is noteworthy for its use of brick and stone and tile roof to achieve a semirural charm in tone with its surroundings. The buildings of the Air Park at Heston, by L. Magnus Austin, use the simplest forms expressive of reinforced concrete construction in a serious attempt to solve the problem of the necessary buildings for a small airport.

Unusually charming for an industrial building is the Windmill Press for William Heinemann, Ltd., at Kingswood, Surrey, by Lord Gerald Wellesley and Trenwith Wills, which is in a delicate Georgian style, full of individuality. Its setting in carefully designed planting adds much to its effect. The Firestone Factory at Houndslow, by Wallis, Gilbert & Partners, is a more conventional factory but shows a commendable effort to make working surroundings beautiful.

Ecclesiastical architecture is well represented by the First Chubland Church in Waltham, London, by Edward Maufe, which is typical of the modern English trend toward free church design. The Seventh Church of Christ, Scientist, by Paul Phipps, like all English Christian Science churches, is dominantly an auditorium, simply designed in a free style with little precedent. St. Anselm's Church at Hayes, Middlesex, by

Hubert C. Corlette, is a modern interpretation of Gothic, and the new Memorial Chapel at Glasgow University, by John Burnett, Son & Dick, is a beautiful example of almost purely archaeological Early English style. The new chapel of Stowe School, by the late Sir Robert Lorimer, is a long narrow building of great charm, its style determined by the columns which were taken from an old Georgian garden temple on the site, and which form the entrance porch.

The most important educational work of the year is the new quadrangle at Clare College, Cambridge by Sir G. G. Scott, consisting of simple two-story buildings distinguished in their austere elegance, rather Georgian in character. Younger Hall at St. Andrews, Edinburgh, designed several years ago by the late Paul Waterhouse, was completed by his son, Michael Waterhouse. In Liverpool, a dignified building for the School of Geology, by Briggs & Thoinley, a memorial to Lady Herdman, was added to the University, and the Liverpool College completed a charming brick wing with cloisters, by Leathart, Granger & Webber. The London School of Tropical Medicine, by Rees, Morley & Horder, associated, is a square and simple building entirely in harmony with its Bloomsbury surroundings. Of secondary schools, that by G. Topham Forrest, at Brockley, retains the high standard in simple brick building of the London County Council work. The Wyggeston Grammar School for Girls at Leicester, by Symington & Prince, is characteristic of the smaller English schools. The William Booth Memorial Buildings, in Denmark Hill, London, by Gordon & Viner and Sir G. G. Scott, is an impressive group for a Salvation Army training college.

Of many theatres, the Dominion Theatre in London, by W. and T. R. Milburn, seats almost 3000 people and is lavishly decorated in French Renaissance style. Interesting moving-picture theatres are the Twickenham Cinema, by Leathart & Granger and one at Beaconsfield, by the same architects.

The most important domestic work is undoubtedly in the Larkhall Estate at Clapham, by de Boissons & Wornum, which consists of blocks of simple neo-Georgian apartments, carefully placed in garden surroundings. Noteworthy also is "Finella," an ultra modernist house in Cambridge, by Raymond McGrath, with the most lavish and imaginative interiors, and an equally unconventional house at Newbury by Thomas Tait, of Sir John Burnet & Partners.

FRANCE. The Central Market at Rheims, by E. Maigrot, has beautiful hyperbolic vaulting with skylights following the curve of the vault. A somewhat similar form distinguishes the machine shop of the Cie Fémimère at Vichy, by A. Deville. The new stadium at Boulogne, near Paris, by Remaury, Lambert, Saacke, & Bailly, is effective in its use of great concrete cantilever trusses over the grandstand. All three of these buildings reveal the artistic possibilities of concrete. The Palais de Méditerranée, at Nice, by Charles and Marcel Dalmas (the new casino built by Frank Gould), is a neo-classic work with modernist interiors, brilliantly planned and lavish to the point of ostentation. A similar spirit distinguishes the Restaurant le Berry in Paris, by Louis Grossard. The railroad station at Lens, by M. U. Cassan, is most successful in its practical requirements such as switch towers and telegraph wire standards. The rest is in a sort of pedestrian

modernism. In Algiers a war memorial by Maurice Gras and E. Monestes, with sculpture by Landowski and Bigonet, is an impressive combination of steps, flanking walls and central group. The monument to the Lafayette Escadrille, near Paris (dedicated in 1928), by A. Marcel, with sculpture by M. Renard, has a simple, triumphal arch flanked with modernized colonnades. It is elegant rather than impressive.

The most interesting of the French churches, extremely radical in design, is that at Elizabethville, by P. Tournon, with sculpture carved in the concrete by S. Bezolles. The entire façade is carved and the whole is a significant attempt to treat a form generally Gothic in shapes that express its concrete construction. The Maison Japonaise is the newest addition to the Cité Universitaire in Paris, by Pierre Sédou, and successfully attempts to reincarnate some of the Japanese spirit, particularly in its roofs. Its interiors are especially good. The Institute d'Histologie at Strassburg, by R. Dams, has charming and delicate ironwork, especially in its stairs.

The most extreme modernism seems to control the greater amount of domestic building and many of the new Paris apartment houses, such as that on the Avenue Percier, by C. Percier, in which there is an interesting large court whose walls have huge glass areas and horizontal bands broken up by boldly projecting buttresses. The Théâtre St. Georges, by L. Sullis, in Paris, shows a similar radical and austere modernism applied to a small, intimate theatre. A like spirit appears in the sanatorium at Plaine-Jean-Mont Blanc in Passy, Haute Savoie, by Abraham & Le Mène, an extraordinary rectangular group with many balconies. The opposite extreme is to be seen in the Hotel Royal Picardy at Le Touquet, by Delbrouwer & Drobecq, an incoherent attempt to achieve gaiety and picturesqueness in a pseudo Gothic style.

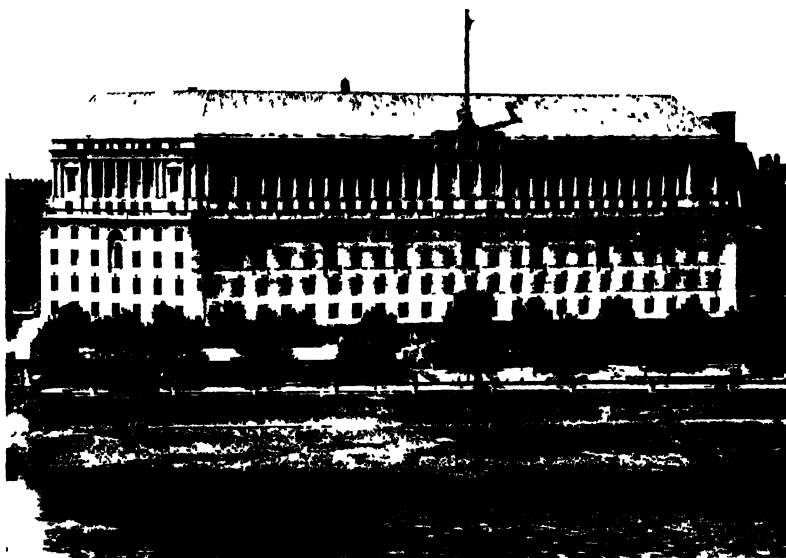
GERMANY. A new Rathaus at Rustringen, by Fritz Hoyer, reveals all its architect's skill in the use of brick. It is free, modern, severe, and handsome, with a high central tower and the ends softened by projecting, concave, curved bays. Bold patterns in the brick work give shadows to the whole and at the entrance there is a pair of extraordinary brick lions flanking semi-circular steps of blue and gold tile. The whole forms a magnificent conception of great power and beauty. Several bridges over the Alster, in Hamburg, by the city engineer, Laug, have concrete arches faced with brick, capped by varied and delightful railings of playful iron, or brick and open-work tile.

The state radio building in Munich, by H. Reher, is a simple composition of window and wall, dignified but rather stark. Commercial buildings in Berlin, almost without exception, are designed with plain surfaces of stuccoed concrete and horizontal bands of windows and with modernist applied lettering for signs, such as the German Building and Land Bank, by Hans Jessen, and the Uhlanddeck, a restaurant by Kaufmann & Wolfenstein. The Israel department store, in Berlin, by H. Straumer, within a similar exterior has a great rotunda running the full height of the building, remarkable for its lighting fixtures and its flat surface treatment in veneered woods. The office building, Sprinkenhof, in Hamburg, by Fritz Hoyer, like most of the Hamburg building, is in brick with characteristic rich patterns.



Courtesy, Spanish Tourist Information Office

IBERO AMERICAN EXPOSITION AT SEVILLE
THE AMERICAN PLAZA



IMPERIAL CHEMICAL HOUSE
LONDON
SIR FRANK BAINES AND ALFRED COX, ASSOCIATED ARCHITECTS
NOTABLE EUROPEAN ARCHITECTURE

The most impressive German industrial building of the year is the eleven-story Siemens-Schuckert factory at Siemensstadt, Berlin, by Hans Hertlein. With its setbacks, stair towers and vertical buttresses, it shows at its best the German talent for creating interesting forms for industrial buildings.

A large amount of German church building characterizes the year. Almost all of it is in the so-called modernist style, which varies from the charming and intimate municipal cemetery chapel at Hamburg, by Fritz Höger, to such fantastic designs as that for the St. Boniface Church at Hamburg, by Weber, or the bizarre Roman Catholic Church in Leipzig by T. Baurage. In general, the Roman Catholic churches are more radical than the Lutheran, but both classes frequently use square or rectangular flat-roofed naves and high, almost plain, towers, as in the St. Francis Church in Düsseldorf by Tietmann & Haase or the Lutheran Church at Altona by Emil Heynen.

Of the more radical educational work, the new portion of the Hanover technical school, by the regional architect, Kassbaum, is remarkable for its simple, flat brick façade, and the national school in Celle, by O. Haesler, for the bold patterning of grouped windows in its plain white walls, unbroken bands of glass marking the class rooms and unbroken, long, vertical windows lighting the stairs. More conventional, but still free and interesting, are the schools in Frohnau by Fritz Bayer and in Reussendorf, by E. Pietrusky.

The Mannheimer Hof in Mannheim, by F. and E. Kulzner, is a rebuilding of an older famous hotel in the contemporary fashionable modernist manner, with curved balconies at the corner to relieve the simple wall treatment. Fritz Höger's hospital at Delmenhorst is a long composition with two wings, decorated with varied and elaborate brick patterns between the rows of simple windows. Apartment buildings are almost universally simple and gain their effects solely by proportion, color, and texture. Frequently a forbidding and inhuman harshness results, but plans and groupings are always carefully considered. Important examples are a development in Düsseldorf, by W. Dunkel, which shows the increasing tendency toward high apartment buildings in Germany, and the apartment house in Hamburg by Hirsch & Deimling. The contemporary bleakness of modern housing developments in Germany is well illustrated by a new part of Berlin-Steglitz by Hans Jessen and also by the entire housing exposition at Breslau, especially the houses by Radtke & Lauterbach and those by P. Heim and A. Kempter and by H. Sabroun.

ITALY. The pavilion of the government of Rome at the Tripoli Fair, by A. Lemongelli, in its simplified Roman grandeur, is characteristic of the best trends of modern Italian architecture. There is a similar dignity in the war memorial at Spezia, by Manlio Costa, a semicircular colonnade beautifully proportioned and with simple details framing a tremendous female figure by E. Carmassi. The music building in Turin for the Verdi School of Music, by G. Ricci in association with G. Scanagatta, is in a modified Renaissance style as is also the Turin publishing house of Paravia & Co. by E. Strada and E. Chisaramella. The post and telegraph office at Sassari, by B. Cipelli, and the Casa Torri in Florence, by Zunkeller, both are examples of monumental buildings voluntar-

ily kept in close harmony with their old surroundings.

Italian churches are also largely archaeological. Especially noteworthy is the restoration and addition to the church of San Andrea in Orvieto and the new church at Lissone, by A. Conti, an impressive example of brick and stone Italian Gothic with a domed lantern at the crossing and a high campanile. The church for the European community at Allassio, by W. G. Newton & Partners, is treated more freely but is generally Romanesque in feeling. Its combination of brick and plaster is especially effective. The Italian Jewish Orphan Asylum at Rome, by D. Del Monte, combines the picturesque of its neighborhood harmoniously with clever planning for modern uses.

The most important examples of Italian domestic work are the Villa Alatri in Rome, by V. Morpurgo, a gorgeous baroque house, with extremely lavish interiors, a modernist house for Count Angelo del Bono in Rome, by L. and G. Lenzi, and a charming, informal villa at Capri, by A. de Angelis.

SPAIN. The two outstanding architectural events in Spain were the international expositions at Seville and Barcelona. That at Seville had a generally informal plan with all of the buildings designed in historical Spanish styles. The most imposing element was the front of the main building with a great quadrant arcade and two towers resembling the Giralda, by the late A. Gonzalez. A curved canal ran in front of the whole and fountains of Spanish tiles were used with delightful effect. The United States Building was by Templeton Johnson. The Barcelona Exposition, on the other hand, was more formal, more classic, and in the individual buildings more confused. The general plan, with magnificent terraced gardens and a great central axis, was laid out by Forestier of Paris, the Plaza de España at the entrance had a large fountain by J. M. Juvol and buildings by A. Florensa, P. DeAzua, and Calzada. The National Palace on the hill top, at the head of the plan, owed much to the Escorial near Madrid and a dome modeled on that of St. Peter's at Rome. It was designed by Cata & Cendova. Its interiors were confused and over elaborate. Other buildings were by Dader & Sagner. One of the most attractive features was a reproduction of a typical hillside Spanish village. Of other work of the year, the Press Building at Madrid, by P. Muguruza, a somewhat confused modern business building, the Tennis Club at San Sebastian, by L. G. Soto, a charming, low, tile-roofed building, the new Madrid Fronton for the game of *jai alai*, and the San Carlos Cinema, at Madrid, both by E. L. Lardet; and the Goya Corner, at Zaragoza, a beautiful, simple, modernist museum, by F. G. Mercadal, all deserve notice.

OTHER COUNTRIES. In Sweden, the recent concert hall in Stockholm, by I. Tengbom, shows the lavish modernized classic tendency so characteristic of Swedish work, and the Stockholm Library, by E. G. Asplund, with a high, circular central stack and reading rooms in rectangular wings, though modern in general form, has interior detail definitely Greek in influence. Two restaurants in Oslo, by Lars Backer, both in a rather simple modern style of German inspiration, and a new theatre in Oslo, by Blakstad & Dunker, with an interior also modern in feeling, are characteristic examples of recent Norwegian work. The Carls-

berg Museum in Copenhagen, by C. Harild, is distinguished by a simple and monumental façade with a large, square tower and the schoolhouse at Gentofte, by E. Thomson and N. Hanberg, shows a somewhat similar modern feeling, carefully restrained and harmonized with the earlier Danish work. The Heeringshof, a restaurant in Copenhagen, by B. Holweg-Müller, has lavish interiors, and the churches at Grundtvig and Odense, both by P. V. J. Klint, show an equal skill in the bold use of brick work. Almost all recent Scandinavian work, while free and distinctly modern in detail, is in a style much less doctrinaire and radical than the usual modern work of Germany and France, the attempt is always present to produce a harmony with traditional local forms.

Recent architecture in Belgium consists largely of suburban housing, almost all cubical and harshly modern, of which that by E. Taelmans outside of Brussels is typical. There was also completed in Brussels a Palais des Beaux Arts, by V. Horta, a low stone building neither successfully classic nor successfully modern. Much housing work of beauty and charm has been built in Switzerland. Particularly important are the groups at Mont Choisy near Geneva, by Brailard & Vial—large, simple, white apartment houses with many balconies, and at Zurich, the Birkenhof by Fröhlich, Kundig & Oetiker, apartment houses grouped around a great court in which the exterior is of Swiss baroque type. The Werkhofgebäude in Neuhausen, by Scheurer & Meyer, use charmingly high Swiss roofs and stepped gables.

Typical of the extreme modernism of Holland are the Administration Building of the Konsumvereins at Amsterdam, by Buys and Lursen, a striking combination of horizontal bands of glass, the Theosophical Society Building at Amsterdam, by Brinkman & Van der Vlugt, on a strange, segmental plan, and the Van Nelle Tobacco Factory at Rotterdam by the same firm, effective in its unbroken, horizontal windows and its interesting mass.

Soviet work still remained largely in the projected stage, but an important industrial administration building in Charkow, Ukraine, by Seifimov, Kravets & Felger, was completed. It is a starkly simple development of a complicated radiating plan with bridges connecting the wings; the mass is impressive. Interesting designs in a similarly harsh and modernist manner have been published by Golosoff, Mowtschan, Posilokoff, Markoff, and Vesnine. Finnish work in general follows the Scandinavian tendency of restrained modernism modified by traditional elements. Characteristic are a group of buildings by A. Aalto at Abo (Helsingfors), containing a restaurant, bank, and theatre, a group of offices in the same town and a cemetery chapel at Brändö, both by A. Landgren, and a tuberculosis hospital by E. Forsman.

The opening of the Cuban Capitol at Havana, by E. L. Varela, revealed a building of conventional capitol plan and exterior but with magnificent and lavish interiors, tremendous in scale and effective throughout. American influence is dominant in its plan, colonnade, and dome, but inside there is a daring use of colored materials and a gorgeousness of conception and scale all too rare in the United States. An impressive statue of Cuba, by Zanelli, in a Roman niche, closes the main vista. The Theatre Pro Arte

Musical in Havana, by Moenck & Quintano, likewise shows American influence in its monumentality, but like many Havana buildings it is incoherent above the main cornice. The interior is particularly restrained and attractive. The Hotel Dos Hermanas in Havana, by O. Contreras, shows a commendable effort to preserve the old Havana atmosphere.

In the Argentine Republic, the most beautiful and unusual building of the year was the school built for the Jockey Club in Buenos Ayres, by Sanchez, Lagos, & de la Torre. It is a long, low building with great freedom of detail beautifully restrained. In general, the remaining Argentine work is still overelaborately Renaissance and confused in composition with ostentatious detail. Exceptions are the simple Casa San Vicente, by J. A. Beraitz, in a charming, modernized Spanish Renaissance style, an apartment house, by E. M. de Azua, and a large private house by Rasmán & del Pont.

The architecture of Uruguay seems more influenced by traditional South American baroque tendencies, as in the Otero house, by J. Butler, and the apartment house, by J. C. Banzo, both in Montevideo; by contrast, the cinema theatre, by H. Bonomi, with its simple wall treatment, seems extremely modern.

ARCTIC EXPLORATION. See POLE RESEARCH.

ARCTIC GEOLOGY. See GEOLOGY.

ARGENTINA, ar-jén-tē-na. A South American republic on the eastern coast of the southern part of the continent, consisting of 14 provinces, 10 territories, and the federal district. Capital, Buenos Aires.

AREA AND POPULATION. The total area of Argentina is 1,153,119 square miles. An official estimate of the population of the Republic, as of Jan. 1, 1928, based on the census of 1914, and the birth, death, and migration records since that time, showed a total population of 10,616,814. According to the census of 1914 (the latest official count), Argentina had 7,885,237 inhabitants. The number of immigrants in 1927 was placed at 294,404 and the number of emigrants at 184,329. Normally, there are an influx and exodus of large numbers of Italian and Spanish laborers before and after the harvests.

The 5,740,000 immigrants who entered Argentina from 1857 to 1926 were mainly Latin—Inhabitants of the States of southern Europe. The Italians and Spaniards alone constituted 79.6 per cent of the total, while the immigrants from all the non-Latin countries formed scarcely 15 per cent.

Increases in the non-Latin immigration (Polish, Russian, German, Yugoslav, Czechoslovak, and Lithuanian) in recent years have occasioned an important change in the nature of immigration into the country. Non-Latin immigration formerly amounted to only 15 per cent of the total. Since the War, this proportion has increased rapidly. It was 19.6 per cent in 1922, 25.2 per cent in 1923, and 30 per cent in 1926. The proportion of foreigners in the population increased from 12 per cent in 1869 to 29.0 per cent in 1914, and then decreased to 23.7 per cent in 1925. Of the 87,020 immigrants entering Argentina in 1928, 27,803, or 32 per cent, settled in the city of Buenos Aires and 26,985, or 31 per cent, in the Province of Buenos Aires, the city and province together absorbing 63 per cent of the total. The gain by immigration for the year was 12.8 to the

thousand in the city of Buenos Aires, 9.08 in the Province of Buenos Aires, 7.05 in the Province of Santa Fé, 7.12 in the Province of Córdoba, and 11.4 in the Province of Mendoza. In the less populous provinces, the gain from immigration was insignificant.

The population of the larger cities was as follows: Buenos Aires (Jan. 1, 1928, 2,030,765); (June, 1914, 1,575,813); Rosario (Santa Fé), estimated 1927, 410,000, (1914, 222,592); Córdoba, estimated, 1928, 221,200, (1914, 134,935); La Plata, estimated, 1928, 165,813, (1914, 90,436); Santa Fé (1929), 105,000, Tucumán, 100,000; Bahía Blanca, 80,000, Mendoza, 70,000. In 1927 the Federal government established 29 towns and 12 colonies on 1,373,320 acres of public land.

EDUCATION Under the Ministry of Justice and the cabinet of the Chief Executive of the nation, the school system of the Argentine Republic is centralized. Although certain liberties tending toward autonomy are delegated, as in the case of the university, the Federal government was particularly considered the source of all good and evil in matters of education. Elementary instruction is free, secular, and compulsory for children from 6 to 14 years of age. In 1927 there were 11,419 primary schools, with an enrollment of 1,373,494 pupils. Secondary, normal, commercial, industrial, and trade schools for public instruction in 1928 totaled 206, with 45,229 pupils, 111 private secondary and normal schools had 9920 students. The five national universities, of Buenos Aires, La Plata, Córdoba, the Litoral, and Tucumán, had a total enrollment of 15,843 students. On June 13, 1929, President Irigoyen signed a decree setting aside \$2,200,000 for new primary schools and a school census.

PRODUCTION The country is agricultural, its principal resources being cereals and animal products. It is self-sufficient in the matter of food stuffs, its prosperity depending upon the surplus production and foreign marketing of these articles. Industrial development, therefore, has concentrated in the preparation of foodstuffs. Except for meat packing, flour milling, the dairy industries, sugar refining, and other industries concerned with the first stages of the working of raw materials, the manufactures are unimportant and insufficient for domestic needs. The production of manufactured goods was greatly stimulated by the World War, however, the greatest progress having been made in the dairy, tanning, footwear, wool scouring and carding, woolen textile, forest products, wine, and meat industries, and to a lesser degree in the manufacture of cotton piece goods, glass and china ware, tools and light machinery, sacking, and cement. A later incentive to national industry was Argentina's tariff policy, the avowed purpose of which is the protection of home industries using domestic raw materials. The chief obstacle to such industries is the lack of domestic fuel. Most of the coal used in Argentina came from Great Britain and the petroleum supplies, from the United States and Mexico. The industries of Argentina are centered in the Province of Buenos Aires, where capital invested in industrial and commercial establishments was estimated to exceed \$1,000,000,000 in 1929.

The area of Argentina is about 700,000,000 acres, of which about 250,000,000 acres may be used for agriculture, the same for cattle grazing, and approximately 100,000,000 acres represent

woodland. About 10,000,000 acres require irrigation. In 1927 only 10.4 per cent of the arable land was under cultivation. The 1928 acreage under cultivation increased by 2,321,800 acres over that for 1927. The estimated acreage under wheat in 1928-29 was 20,298,480, and the production, 8,457,700 metric tons, oats, 3,744,000 acres, 1,450,000 tons, linseed 7,086,720 acres, 2,952,800 tons, maize (1927-28), 11,805,600 acres, 8,000,000 tons. The area under sugar was about 237,500 acres and the production in 1928 amounted to 414,527 tons, under the vine, 280,000 acres, which produced 89,976,470 gallons of wine in 1927. Cotton was planted on 71,746 acres, which produced 73,410 tons (estimated) in 1927-28. The ginned cotton crop in 1928 amounted to 25,000 metric tons, of which 72 per cent was exported. The 1927-28 wool production was estimated at 146,098 metric tons.

The steady expansion of agriculture is indicated by the following comparative figures for exports in metric tons in 1928 and in 1910-14 (average year): wheat, 5,295,835 tons in 1928, 2,118,242 in 1910-14, maize, 6,372,181 tons and 3,193,973 tons, linseed, 1,944,402 tons and 678,880 tons, flour, 169,090 tons and 111,489 tons. Exports of oats decreased, 299,704 tons being exported in 1928, as compared with 604,362 in 1910-14. The chief obstacles to agricultural progress were droughts, locusts and other pests, lack of grain elevators in the grain belt, and the ownership of much of the land by absentee landlords, who found it easier to raise cattle and sheep. Argentina was not yet self-sufficing, in 1927, 11.1 per cent of its total imports were foodstuffs, including imports valued at \$6,363,831 from the United States.

MEATS is the principal industry. In 1928, 508,000 tons of frozen and chilled beef were exported. In 1927, 4,650,530 cattle and 5,291,234 sheep were killed and refrigerated. Flour milling ranks second, the average annual output being 7,000,000 sacks. An 81,000-ton grain elevator was under construction at Bahía Blanca in 1929.

The dairy, quebracho extract, and textile industries also were expanding rapidly, the latter being highly protected against foreign competition. Exports of quebracho extract, used by tanning industries in the United States and Europe, totaled 206,000 metric tons in 1928. Argentina imports much of the lumber and wood products used, its own large forested areas being too far from the centres of population for economical exploitation. A great variety of minerals are found but are either of low grade or inaccessible. Oil production, though small, was increasing, amounting to 9,100,000 barrels (1,459,600 tons) in 1928. In 1929 an official estimate placed the number of manufacturing establishments in the country at 61,000, their motive power at 1,000,000 horse power, their employees at 600,000, and their output at \$1,225,000,000 annually.

COMMERCE According to figures published in the *Pan-American Bulletin* for May, 1929, Argentina's foreign trade in 1928 totaled 1,930,000,000 gold pesos, as compared with 1,864,800,000 gold pesos for 1927. Exports accounted for 1,023,000,000 pesos of the 1928 total and imports for 907,000,000 pesos, giving a favorable balance of 116,000,000 pesos. The net importation of gold during the year was 86,300,000 pesos (par value of the gold peso, \$0.9648). Imports in 1927 amounted to 856,610,000, and exports to 1,008,179,000 pesos, the balance of trade being favor-

able by 151,568,566 pesos. In 1926 there was an unfavorable balance of 30,317,975 gold pesos. The countries supplying the bulk of Argentine imports were the United States, United Kingdom, Germany, Italy, France, Brazil, and Belgium, in the order named. The United Kingdom was by far the largest purchaser of Argentine products, with Germany, the United States, Belgium, France, Italy, Brazil, and the Netherlands ranking in order.

Imports from the United States were greater in 1929 than in 1928, although a recession was noted in the last quarter of the year. In 1929 the United States took approximately 10 per cent of Argentina's total exports, as compared with 5 per cent of the total before the World War. Exports in 1929 in metric tons included: Wheat, 6,689,000; corn, 5,070,000; linseed, 1,682,000; oats, 443,000; barley, 249,000; flour, 125,000; quebracho logs, 157,000; quebracho extract, 187,000; butter, 16,500; sheepskins, 13,000; wool, 136,000; cotton, 20,000; oxhides, 103,000. Also 1,000,000 quarters of frozen beef, 5,449,000 quarters of chilled beef, and 3,883,000 frozen mutton and lamb carcasses.

FINANCE The budget for 1929 provided for revenues of 733,000,000 and expenditures of 732,796,794 paper pesos. The sum of 158,000,000 pesos, appropriated for public works, was to be covered by bonds of the internal debt, and 28,644,225 pesos, allowed for subsidies and charity, was to be met by the proceeds of the national lottery. In 1928 the revenues were estimated to total 681,394,114 and expenditures 762,864,207, pesos. There being no income tax, about 76 per cent of the revenue is obtained from import duties and 10 per cent from direct taxation. Receipts of the Buenos Aires Customs House in 1928 amounted to 356,708,491 pesos, an increase of 34,320,075 pesos over the 1927 total. While partly attributable to the higher prices of exported products, the increase nevertheless reflected a decided expansion in the volume of foreign trade. The national consolidated debt on Dec 31, 1927, totaled 2,155,518,098 paper pesos, of which 1,103,820,137 pesos represented the external, and 1,051,697,961 the internal, debt. On the same date, the floating debt amounted to 448,440,376 paper pesos. Paper money in circulation on Jan 1, 1929, amounted to 1,405,875,362 pesos. According to figures compiled by the U. S. Department of Commerce, Argentine securities totaling \$597,804,000 were floated in the United States during the period 1920-28, inclusive. Of this sum, \$452,425,000 represented government issues; \$118,017,000, provincial securities, and \$27,362,000, municipal securities.

The national reserves of gold increased from \$444,000,000 at the end of 1924 to \$607,000,000 at the end of 1928 and in 1929 the National Bank of Argentina exported large amounts to New York and European financial centres for ultimate use in stabilizing the peso. From June 1 to August, 1929, gold to the value of \$30,000,000 was exported to New York.

COMMUNICATIONS Railway trackage in operation in Argentina in 1928 totaled 22,791 miles, of which 4418 miles belonged to the state and 18,373 miles to private companies. The state and private railroads in 1927 carried 149,507,178 passengers and 52,928,126 tons of freight, for which the revenues amounted to 146,840,800 gold pesos, as against 137,942,400 in 1926. A construction programme involving 390 miles of new track from

Villa del Rosario and Córdoba to the main line of the Central Argentine Railway to Tucumán and an additional 680 miles of track in the northern part of the country was announced in 1929. A new government-owned line, running a distance of 75 miles from Alta Córdoba to La Puerta, was opened early in 1929. A number of lines running out of Buenos Aires were electrifying their trackage for short distances from the capital in 1929 and extensive alterations and improvement on the great Plaza Constitución passenger terminal in Buenos Aires, commenced in 1923, were virtually completed. Several airmail and passenger routes were opened during the year. The government operates 25,763 miles of telegraph line. On Jan 1, 1929, there were 200,924 telephones in use in Argentina.

GOVERNMENT. The executive power is vested in a President elected for six years, and the legislative power in a national Congress, comprising a Senate of 30 members elected for nine years, and a Chamber of Deputies of 158 members elected for four years by the people at the ratio of one deputy for every 49,000 inhabitants (census of 1914). One-third of the Senate retires every three years and one-half of the Chamber every two years. The cabinet is appointed by and under the direction of the President, and comprises the departments of foreign affairs, finance, interior, justice, public instruction, war, marine, and public works. President Hipólito Yrigoyen was elected for the term 1928-34. The vice president and president of the Senate in 1929 was Dr. Enrique V. Martínez.

HISTORY. The history of Argentina during 1929 was marked by disturbed political conditions threatening the breakdown of constitutional government, the policy of isolation followed by the Yrigoyen administration, and evidences of a growing irritation in connection with the tariff policy of the United States. The tariff controversy was intensified by an "oil" crisis which it was feared would be made still worse by the threatened exclusion of additional Argentine farm products from United States markets. A succession of serious strikes and labor troubles partially paralyzed the economic life of the nation.

President Yrigoyen encountered serious obstacles in carrying out his policies during the first year of his second administration. He announced his programme as one of political reform, economic progress, and international good will, but little progress was apparent in any of these spheres at the end of 1929. Early in the year, the President boldly attacked graft and corruption in Argentina. He removed the highest officials of a number of provinces, instituted criminal proceedings against them, and assumed personal charge of the respective provincial governments. Criminal proceedings also were begun against 22 ex-legislators and one ex-mayor, charged with illegal acts in connection with public contracts, and the contracts were voided.

In April and again in June, the action of the Yrigoyen faction in both the Senate and National Assembly in absenting themselves from sessions forced both bodies to interrupt their deliberations for lack of a quorum. The abstentions followed attempts to seat three anti-Yrigoyen senators elected from the provinces of Mendoza and San Juan, in which the President had assumed control. The Senate on August 3 and September 23 rejected the credentials of the three senators, one of whom, Dr. Carlos Washington Lencinas, former Gover-

nor of Mendoza, was assassinated on November 10 while addressing a political meeting. In the outbreak which followed the shooting, 21 persons were wounded and three killed.

In the meantime, criticism of the Administration became more and more active, the press dwelling particularly upon the failure to pay a number of government bills, the President's failure to appoint an Ambassador to Washington, his arbitrary handling of departmental heads, his intervention in four provinces, and the prevalence of labor troubles. On November 30, the Senate adopted a resolution condemning the Government's intervention in the province of Corrientes. Strikes completely paralyzed for a time exports of wheat and other commodities from seven ports in the Province of Santa Fé. In the port of Rosario, a general strike took effect July 25. Government supporters accused labor leaders of trying to bring about a nation-wide Communist strike. The attacks on the President's policies culminated in a motion for his impeachment introduced into the Chamber of Deputies on September 25. On December 24, a dental mechanic named Gualberto Marinelli fired three shots at President Irigoyen at close range in an attempt to assassinate him as he left his residence. Irigoyen escaped harm, however, and Marinelli was killed by shots of his escort.

A long drought, ending with torrential rains which brought disaster to many small farmers of the Entre Rios wheat region, and the prevailing agricultural depression led to demands for "farm relief" similar to those put forward in the United States. On November 2, the President signed a decree authorizing the Ministry of Agriculture to renew without interest obligations for seed incurred by farmers in planting the new crop, at the same time halting legal proceedings for the collection of such debts. Establishment of a Federal Farm Board similar to that created by President Hoover in the United States was urged by *La Prensa*, a leading Buenos Aires daily.

The conclusion in November of a trade agreement between Argentina and Great Britain was generally regarded as the Administration's answer to the high tariff policy of the United States, and particularly to the effort to impose higher duties on farm produce. The agreement was negotiated by the distinguished Argentine Mission to Argentina, provided the Argentine Government with a two-year credit of 10,000,000 pesos for the purchase of construction materials for railways and public works in Great Britain. Great Britain received a similar credit in Argentina for the purchase of grain, wool, meat, and other foodstuffs. European observers saw in the agreement an effort by Argentina "to free itself financially from the United States" and to forestall the American commercial advance there. In this connection, it is of interest to note that the Argentine railroads, most of which are controlled by British capital, have adopted rules restricting membership on their boards of directors to Argentines and Englishmen. Many Argentines, particularly the agriculturalists, were opposed to retaliatory tariff measures against the United States, feeling that their country would lose rather than profit by it. However, the government's failure to send representatives to the Pan-American Arbitration Conference in Washington in January or to ratify the Kellogg-Briand Peace Pact was attributed mainly to irritations incident to the United States tariff policy and the feeling that Argentina was being

deliberately discriminated against. The Argentine press continued to assail the foreign policy of the United States with regard to the Monroe Doctrine and intervention in the Caribbean area, particularly following the outbreak in Haiti in November.

President Hoover was greeted with considerable cordiality in Buenos Aires during his pre-inauguration good-will tour of Latin America and in many Argentine quarters his utterances with regard to American policy were sympathetically received. *La Prensa*, however, following Mr. Hoover's Armistice Day address, said editorially that the policy of the United States toward Latin America was the equivalent of force, regardless of the statements of her spokesmen, and declared that the United States has neither the right nor obligation of guardianship over the small countries of the Caribbean.

Activities of the Fascisti in Argentina similar to those which aroused public attention in the United States during 1920 were rudely checked early in the year when President Irigoyen ordered Argentine ports closed to Italian shipping, a measure which caused a sudden change in the policy of the Italian government.

The position of Argentina with regard to the League of Nations remained ambiguous. The former administration accepted membership in the League, but the question of ratification was not brought before Congress and for two years Argentina, although appearing as a member of the League in official documents, had not been represented at Geneva or given the League financial support.

A boundary dispute with Bolivia of 100 years' standing was settled on April 23, when the Bolivian Congress ratified a treaty which had been signed July 9, 1925.

The explorations of two German explorers in the wilds of the Brazilian state of Mato Grosso, revealing that the great rivers of virtually the entire region east of the Andes originate there and may be readily linked by canals to form probably the greatest river chain in the world, aroused much interest in Argentina and the other South American countries, where the possibility of internal waterways was discussed.

On December 16, President Irigoyen, by presidential decree, ordered the closing of the Caja de Conversion, or Argentine gold exchange office. The action was generally criticized by bankers, who predicted that it would serve to aggravate an already serious financial and business situation. Exchange rates on the dollar rose on the following day from 106.80 Argentinean gold pesos for \$100 to 116 gold pesos for \$100, but later dropped to a more normal level. With the peso at par, the exchange rate is \$100 for 103.64 pesos. The presidential decree explained the closing of the Caja de Conversion, by stating that the irregular state of the world's exchange market "exerts a damaging influence upon our market, causing shipments of coined gold from this country without justified causes." The American export trade to Argentina was expected to suffer heavily since the unfavorable effect of the decree on the Argentine exchange would raise materially the cost of everything paid for in dollars.

ARIZONA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 334,162. The estimated population on July 1, 1928, was 474,000. The capital is Phoenix.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929:

Crop	Year	Acreage	Prod Bu	Value
Cotton	1929	228,000	158,000 *	\$17,550,000
	1928	200,000	148,000 *	17,508,000
Hay	1929	203,000	689,000 *	12,357,000
	1928	195,000	702,000 *	12,614,000
Wheat	1929	42,000	1,184,000	1,531,000
	1928	47,000	1,269,000	1,650,000
Corn	1929	41,000	1,148,000	1,492,000
	1928	39,000	1,014,000	1,268,000
Grain sorghums	1929	52,000	1,560,000	1,482,000
	1928	52,000	1,508,000	1,206,000

* Bales * Tons

MINERAL PRODUCTION. Copper increased in 1928 its predominance in the mineral production of the State. While the respective quantities of gold, silver, lead, and zinc mined in that year all fell below the corresponding quantities for 1927, that of copper surpassed not only the total of 1927 but that of the more active year 1926. There were produced in the State in 1928, 732,276,803 pounds of copper, in 1927, 682,190,547 pounds. The value of the product of 1928 exceeded that for 1927 more greatly than appeared in the respective quantities, for the copper of 1928 had an estimated average value of 14 4 cents a pound, as against 13 1 cents for that of 1927. The aggregate of the value of gold, silver, copper, lead, and zinc produced was, for 1928, \$114,300,381; for 1927, \$98,790,957. Quantities produced in the respective years were gold, 191,927 23 fine ounces in 1928 and 200,494 59 in 1927, silver, 6,791,351 fine ounces (1928) and 6,847,680 (1927), lead, 14,380,964 pounds (1928) and 19,865,961 (1927); zinc, 1,278,636 pounds (1928) and 2,268,960 (1927). The reported production of clay products for 1927 scored a sharp increase over that for the year previous and attained \$345,301, bringing it close to that of lime, the leading mineral outside the five-metal group, which attained \$390,074. For 1927 the value of all mineral products was \$100,558,556, as against \$115,047,897 for 1926. The decline of 1927, due chiefly to a fall in copper output, was approximately made up in 1928.

The value of gold, silver, copper, lead, and zinc produced by mines in Arizona in 1929 was about \$158,433,300, an increase from \$114,300,381 in 1928, according to estimates of the U S Bureau of Mines. The mines of this State not only made a general increase in the output of the five metals, but a remarkable increase in the output of copper, which made a new record for the State far in excess of the record of 1918, when the total was 764,855,874 pounds of copper. The large producers of copper responded to the increased price of the metal, especially during the first six months of the year, and made a production of copper which exceeded that of 1928 by more than 101,000,000 pounds. There was a large increase in the output of gold corresponding to the abnormal increase in the output of copper, but the decrease in gold from ore in Mohave County was pronounced. The prices of lead and zinc, slightly higher than those of 1928, did not result in a marked increase in the State totals for lead and zinc, although good increases were made at individual mines, such as the Montana property in Santa Cruz County and the Seventy-nine Mine in Gila County. Large expenditures were made in improvement: at the copper smelters, in construction work on a copper refinery at El Paso,

Tex., and in building new mills, especially at the Verde Central mine at Jerome and the Christmas Mine in Gila County. Dividends amounting to \$27,611,659 were reported in 1929 by the following mining companies Calumet & Arizona, United Verde, Inspiration, United Verde Extension, Miami, Magma, New Cornelia, and Arizona Commercial. Dividends of \$5,500,000 also were paid, it was reported, by the Phelps Dodge Corporation, which operates the Copper Queen and Morenci properties in Arizona and other mines in Mexico and New Mexico. Profits from the Ray Mine were included in dividends of \$3,937,500 reported paid by the Nevada Consolidated Copper Company, operating properties in Nevada, Arizona, and New Mexico. The gold output increased from \$3,967,488 in 1928 to about \$4,217,000 in 1929 due to the unusual activity at the leading copper mines. The silver output increased from 6,791,351 ounces in 1928 to about 7,257,000 ounces in 1929, but the value decreased from \$3,972,940 to about \$3,875,000, as the average price of silver decreased from 58 5 cents an ounce in 1928 to 53 4 cents an ounce in 1929. The output of silver from Arizona mines has gradually increased in recent years and the State ranked fourth in the production of this metal after Utah, Montana, and Idaho.

The copper output increased from 732,276,803 pounds in 1928 to about 833,525,000 pounds in 1929, and the value from \$105,447,880 to about \$149,200,000. As the average price of copper increased from 14 4 cents a pound in 1928 to 17 9 cents in 1929, mines in Arizona increased their output decidedly and the production in 1929 was the largest that has ever been recorded. The largest copper producers in 1929 were the United Verde, Copper Queen, Inspiration, New Cornelia, Nevada Consolidated (Ray Mines), Miami, United Verde Extension, Morenci, Calumet & Arizona, Magma, Old Dominion, and Shattuck Denn mines. Other mines that produced more than 1,000,000 pounds of copper each were the Christmas, Arizona Commercial, Verde Central, El Tiro-Imperial group, and De Soto properties. The lead production in Arizona increased from 14,380,964 pounds in 1928 to about 15,500,000 pounds in 1929, and the value from \$834,096 to about \$984,250. The output of zinc recovered chiefly from mines in Santa Cruz County increased from 1,278,636 pounds in 1928 to about 2,357,000 pounds in 1929, and the value from \$77,997 to about \$136,800. The increase in zinc was due to the increased shipments of zinc concentrate by the Eagle-Picher Lead Company.

TRANSPORTATION. The total number of miles of railroad line in operation on Jan 1, 1929, was 2494 47. No additional construction in 1929 was reported.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the U S Department of Commerce in 1929 and dealing with operations of 1927, there were in the State, in 1927, 300 manufacturing establishments. These employed 8967 wage earners, whose wages for the year totaled \$12,132,957. Materials and supplies used in production cost \$77,799,198. Manufactured products attained the combined value of \$117,624,434.

EDUCATION. Steps were taken, according to Superintendent of Instruction Case in the *Journal* of the National Education Association, to end with the close of the calendar year the issue of elementary teaching certificates to applicants who

had not completed at least a three-year course for the training of teachers.

CHARITIES AND CORRECTIONS The central administrative authority as to correctional and benevolent work was the Board of Directors of State Institutions. As functioning in 1929, it was composed of the Governor, the State Treasurer and one appointed member. It had jurisdiction over 5 State institutions. These, with the numbers of their respective inmates, in December, were: State Prison, 530, Asylum for the Insane, 742; Industrial School for Boys, 100, State School for Girl Juvenile Offenders, 20, Pioneers' Home, 120. The board was charged also with general supervision of a Public Employment Bureau. The Pioneers' Home was a refuge for destitute residents over 60 years of age, of at least 35 years' residence in the State; it was intended specifically for pioneers, but there was under construction in 1929 a building to harbor old and destitute miners who had worked long in the State. A new cell house at the State Prison was being built by prison labor. There was completed an addition to the Asylum, to hold 200 more patients.

POLITICAL AND OTHER EVENTS The State authorities continued throughout the year their opposition to the Federal project for damming the Colorado River at Black Canyon (the so-called Boulder Dam project). Arizona stood out persistently for a greater share in the allocation of water and power rights to accrue from the dam than had been accorded in the Federal law of 1928. The State's Colorado River Commission on January 15 authorized the filing of a suit in the United States Supreme Court with the purpose of overthrowing the Johnson-Swing Act. Likewise, the State abstained from signing the new Seven-State Colorado River Compact to enable the Government to proceed. At a conference of representatives of the States of Arizona, Nevada and California held at Santa Fe in March, the Arizonians made several proposals, one being that Los Angeles should pay \$2 for every acre-foot of water drawn from the river for domestic purposes. The conference eventually broke up without agreement. It was a further demand of Arizona that all water from the Gila River system should be exempted from deduction for future claims that Mexico might establish to water rights in the Colorado under treaty. A correspondence between Secretary of the Interior Wilbur and the Governor of Arizona led to no result. The disadvantage that delay in building the dam must cause to the interests of the Imperial Valley, by reason of prolonged flood risks, rendered the tactics of obstruction formidable.

The Grand Canyon Bridge, described as the second bridge in height in the world, was dedicated on June 14. It spans Marble Canyon, on the Colorado River in northern Arizona. Somewhat over 600 feet long and 400 feet high, it is situated some miles west of Lee's Ferry and about 130 miles north of Flagstaff. At the time of its opening, it was the only bridge across the river between Green River in northeastern Utah and Needles in southwestern Arizona. A company conducting mining operations in the Meteor Crater, near Winslow, according to an announcement made in October, located by diamond drills the expected mass of iron ore in the pit of the crater, at a depth of 1400 feet.

OFFICERS Governor, John C. Phillips; Secretary of State, I. P. Fraizer, Attorney-General, K. Berry Peterson, Treasurer, Charles R. Price,

Auditor, Ana Frohmler; Superintendent of Public Education, C. O. Case.

JUDICIARY Supreme Court Chief Justice, Alfred C. Lockwood, Associate Judges, A. G. McAlister, Henry D. Ross.

ARIZONA, UNIVERSITY OF A coeducational, State institution of higher learning in Tucson, Ariz., founded in 1885. The 1929 autumn enrollment totaled 1911; the registration for the summer session of 1929 was 229. The faculty numbered 162. The endowment fund amounted to \$20,000, and the income for the year was \$1,637,922. The university receives both Federal and State support. The library contained approximately 77,000 volumes. President, Homer LeRoy Shantz, Ph. D., Sc. D.

ARKANSAS POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,752,204. The estimated population on July 1, 1928, was 1,944,000. The capital is Little Rock.

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929:

Crop	Year	Acreage	Prod Bu	Value
Cotton	1929	3,834,000	1,490,000 *	\$124,415,000
	1928	3,681,000	1,246,000 *	118,886,000
Corn	1929	1,882,000	26,368,000	25,821,000
	1928	2,002,000	34,034,000	30,971,000
Hay	1929	754,000	752,000 *	11,415,000
	1928	758,000	784,000 *	10,984,000
Rice	1929	154,000	7,084,000	6,517,000
	1928	164,000	7,823,000	6,728,000
Oats	1929	186,000	4,886,000	2,798,000
	1928	155,000	3,410,000	2,012,000
Potatoes	1929	81,000	2,697,000	3,776,000
	1928	36,000	2,700,000	2,160,000
Sweet potatoes	1929	26,000	1,716,000	1,973,000
	1928	28,000	2,520,000	2,268,000
Sorghum syrup	1929	41,000	2,337,000 *	2,220,000
	1928	40,000	2,800,000 *	2,520,000

* Bales * Tons * Gallons

MINERAL PRODUCTION Petroleum production, though it continued to furnish the chief feature of the State's mineral industry in 1928, decreased sharply in quantity and for reasons of prevailing price declined even more in total value, as compared with 1927. There were produced, in 1928, 32,395,000 barrels of petroleum, in 1927, 40,005,000. The value of petroleum produced in 1928 was \$27,400,000 (estimated), in 1927, \$42,400,000. The natural-gas gasoline produced in 1928 was less in quantity than in 1927, but higher in value, the quantities being, respectively, 32,500,000 and 37,408,000 gallons, the values, \$2,554,000 (estimated) and \$2,281,000. The production of all natural gas (unavailable for 1928) was 30,450,000 M cubic feet, in value \$4,281,000 for 1927 and 43,566,000 M feet, \$5,817,000 for 1926. The production of coal remained active, being 1,548,834 short tons in value \$5,393,000, for 1927, and 1,660,973 tons, in value \$5,615,000, in 1926. However, in which Arkansas was the predominant producer, was mined in greater quantity than the yearly average, although the production of other States fell. The State produced in 1928, 361,236 long tons, valued at \$2,193,230, as against 303,830 tons, \$1,892,800, in 1927. Clay products, the only other mineral production in excess of a total value of \$1,000,000 a year, attained \$1,285,720 in 1927, as against \$1,544,771 in 1926. The entire mineral product of the State had, for 1927, a value of \$59,449,100, for 1926, of \$84,485,072.

TRANSPORTATION The total number of miles of railroad line in operation on Jan. 1, 1929, was 4822.20. There were built, in 1929, 29.23 miles of first, and 5.05 of second, track.

MANUFACTURES According to the Federal biennial Census of Manufactures published by the U. S. Department of Commerce in 1929 and dealing with the operations of 1927, there were in the State, in 1927, 1146 manufacturing establishments. These employed 40,032 wage-earners, whose wages totaled \$35,288,169 for the year. Materials and supplies used in production cost \$103,815,280. Manufactured products attained the combined value of \$182,750,871.

EDUCATION A prospect of placing the State equalization fund on a more productive and reliable basis was brought about by the enactment of a State net income tax law. The school population of the State in 1929 was estimated to number 620,739. There were enrolled in the public schools 479,108 pupils, of whom 440,469 were in elementary schools and 38,639 were in high schools. The expenditures for public-school education in the course of the year 1929 were current, \$11,101,551; outlay and debt service, \$4,516,179. The salaries of teachers averaged \$689.

CHARITIES AND CORRECTIONS Institutions of the State were under decentralized control, in virtue of a law of 1928 which abolished the previously existing State Board of Charities. The chief eleemosynary and correctional institutions were State Hospital for Nervous Diseases, Little Rock, with a subsidiary dairy farm, Confederate Home, at Sweet Home, Boys' Industrial School, near Pine Bluff, State Farm for Women, near Jacksonville, State Penitentiary, Little Rock, Arkansas State Training School for Girls, near Alexander, State Tuberculosis Sanatorium for Negroes, School for the Blind, School for the Deaf. The boards of the reformatory institutions had recommendatory power as to paroles, the Penitentiary Board had a special parole officer. Purchases for the institutions were contracted by a single State purchasing officer.

LEGISLATION The State Legislature held its regular biennial sixty-day session, adjourning March 14. An income-tax measure was enacted, to go into effect August 1. The estimated proceeds of the income tax were \$2,500,000 per annum. Of these proceeds one-tenth were to be employed for the rehabilitation of certain of the State institutions, one-third to create a fund for contributions on the part of the State to rural school districts in order to insure them a school term of not less than nine months, and the remainder, or somewhat over one-half, to offset a reduction in the general property tax. A comprehensive highway programme for the State also was enacted. The Legislature passed a "basic science" statute on the model of those in force in certain other States, under its provisions those intending to practice the healing arts were required to pass examination in anatomy, physiology, chemistry, bacteriology, and pathology, and to have had the equivalent of a high-school education, Christian Science practitioners and certain others were made exempt from these provisions. A back tax bill was enacted, setting the limitation of five years on tangible property and seven years on intangible property as the time limit for suits against corporations where these were asked to pay higher taxes because of alleged underassessment. A measure to legalize horse racing and, therewith, a system of parimutuel betting was

passed by the Legislature after an acrimonious contest involving charges of corruption, but the measure was vetoed by Governor Parnell after the adjournment.

POLITICAL AND OTHER EVENTS The construction of a 100-mile pipe line to transport natural gas from the Monroe field, out of the State and to Shreveport, La., was undertaken in May by the Cities Service Company. Provisions were made by Congress for opening 160,000 acres of the National Arkansas Forest, in the Ouachita Mountains, as a national park. The city of Little Rock held a referendum on April 2 on the question of permitting professional baseball on Sundays and voted heavily in the affirmative.

OFFICERS Governor, Harvey Parnell, Secretary of State, Jim B. Higgins, Treasurer, Ralph Koonce, Auditor, J. O. Humphries, Attorney-General, Hal L. Norwood, Superintendent of Public Instruction, J. P. Womack, who resigned in 1929 and was succeeded by C. M. Hirst.

JUDICIARY Supreme Court Chief Justice, Jesse C. Hitt, Associate Justices, Frank G. Smith, T. H. Humphreys, William F. Kirby, Thomas M. McWhaffey, E. L. McElaney and Carroll D. Wood, who was retired in 1929 and succeeded by Turner Butler.

ARKANSAS, UNIVERSITY OF A coeducational State institution of higher learning in Fayetteville, Ark., founded in 1871. It comprises the colleges of arts and sciences, education, engineering, agriculture (including experiment station), and schools of law, business administration, and medicine, the last named being in Little Rock. In the autumn of 1929, the enrollment was approximately 2000, and for the summer session of 1929, it was 897. The number of faculty members, including administrative officers, was 201. The productive funds amounted to \$132,000 and the income for the year 1929-30 was about \$1,200,000. The library contained approximately 92,000 volumes. President, John Clinton Futrell, LL.D.

ARMAMENT, LIMITATION OF NAVAL See NAVAL PROGRESS.

ARMENIA. The name applied, since Jan. 16, 1923, to one of the three constituent republics of the Transcaucasian Socialist Federated Soviet Republic, a member of the Union of Socialist Soviet Republics Capital, Erivan. Before the World War, Armenia sometimes indicated the Armenian territories of the former Turkish Empire and sometimes the entire region in which the dominant racial element was Armenian. In the former Turkish Empire, the Armenians constituted about 38.9 per cent of the population in the following vilayets: Erzerum, Bitlis, Khairput, Diarbekr, Sivas, and Van, being in the minority in the first five and a majority in the last named. The present number of Armenians in the Turkish Republic is unknown, a large part of the Armenian element having disappeared from Anatolia during the War and afterward as a result of massacres, deportations, and migration. The population of the former Turkish Empire known as Armenia and Kurdistan was given at 2,470,900.

ARMENIAN SOCIALIST SOVIET REPUBLIC. Armenia was proclaimed a Soviet Republic on Dec. 2, 1920. It comprises the southeast frontier region of Transcaucasia, which formerly belonged to the Russian Empire, but which in November, 1917, split off from Bolshevik Russia. The entire Transcaucasian region comprised the three main peoples, Armenians, Georgians, and Tartars, and was

at first constituted into a federal republic, which lasted only a few weeks, however, due to the diversities of race and language. It dissolved into three parts, the Armenian Republic, Georgia, and Azerbaijan, each of which declared its independence. Although the Armenian Republic was recognized by the Allies in 1920, it soon fell under the sway of the Bolsheviks and was absorbed into their federation.

During the first Transcaucasian Soviet Congress of Dec. 13, 1922, the three Soviet Republics of Armenia, Azerbaijan, and Georgia again united to form the Transcaucasian Socialist Federated Soviet Republic. A federal constitution was accepted by the Congress and published Jan. 16, 1923. The area of the Republic is 11,945 square miles and the population in 1926 numbered 876,557, 86 per cent being Armenians, 10 per cent, Turko-Tatars; and 24 per cent, Russians. According to the Soviet Union Year Book for 1929, Armenians constitute 1 per cent of the total population of Soviet Russia, or approximately 1,470,136. Armenia is an agricultural country, only 16 per cent of the population living in towns. Eriwan has 90,000 residents. The school attendance in the Republic in 1925 was given at 81,000 pupils and there are a state university and several technical trade schools.

Agriculture, which is partly carried on with the aid of irrigation, is the chief industry of the people. Among the leading products are wheat, rice, licorice root, tobacco, and cotton. The area sown in 1925 was 233,900 dessiatines, which represents the pre-war area under cultivation. The cultivation of cotton, which fell away almost to nothing after the Bolshevik Revolution, is gradually assuming its place of importance in the agricultural activities, more than 15,000 dessiatines being devoted to its culture. The mining of copper is a leading industry, 1500 persons being engaged in this pursuit. Having no seaports, the country is almost entirely cut off from the outside world, being compelled to depend for its communications on the single Transcaucasian Railway which passes through its territory from Batum to Baku. The production of the 1800 industrial productive cooperatives in the Republic in 1927-28 amounted to 2,100,000 rubles with an investment in liquid capital of 300,000 rubles, as compared with a production by 600 cooperatives of 500,000 rubles with a capital of 100,000 rubles in 1926-27. The industrial cooperatives employed 97,700 artisans and handicraft workers in 1927-28 and 93,000 in 1926-27.

ARMIES See MILITARY PROGRESS

ARTERIOSCLEROSIS AND HIGH BLOOD PRESSURE. Dr. H. Dietrich of Magdeburg discussed this subject at a session of the local medical society on March 21 (see *Munchener medizinische Wochenschrift*, August 16, p. 1398). Mankind may be divided into three groups, the first being composed of individuals who never develop high blood pressure even in the most advanced years, in the second group high blood pressure does not appear until old age, while in the third, which is of chief interest to us, it may develop in middle years and even in early life. The explanation of hypertension is found in the middle coat of the arteries, for while a certain amount of decrease in the amount of muscle is natural with advancing years, the subject of hypertension undergoes instead an overgrowth. Save in cases which develop very early in life, there is a decrease in the muscle before the over-

growth replaces it. Thus, when hypertension develops late in life, the muscle in the middle coat of the arteries has diminished notably and has been replaced by ordinary connective tissue. When hypertension develops in arteries already weakened by this change into fibrous tissue, many secondary phenomena appear—fatty and calcareous degeneration, dilatation and elongation with tortuous course, participation of the inner coat with obstructive changes, etc., so that an extreme variety of pathological and clinical pictures results.

FORCED EXPIRATION IN HIGH BLOOD PRESSURE. Dr. I. Rapaport of New York has an article on this subject in the *Journal of the American Medical Association* for April 6. He has tested deep-breathing exercises in a few of these patients with encouraging results and these have been confirmed by T. Halla of Brunn, who has independently carried out this treatment in a large number of cases over several years. The author therefore hastens to release his experience for the benefit of the profession at large. Hyperventilation has of late years been tested on a variety of patients and normal individuals and is known to be able both to cause and remove pathological states. It is not necessary for the patient to breathe deeply, for the same result can be obtained by inhalations of carbonic acid gas. It has been partly shown that the opposite condition of hypoventilation, or defective ventilation, of the lungs is common in sedentary subjects with high blood pressure, so that a theory that forced breathing should benefit these patients is well grounded. Mere lack of sufficient oxygen in the blood cannot explain hypertension, for the oxygen content of the blood is a constant under all ordinary circumstances. An explanation of the value of forced breathing is at present difficult, but we have the experimental knowledge that the act of deep breathing for a short time will cause a sharp drop in the blood pressure.

ART EXHIBITIONS. One of the most important and significant exhibitions of the year was of modern French paintings, shown in November by the new Museum of Modern Art in New York in its first exhibition. The artists represented were Cézanne, Gauguin, Van Gogh, and Seurat. The examples selected were in general excellent, and made a very impressive showing. The Museum's second exhibition was of contemporary American artists.

The number of loan exhibitions in the United States was increasingly large, excellent groups of both old and modern masters were arranged in various sections, so that the opportunity of seeing good works of art was no longer confined to a few cities. One of the finest of these was the Detroit Museum's eighth annual loan exhibition of old masters, in March, of Van Dyck, a very representative selection of the artist's work. The Detroit Institute of Art also arranged an interesting exhibition of the Romantic, Realistic, and Barbizon schools, which afforded an excellent opportunity to study the period of French painting between the classic and impressionist. The Chicago Art Institute held an exhibition of old masters of many periods and styles. Other exhibitions held by various museums were eighteenth-century French painting at Hartford, Italian Baroque with emphasis on the Venetian at the Fogg Museum, Harvard University, an exhibition of ancient American art at the Toledo Museum similar to those held in the past in

Madrid, London, and Paris, and the first of its kind held in the United States, and an unusual exhibition of modern French, also at the Toledo Museum.

The exhibitions held in galleries in New York were numerous as usual, but the quality was comparatively not as high as in former years. There were, however, such exceptions as the extremely fine exhibition of Flemish primitives, one of the largest ever shown in the United States, and the exhibition of Venetian paintings in March, which included a self-portrait of Titian with an inscription definitely fixing the date of the artist's birth. An exhibition of eighteenth-century French art, remarkable as a whole, was particularly interesting for an unusual portrait of a woman by Watteau.

Other exhibitions of note were, a collection of stained glass from the twelfth to the seventeenth centuries shown with very effective lighting, an exhibition of paintings of women and children by artists of the fifteenth to the twentieth centuries in which old and modern masters were hung side by side, a group of Italian primitives with rare trecento work, and an exhibition of prints of the fifteenth and sixteenth centuries of unusual quality. Exhibitions of single artists included: "The Classical Period of Renoir," 11 pictures by this artist, some of them his best work, the largest collection of Modigliani ever shown in America, a representative loan exhibition of Lucas Cranach, and a group of water colors by Arthur B. Davies, brought to America after the artist's death.

The Eleventh Annual Exhibition of American Decorative Art, opening in February at the Metropolitan Museum, consisted of rooms designed by architects of note. It aroused interest in the American version of modern decoration and was on view for a longer period than was at first intended. The Metropolitan also held an international exhibition of glass and rugs, the annual exhibition of the American Federation of Art. Another exhibition held in New York, which attracted wide interest was the Russian Exposition, the first comprehensive showing of modern painting and sculpture from Soviet Russia.

Other interesting exhibitions were the Americana exhibition of glass, ceramics, and furniture, a loan exhibition of Chippendale pieces, and an anniversary exhibition of Daumier at the New York Public Library.

The summer art colonies at Newport, Stockbridge, Gloucester, and Lyme held their usual exhibitions. Among the societies exhibiting during the year were the Associated Dealers in American painting, which in its third annual exhibition attempted a larger scale, showing both European and modern paintings, the Society of Independent Artists, the Salons of America, the Whitney Studio Club, the New York Water Color Club, the Boston Society of Independents, the National Association of Women Painters and Sculptors, the New Society of Artists, and the American Society of Miniature Painters.

CARNEGIE INSTITUTE PITTSBURGH The Twenty-eighth International Exhibition of Paintings opened in Pittsburgh with representative works of 14 European nations. There were 392 paintings in all, 136 of these being by American artists and 256 from abroad. The Institute continued the plan adopted several years ago of inviting fewer artists and giving the public an opportunity to see a larger showing of each artist. The pictures were

hung in a separate gallery for each nation, an arrangement which gave the observer a good idea of national tendencies. The first prize of \$1500 was again won by a European, Felice Carena of Florence, Italy, for his painting called "The Studio." The same artist also received the Lehman award of \$2000 for the best purchasable picture in the exhibition; this award provides for the purchase of the picture chosen. The second prize of \$1000 went to William J. Glackens, a well-known artist of New York, for his painting, "Bathers, Ile Adam," and the third prize of \$500, to Georges Duffrenay of France for "Still Life with Violin." The first honorable mention with \$300 was given to Edward Bruce, an American; other honorable mentions were Joseph Pollet, American, Joan Junyer of Barcelona, and Max Beckman of Frankfurt. A special prize of \$300 offered by the Garden Club of Allegheny County for the best painting of flowers or a garden was won by Paul Nash of England for "Sea Holly."

PENNSYLVANIA ACADEMY. With the one-hundred-and-twenty-fourth annual exhibition, modernism has left its mark upon the Academy of Fine Arts. During recent years, the rather infrequent contributions of the radicals had little effect on the conservative front presented to the public. In this last exhibition, however, the work of the independents formed the predominant note, and the method of hanging, more by contrast than by consanguinity, emphasized their prominence. But, in spite of this, the list of prize-winners includes many names neither surprising nor new. The awards were made as follows: The Temple Gold Medal to Robert Henri for the "Wee Woman", the Jennie Sennan Gold Medal for the best landscape to Charles Burchfield for "Lilies", the Carol Beck Gold Medal for the best portrait to Richard Lahey for "Madame du Tarte", the Lippincott Prize for the best figure piece to Leopold Seyffert for "My Family", the Widener Memorial Gold Medal for sculpture to Bruce Moore for "Black Panther", the McClees Prize for group sculpture to Hallie Davis for "Baby and Snail." The traditional place of honor was given this year to a group of three paintings, "On the Heights," "After the Rain," and "Solitude," by the late Arthur B. Davies, who died in 1928 in Florence.

NATIONAL ACADEMY, SPRING In its one-hundred-and-fourth exhibition, the National Academy of Design seemed more at home in the liberal policy which it had deliberately adopted several years previously. The prize-winning pictures include an unusual number of landscapes. The First Altman Prize was awarded to William S. Robinson, who has received awards at several exhibitions in the United States, for his painting, "Borderland." The Second Altman Prize went to W. Granville-Smith for "The Mill Pond," also a landscape. This was the third time this artist had won an award at the National Academy Exhibition. Ethel Thayer of Boston received the First Hallgarten Prize for her painting of a nude, and Arthur Hill Gilbert of California, who had won several prizes in the West, the Second Hallgarten Prize for his landscape, "Old Oak—Monterey." The Third Hallgarten Prize went to Malcolm Humphreys, a new prize-winner, for "Fishing Fleet." Ettore Case, a Venetian, was given the Thomas B. Clarke Prize for his figure composition, "Fruits of the Earth." The Ellen P. Speyer Memorial Prize for painting or sculpture of animals was awarded to Furio Pic-

cirilli for his amusing black marble figure of a seal. The Isaac N. Maynard Prize for the best portrait was won by Ernest L. Ipsen for his portrait of Mrs. George Willoughby Maynard. The Salmus Medal of Merit went to Carl Kungius for "Wilderness."

NATIONAL ACADEMY, WINTER. The judges of this exhibition departed from their custom by awarding the Second Altman Prize to the "Fossil Hunters," a decidedly modernistic painting. The other awards, however, were made with the usual conservatism. They were as follows: the First Altman Prize, for a figure or genre subject, to Henry W. Watrous of New York for "A Medieval Saint"; The Carnegie Prize to Ivan G. Olinisky for "Soire Intime," the Thomas R. Proctor Prize for the best portrait to Gertrude Fiske of Boston, the Edwin Palmer Memorial Prize to Frederick J. Waugh of Provincetown for his seascape, "Full Tide"; the Isidor Medal for the best figure composition to Edmund C. Tarbell of Boston for "Margery and Little Edmund"; the J. Francis Murphy Memorial Prize for landscape to Arthur Hill Gilbert of California; the Helen Foster Barnett Prize for the best piece of sculpture to Mitchell Fields, the Julia A. Shaw Memorial Prize for the most meritorious work by an American woman to Edith Mitchell Piellwitz.

ART INSTITUTE, CHICAGO. The forty-second annual exhibition of painting and sculpture opened with a large and representative group of works. The institute continued its attention to the young Americans, but the general tone of the exhibition was little changed. The prizes were awarded as follows: The Logan Gold Medal and Prize of \$2500 to Alexander Brook for "The Children's Lunch"; the Logan Silver Medal and \$1500 to John Storrs for his bronze sculpture, "Two Figures"; the Palmer Gold Medal and Prize of \$1000 for painting or sculpture to Evelyn van Norman for "Boy Reading"; the Logan Medal and Prize of \$1500 to Sylvia Shaw Judson for her sculpture "Little Garden"; the Norman Wait Harris Medal and Prize of \$300 to Eugene Higgins for "The Storm"; the H. V. Kohnstamm Prize of \$250 to Henry Lee McFee for "The Branch"; the Peabody Prize of \$200 to Davenport Griffin for "Deep Woods"; the Martin B. Cahn Prize for the best painting by a Chicago artist to Tunis Ponsen for "Fishing on the Siene"; the William M. R. French Gold Medal to Paul Trebilcock for "Chiarina." The following received Honorable Mention: Architectural subject, Paul Beiman for "Tearing Down"; Harry Gotlieb for the "Roundhouse"; figure subject, Lotan Welshans for "Sleep"; sculpture, Walter Zechorsch for "Work."

EUROPEAN EXHIBITIONS The most important exhibition of the year 1929, a loan exhibition of Dutch Masters, was held in London at Burlington House. The dominant figures of the collection were Rembrandt, Hals, and Vermeer, of whom many fine examples were shown, and the emphasis was in general laid upon the universally acknowledged masters rather than upon the primitives or the development of the school as a whole, the earlier phases of the art of the Low Countries having been well covered by the Flemish exhibition two years previously. This exhibition was, as far as attendance was concerned, the most successful exhibition ever held anywhere. Supplementary to this exhibition, the National Gallery placed on view about 50 Dutch paintings usu-

ally not shown. Among other noteworthy exhibitions in London were a loan collection of old English silver, one of the finest ever assembled, and a loan exhibition of English decorative and domestic arts.

The interest in various countries in studying the art of other nations and the growing opportunities for such study was very evident during the year. A large and important exhibition of modern French art was held in Brussels, an exhibition of modern Swedish art in Paris, the Kroll-Müller collection of Van Gogh, the most comprehensive collection of this artist, and a group of 100 works by Derain were shown in Berlin. The exhibition of Russian icons from the twelfth to the eighteenth centuries, shown in Berlin by the Soviet State, was another example, as was of course, the exhibition of Dutch paintings in London.

One of the most interesting European exhibitions was that arranged in Berlin by the East-Asiatic Society, the first comprehensive survey of Chinese art shown in Europe, which included a remarkable collection of archaic sacrificial bronzes. Other notable exhibitions were in Paris, 126 paintings from the collection of Paul Guillaume, many of these shown to the public for the first time, an exhibition of works pertaining to the theatre of the seventeenth and eighteenth centuries, and excellent showings of Coubet and Hubert Robert, in London, a group of drawings of old masters, and an exhibition of Maya relics at the British Museum, intended to stimulate interest in another expedition to British Honduras, in Venice a loan exhibition of seventeenth-century Venetian art gathered from many countries, and in Berlin an exhibition of Leibl.

ARTIFICIAL SILK. See RAYON

ARTILLERY. See MILITARY PROGRESS

ARTISTS. See MUSIC, PAINTING, SCULPTURE

ART MUSEUMS. The Museums of the United States during the year 1929 have continued their usual activity in adding valuable works of art to their collections and in addition showed numerous advances in broadening these collections, developing new methods, and in general increasing the opportunities of the public for enjoying art. An important event of the year in the world of museums was the opening in November of the new Museum of Modern Art in New York City. America has been gradually acquiring a keen interest in modern art, and museums could naturally not be expected to keep abreast of the times to the extent many people desired. The need of an "American Luxembourg," a purgatory from which a permanent collection could be chosen, was met by the founders of this new museum. It was established temporarily in the Heckscher Building, where two excellent exhibitions were held during the autumn.

Another important event was the opening of the Rodin Museum in Philadelphia. It was given by Julius E. Mastbaum, and is a reproduction of the Rodin Musée at Meudon, France. The building, in an attractive setting on the Parkway near Twenty-first Street, is of white limestone brought from France, and is 100 feet by 80 feet. The interior consists principally of a rectangular gallery with a skylight and mural decorations by Franklin C. Watkins. Outside the building are exhibited "The Thinker," "The Shadow," "Adam," "The Age of Bronze," "The Burghers of Calais," and "The Gates of Hell." The collection of Rodin's work is remarkably varied and

complete; it consists of 83 bronzes, 39 plaster casts, 2 bas-reliefs, 64 drawings, 177 original letters, and other documents connected with the sculptor.

The most important event at the Metropolitan Museum of Art was the bequest of the H. O. Havemeyer Collection of paintings, both modern and old masters, one of the finest in the United States. The collection, not shown to the public up to the end of the year, was to be exhibited as a whole, and a new wing was to be built to contain it. Other additions to the department of paintings were the "Madonna and Child," by Luca di Tommé, the "Judgment of Paris," by Lucas Cranach, a portrait of James Munroe, by Gilbert Stuart, and a group of Italian Baroque paintings. A very important acquisition in the classical department was a statue of Protesilaos, a Roman copy of a Greek work of about 450-440 B.C., the only extant statue of this hero. A new classical study room was opened, with both genuine examples of ancient sculpture and forgeries for purposes of comparison. Accessions in other departments include the "Descent from the Cross," by Jean Goujon, a French marble relief of the sixteenth century, a Spanish Gothic ceiling of the fifteenth century, a torso by Maillol, two valuable Chinese paintings, and a model of the city of Nuremberg as it was in 1025, presented by the Friends of German Art, as well as many interesting Egyptian objects discovered by the Museum's Expedition as a result of excavations at Dier el Bahi.

The Pennsylvania Museum announced the remarkable gift by an anonymous donor of a fund to establish a collection of Romanesque art. The principal features of this collection are the front of a Burgundian abbey-church and a Catalan cloister from the Church of Saint-Genis-des-Fontaines, an abbey in the Pyrenees. Part of the fund was set aside for the purchase of armor, sculpture, and other examples of Romanesque art. The growing interest in furniture and the decorative arts was well shown by this museum's recent acquisitions of period rooms: a Venetian Gothic room from the Soranzo Palace, a Louis XVI room from the Hotel Letellier, with fine examples of carving and decoration, a Dutch seventeenth-century room from an ancient brewery in Haarlem, a German Renaissance room, and a French Gothic room. Another important gift was 300 Chinese paintings and a superb Chinese Palace Hall in which to exhibit them. Other acquisitions include a Beauvais tapestry, an early Buddhist sculpture, an excellent study collection of more than 700 specimens of English Gothic wood carving, a Chippendale wing chair from the Reifsnnyder collection, and two important paintings by Arthur B. Davies.

The Museum of Fine Arts in Boston received a bequest from George Nixon Black of \$150,000 for the general purposes of the museum, the income from a residuary estate of \$1,000,000 and a number of paintings and other works of art. An interesting addition to this museum was a Gothic tapestry, about 1490, representing six scenes from the Passion, which formerly hung in the Chapel at Knole, the estate of the Sackville family. Other additions were an important seal from the Indus Valley, four Andhra sculptures, a good example of early Cambodian sculpture, 287 charcoal and pencil drawings by Sargent, presented by the artist's sister, a portrait of Robert Hay, by Raeburn, "Cupid at the Toilet of

Venus," and "Venus Chastising Cupid," by Etienne-Maurice Falconet.

The Detroit Institute of Arts acquired a fine Chinese scroll painting, "A Peasant Family," by Mathieu Le Nain, the "Madonna and Child," by Tiepolo, an interesting example of early Chinese bronze sculpture, a Dutch interior by Hendrik van der Burch, "The Birth of Love," attributed to Giacomo Bassano, a portrait by Moroni, a bust by Giovanni della Robbia, a bronze head by Maillol, and a portrait of a man by Van Dyck.

The Cleveland Museum made the following additions to its collections: an Assyrian relief of the time of Assurnasipal III, a fine Gothic wood carving of Christ and Saint John the Evangelist, a brocade from Lucca, Italian with Chinese influence, a painting of Minerva by Strozzi, and a life-sized statue of a Roman statesman.

The Art Institute of Chicago added a number of interesting objects, including a Tang head in dried lacquer, probably a representation of a Buddhist priest, a fifteenth-century Gothic tapestry of a bear hunt, a late Greek relief, and a painting by Segonzac.

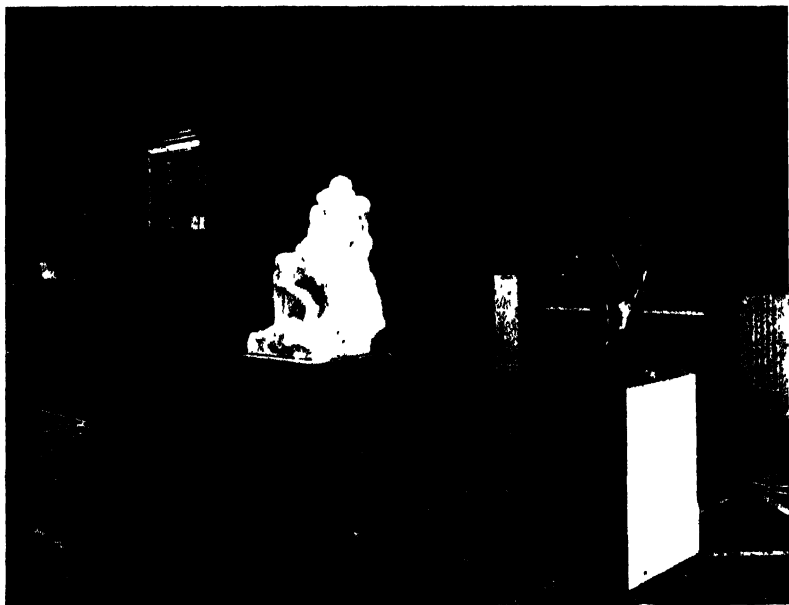
The Fogg Museum opened a new gallery of drawings and paintings with work by Degas, Matisse, and Picasso. Among the recent accessions of this museum are embroideries, etchings by Goya and Canaletto, prints by Durer and Holbein, and a 3000-year-old censer from Iraq.

The Rochester Museum received by gift a collection of Egyptian and Graeco-Roman antiquities and a Madonna and Child of the school of Donatello, a beautiful example of sculpture in bas-relief. Other new additions were a fourteenth-century Gothic Madonna of the school of the Ile-de-France, "Saint Stephen," by Domenico Feti, early seventeenth-century, a fifteenth-century illuminated manuscript, and three pieces of thirteenth-century French stained glass.

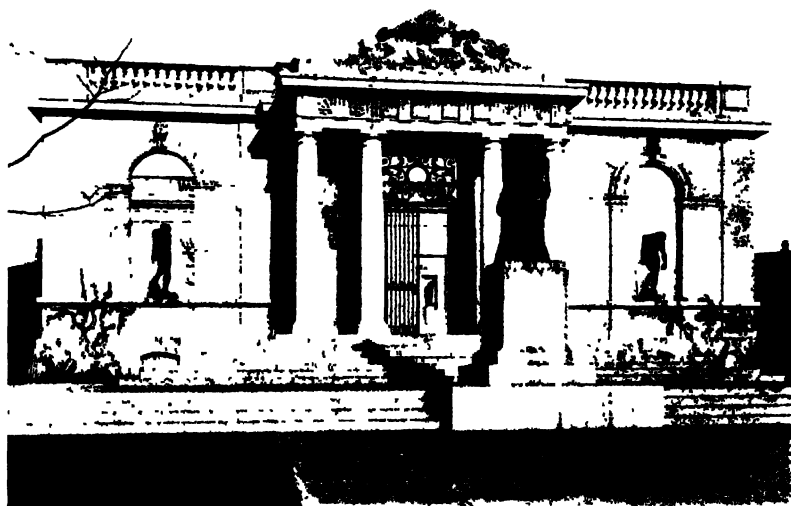
The Toledo Museum of Art acquired by purchase Claude Monet's well-known painting, "Antibes." Its most important accessions included two Gothic sculptures, the "Bull Fight," by Goya, and a portrait of Elizabeth of Valois, by Francois Clouet.

The Gallery of Living Art at New York University added to its collection of modern art "Portrait of Matisse," by Derain, "Jungle Scene," by Dufresne, "Still Life," by Roget de la Fresnaye, "Banks of the Oise," by Vlaminck, and "Still Life," "Abstract Composition," and "Portrait of the Painter," by Picasso, as well as many other important pictures.

The Museum of the City of New York received a unique collection of prints, paintings, and photographs illustrating the history of New York over a period of 300 years. The Minneapolis Institute of Arts opened a new gallery of classical art. The City Art Museum of St. Louis acquired an important painting by Pieter de Hoogh, "A Game of Skittles," and a portrait of Henry Addington by John Singleton Copley. The Carnegie Institute, Pittsburgh, opened the Daltzell Memorial Gallery of 36 paintings of Italian, English, Spanish, and German schools. The Wadsworth Atheneum and Morgan Memorial in Hartford acquired a valuable tempera panel, a head of an angel, by Fra Angelico. The Princeton University Art Museum made the following additions: a colored terracotta of the Tang dynasty, a portrait by Moroni of Brescia, a large painting of the Ming dynasty, and a fourteenth-century Castilian "Last Supper."



VIEW OF THE MAIN EXHIBITION ROOM WITH RODIN'S "KISS" IN CENTRE FOREGROUND



ENTRANCE PORTAL
RODIN MUSEUM, PHILADELPHIA

EUROPEAN MUSEUMS. Among the interesting announcements from European museums was the plan for extensive remodeling of the Luxembourg in Paris. Not the least significant part of this was that, with the removal of over a hundred pictures to the Louvre, the impressionists have taken their official place in the national museum. The Louvre's collection of modern painting also was enriched by the bequest of three fine Cézannes. It was announced in the autumn that the Wilton Diptych and the Cornaro Titian, two very important works of art, had been bought for the English nation and presented to the National Gallery. The British Museum acquired 45 Russian and Arabic manuscripts, some Scythian bronzes, two drawings by David for a portrait of Marie Antoinette, and a Viking sword found in the Thames near Windsor. The accessions of the Victoria and Albert Museum included an extremely rare Jacobean paneled room, a valuable example of French Romanesque sculpture of the second half of the twelfth century, and some stained glass from the chapel at Ashridge Park.

ART SALES. The year 1929 was remarkable for the small number of sales, and, in general, for the lack of importance and individuality in the sales held. One notable exception to this statement, however, was the sale of the collection of American furniture of Howard Reifsnnyder, a collection well known throughout the country and of undoubted authenticity. The importance of this sale, and a point that would have made it an interesting event in any season, was the fact that it set a new standard of values on American antiques. The fourth session alone realized more than has ever been spent at an auction of American furniture, and the highest price in the sale, \$44,000, paid for a highboy, was probably the highest ever brought by an American piece. Other prices were \$33,000 for an armchair, \$28,000 for a chest-on-chest, and \$8500 and \$9000 for two chairs. The furniture brought \$322,226 50, and the paintings and porcelain \$80,000. The total of the sale was \$605,449.

A sale of which a great deal was expected but which came to a disappointing conclusion was that of two pictures from the collection of Carl W. Hamilton. "Crucifixion," by Piero della Francesca and "Madonna," by Filippo Lippi. Much publicity was given to these pictures and there was wide speculation about what they would bring, the Piero della Francesca having been appraised at \$800,000, but the sale was far from being the spectacular event predicted. Bidding was slow, and the pictures were finally knocked down at \$375,000 for the Piero and \$125,000 for the Lippi. The former, however, established a record price for an early Italian picture at auction. It was the first time such a picture commanded a price comparable to those paid for English portraits. Only the famous "Pinkie" surpassed it.

A sale of considerable interest was that of the Pulitzer and Gould paintings, chiefly eighteenth-century English portraits, 55 in all, which brought a total of \$180,660. The highest price in the sale was paid for a portrait of Sheridan by Romney, \$36,000. Hoppner's portrait of Georgiana, Duchess of Bedford, went for \$11,000. Lippi's portrait of Antonio Grimani, Doge of Venice, a picture of great interest, brought \$20,000, and a portrait by Reynolds of Caroline, Duchess of Marlborough, brought \$25,000.

Other sales of interest were: The sale of the

famous collection of mediæval and renaissance art of Frederic Spitzer, in which varied examples of metalwork, ivories, enamel, armor, etc., were dispersed, with a total of \$163,946, the sale of the collection of Arthur B. Davies, interesting not only for its intrinsic value but as a painter's collection, with a total of \$77,223, and the Metropolitan Museum's sale of paintings.

European sales presented a better showing. The sale in Berlin of the remarkable collection of M. Spiridon of Paris was one of the events of the year. The 80 excellent examples of Italian painting of the trecento and quattrocento brought something like \$2,000,000. The highest price of the sale, 1,500,000 marks, was paid for three panels by Botticelli, scenes from Boccaccio, the portrait of a Florentine girl by Ghirlandajo brought 750,000 marks, the highest price for a single picture, "St. Liberialis" and "St. Lucia" by Francesco Cossa, went for 1,018,000 marks, "Madonna and Child with Angels," by a pupil of Piero della Francesca, for 520,000 marks, a self portrait by Cosimo Rosselli, 450,000 marks, and "St. Agatha," by Luini, 260,000 marks.

Another notable sale in Berlin was that of the collection of Dr. Eduard Simon, which brought a total of 2,000,000 marks. Some of the prices were: For the "Adoration of the Magi," by Giovanni da Paolo, 165,000 marks, and for "Virgin and Child," by Luca della Robbia, 160,000 marks. The Schiller collection of antique jewelry and glass sold in Berlin aroused a good deal of interest, with such unusual prices as 110,000 marks for two Phœnician crowns and a finger ring, 48,000 marks for a necklace, 19,000 marks for an ointment bottle, 14,000 marks for a millefiori bowl.

The London season opened propitiously with the sale at Christie's of Lord Brownlow's collection of old masters, 126 paintings which brought varied prices, reaching a total of about \$607,000. The liveliest competition was aroused by Van Dyck's portrait of M. Jacques Leroy, which was knocked down at \$86,870. Rembrandt's "Portrait of a Warrior," signed and dated 1651 (not from the Brownlow collection) brought \$78,000, a surprise to many, since it had not so distinguished a pedigree as the Brownlow Rembrandts. "Isaac Refusing Esau his Blessing," by Rembrandt, went for \$41,000, Romney's portrait of Lady Hamilton as Cassandra for \$42,500, and Hoppner's portrait of John and Henry Cust for \$50,000.

One of the interesting collections dispersed in London was the Ford collection of Wilson, sold, with a few Gainsboroughs, at Christie's, which reached the unexpected total of £65,188. Some of the Wilsons were "The Thames at Twickenham," 6400 guineas, "The Lake of Nemi," 3100 guineas, and "The Tiber," 1000 guineas.

A rare group of French color prints was sold at Sotheby's, "the collection of a nobleman" afterward announced to be Baron van Zuylen, which contained a remarkable series of Debucourt, unusual Boutons and Bonnets, "Les deux basiers," by Debucourt, brought £2000, a record price for this artist. The total of this sale was £29,714. Other sales in London were a group of collections of old masters and British portraits which totaled £129,300. Of Lord D'Abernon's collection, with a total of £18,707, a notable item was "The Mobcap," by Reynolds, which brought 6000 guineas. An event of considerable interest was the announcement that the Portland vase, for many years lent to the British Museum, was to be sold.

Large crowds congregated to see the sale of this famous vase, but it was later withdrawn when the bidding failed to meet the owner's reserve.

The sale in Paris of M. Emile Straus's collection of modern paintings, drawings, and sculpture attracted collectors from many parts of the world. The following were some of the works sold: "Danat," drawing by Fragonard, 500,000 francs; "Masque de Voltaire," pastel by La Tour, 245,000 francs; "Bias de Seine, près Giverny, à l'aurore," by Monet, 265,000 francs, "L'inondation," by Monet, 203,000 francs, "Still Life," by Monet, 281,000 francs; "Le Défenseur à la Barra," india-ink drawing by Daumier, 150,000 francs, pastel of a young woman, by Renoir, 60,000 francs.

One of the most interesting sales of the year was that held at Osaka, Japan, of the collection of Chinese and Japanese works of Baron Fougita, the best-known art collector in Japan. The total amount of the sale was about \$1,400,000. Some of the objects sold and their prices are as follows: Chinese landscape painting by Hsia Kuei, \$69,500; Japanese landscape painting by Mokubei, \$40,000; pottery tea jar, \$34,955; Korean tea bowl, \$24,555; water jar, \$15,000; and Sung celadon koro, \$16,950.

Other important sales of the year were The Paulme collection of French eighteenth-century drawings and pastels, with a total of \$435,600; the collection of Emil Weinberger, chiefly of works of the Renaissance, with a total of \$205,000; and Baron de Cosson's collection of armor, £10,200, the latter interesting because the owner was one of the most famous authorities on armor.

Notable single sales of the year included Portrait of Elizabeth, Duchess of Sutherland, by Romney, sold by the Duke of Sutherland to an American collector for a reputed price of more than \$250,000, the entire collection of Philippe Wiener of old masters and furniture, sold to an American dealer for \$800,000; a tapestry from Knole, the estate of the Sackville family, and one of the Sackville portraits, both destined for American collections.

ASHANTI. See GOLD COAST

ASIA. See CHINA, JAPAN, and the other articles on the subdivisions of the continent. See also the articles on ARCHÆOLOGY and EXPLORATION.

ASIR. See ARABIA

ASSUAN OR ASWAN DAM. See DAMS

ASTRONOMY. It has long been suspected that the displacements of the lines in the spectra of spiral nebulae are not due entirely to motion in the line of sight; for these displacements are almost invariably toward the red, and would require extraordinarily high velocities if they were produced by the Doppler effect. After the enormous distances at which the majority of the spirals are located became known, it appeared probable that part of the displacement is an effect of distance, and a statistical study of the observations which have now been accumulated has shown that the amount of the shift is indeed correlated with distance. Nebulae which are known to be the more remote give the larger shifts; the farther away a nebula, the faster it seems to be receding from the observer.

An empirical relation between distance and line-displacement has been deduced by Hubble from the known approximate distances of twenty-four extragalactic nebulae; for every million light years of distance, the apparent velocity of re-

cession increases by nearly 100 miles per second. According to this relation, the displacement in the case of N. G. C. 7619 (which corresponds to a recession of 2400 miles per second when corrected for solar motion relative to the spirals) indicates a distance of approximately 25 million light years, in good agreement with the estimate from diameter and brightness. It thus appears possible to estimate roughly the distance of a remote object from the apparent Doppler shift; Hubble estimates the Virgo cluster to be 6,500,000 light years distant, though by other methods Shapley has obtained 10,000,000. Some of the faint nebulae in Coma Berenices, recently observed by Humason with the 100-inch reflector, probably lie 50,000,000 light years away.

The cause of the undoubted and marked increase in apparent radial velocity with distance is uncertain. The Theory of Relativity indicates that such an effect should exist, but in its present form this theory does not afford an altogether satisfactory explanation of the known facts.

See *Proc Nat Acad Sci*, 15, 167-173, 1920, *Astrophys Jour*, 60, 245-274, 1920.

EXTRAGALACTIC UNIVERSES. The extragalactic nebulae, or "island universes," of which hundreds of thousands exist in the oceans of space, have been found to be organized into great systems—clustered into galaxies of galaxies. A region in Virgo and Coma Berenices, especially rich in nebulae of the type that Hubble's researches had marked out as external to our own galaxy, has been found by Shapley and his colleagues to contain several such clusters of universes. The nearest of the Coma-Virgo groups consists of between 200 and 300 members and is estimated by Shapley to be 10,000,000 light years distant and to extend through 2,000,000 light years of space. The individual systems in the organization have diameters of from 5000 to 20,000 light years. Statistical relations between apparent size and brightness, established with the aid of nebulae of known distances, are especially applicable when nebulae are thus grouped into clusters; in this way, Hubble has estimated the distance of a group of 800 galaxies in Coma Berenices to be 50,000,000 light years.

Our own galaxy appears to have a diameter from ten to twenty times as great as that of any of the others with which we are acquainted, with the exception of the Andromeda nebula which is about one-fifth the size of our system. The Andromeda spiral, some of the brightest of the other neighboring spirals, the Magellanic Clouds, and our own galaxy, may together form a local cluster somewhat similar to the other groups which we observe in the northern sky.

TRANSPARENCY OF SPACE. The existence of remote blue stars, and of negative color indices in globular clusters and distant nebulae, show that no appreciable selective scattering or absorption of light (like that which takes place in our atmosphere) occurs in interstellar space, except of course in certain regions where obscuring nebulosities are known to lie. If, in addition, scattering or absorption independent of the color is also negligible, so that space is completely transparent, then the angular diameters of objects of the same size should vary with their apparent magnitudes according to a known mathematical law. The theoretical relation between angular diameter and apparent magnitude is approximately satisfied in the case of globular clusters, which indicates that the nearer re-

gions of space are effectively transparent, although the clusters are not very satisfactory objects for a test, because the observational measurements are affected by a number of sources of uncertainty. A much more conclusive test is possible on the extragalactic nebulae, the uncertainties attaching to individual nebulae are largely eliminated by using all the members of a large cluster.

A study by Shapley of the 2775 nebula in the Coma-Virgo clouds has shown that space in this direction is effectively transparent through at least 100 million light years, and this is not inconsistent with what is known of the distribution of meteors and other interstellar matter. On the average, faint nebulae which send 1 per cent as much light as those of the brighter groups have an apparent diameter 10 per cent as great, which is what we should expect if space is transparent and if the nebulae average up to the same size; if space were hazy, more distant nebulae would look fainter but no smaller.

The interstellar material responsible for the fixed lines in stellar spectra is estimated by O. Struve and Gerasimović to have a density of about 10^{-26} .

COSMOGONY A collision between the sun and a passing star has often been suggested as the origin of the solar system, but in recent years tidal disruption due to a close approach has been more generally adopted as the probable origin. Jeffreys has shown, however, that on the basis of the tidal theory there is difficulty in accounting for the observed rates of rotation of the planets and for the diameters of the satellites, and he has suggested for the origin of the system a glancing collision.

As the two stars, each in a fluid condition, slid over one another, a layer of matter of about $1/500$ the mass of the sun would be swept off the outside and would form an elongated ribbon stretching between the two bodies. This filament would be unstable, and would break up into fragments in a few hours. The whole process of ejection would occupy about an hour, the ejected masses of gas would undergo rapid adiabatic expansion, and quickly liquefy. The planetary nuclei would gather up the other matter, and liquid planets and satellites would be formed, the nucleus of the earth probably became liquid in about a day, that of Jupiter in a week. The changes after liquefaction would be much slower. See *Mon. Not. Roy. Ast. Soc.*, 89, 636-641, 731-738, 1929.

ASTROPHYSICS The physical theory of stellar spectra and stellar atmospheres, as constructed on the basis of the pioneer work of Saha, has been greatly extended, generalized, and improved in recent years, particularly through the investigations of E. A. Milne, and many of the observed details of celestial spectra, including some of those used in the empirical determination of parallaxes, are rapidly receiving satisfactory theoretical explanations. The recent developments in the atomic theory of spectra are leading to an understanding of the processes by which spectral lines are produced in stellar atmospheres sufficient to form a basis for a realization of the long-standing hope that quantitative spectrum analysis of stellar atmospheres might become possible. See *Phil. Trans. Roy. Soc. Lond.*, 228, 421-461, 1929.

The extranuclear electrons in an atom of any given chemical element are bound to the atom

with differing degrees of firmness, and they may happen to be arranged in any one of various different configurations, each of which corresponds to a certain state of energy of the atom. Spectrum lines are emitted or absorbed when an atom changes from one energy state or "level" to another, the rules governing such transitions, and principles by which the appearance of the resulting spectra may be determined, are now well known although their theoretical explanations are not in all cases clear. Line spectra no longer present a hopeless maze to the physicist, the structure of even the most complex spectra is rapidly being deciphered, and the lines sorted out and classified into regular series. With the aid of the theory of the production and relative intensities of the various arc and spark lines under different conditions of excitation and ionization, we can interpret the details of celestial spectra and understand the significance of the presence or absence of recognizable lines in the case of each of the elements, and the physical theory is a valuable guide in attempts to identify additional lines. Both line-contours and line-intensities may be used to determine the actual number of atoms of any given element in a specified state of excitation or ionization above various levels in the solar atmosphere.

The solar spectrum has been photographically mapped to wave length 11,630 Å. Plates stained with neocyanine were used in the infra-red. There are 21,835 recorded lines, of which 3288 have been identified as due to iron, 1069 to titanium, 1027 to chromium, 783 to cobalt, 628 to nickel, and 610 to vanadium, altogether, nearly 13,000 have been identified. The spectra of Mn, Re, Po, Ac, Pa, Rn, Il, Th, Ho, Tu, and Lu have not yet been sufficiently studied in the laboratory to permit any investigation of the presence of these elements in the sun. Of the remaining 79 known elements, 49 have been found in the sun with certainty, 9 are doubtful, and 21 have not been found, 18 have both arc and spark lines in the solar spectrum, 22 show arc lines only, 7 show spark lines only, while boron and nitrogen show primarily in the band spectra of compounds.

The principal factor unfavorable to the appearance of a spectral line is a high excitation potential. The elements which fail to appear in the solar spectrum fall into two groups: (1) Those with atomic numbers up to 54, together with gold and mercury, the excitation potentials of which are so high that there is little or no chance of lines appearing unless the substances are present in extreme abundance, and also cesium, of which the first ionization potential is so low that no neutral atoms remain even above sun spots, while the second is so high that observable lines would require prohibitive excitation, (2) heavy metals, the absence of whose lines can be explained only by concluding that these elements are present in the reversing layer in very small quantities, if at all.

It has long been recognized that the elements which show very strong lines must be particularly abundant in the solar atmosphere. The line-intensity is proportional to the square root of the number of atoms in the state of excitation necessary to produce that line. The lines decrease gradually in blackness from the centre outward, fading into the continuous spectrum, microphotometric measurements of the gradation in intensity permit the calculation of the number of

atoms at work producing the line, Unsöld thus finds, e.g., that 2300×10^{16} atoms are at work above each square centimeter of the solar surface in the production of the H and K lines of calcium, only 3.4×10^{14} neutral calcium atoms are present. For weaker lines, the theory of multiplets, as used by Russell, Adams, and Moore in connection with a calibration of Rowland's conventional scale of intensities, provides a quicker method of calculation.

Russell's calculations show that the six metals, Na, Mg, Si, K, Ca, and Fe, contribute 95 per cent of the whole mass of the sun's atmosphere, the total number of metallic atoms above a square centimeter is 8×10^{20} , of which 80 per cent are ionized. The elements of even atomic number average ten times as abundant as those of odd atomic number. There is no evidence that the heaviest elements sink below the photosphere. Russell estimates the solar atmosphere to consist of 60 parts by volume of hydrogen, two parts of helium, two of oxygen, one of metallic vapors, and 0.8 of free electrons. The almost incredible abundance of hydrogen helps to explain a number of previously puzzling astrophysical facts. The temperature of the reversing layer is estimated to be 5600°, and the pressure at its base is 0.005 atmosphere. See *Astrophys Jour* 70, 11-82, 160-174, 1929.

An analysis of the structure of the atmospheric oxygen absorption bands in the solar spectrum has led to one of the most important discoveries of recent years, viz., that the molecule of oxygen exists in three different forms, involving isotopes with atomic weights 16, 17, and 18. The discovery of this important fact of chemistry came about through the application of modern theoretical physics to the interpretation of astronomical observations at Mount Wilson, and is an excellent illustration of the intimate relations now existing between physics, chemistry, and astronomy.

Russell and Bowen have concluded that Freeman's supposed identification of coronium with argon is without foundation. Observations of the rate of cooling during an eclipse indicate the lunar surface to be composed of porous material such as pumice or volcanic ash.

STARS. A recent analysis by J. Schilt of the great mass of data now available pertaining to proper motions and radial motions has confirmed the real existence of two great star streams, as against the preferential motions of Schwarzschild's ellipsoidal theory. The stars in general, to the tenth visual magnitude, appear to be divided into two streams of which the points of convergence are in Orion and Canis Major, these however, do not coincide with the streams of Kapteyn's theory.

By means of an improved radiometer, the vanes of which are cut from house fly wings and the entire suspension of which weighs only 3/100,000 ounce, Abbot has obtained, with the 100-inch reflector, the energy spectra of stars as faint as the 3.8 magnitude.

The theory of the mechanical equilibrium of stellar atmospheres has been extended by Rosseland and McCrea to include turbulence. In the presence of the virtual viscosity due to turbulence, radiative viscosity ceases to have any important effects.

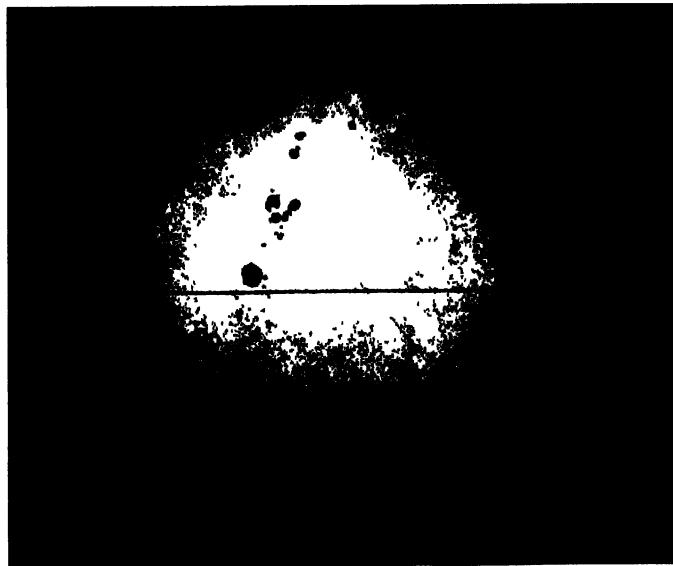
COMETS AND METEORS. Up to the end of 1929, about 900 comets had been observed, including the different returns of the periodic ones; it has

been estimated, however, that the number of comets within the orbit of Neptune at any one time is probably about 8000, while the total number having their perihelia within the same limit must amount to millions. The majority of those which have been observed have orbits that do not differ sensibly from a parabola, but the probability of a comet being seen depends not only on its intrinsic brightness but also on its movement, and orbits with a large major semi-axis must necessarily be almost parabolas in order that the comet may be observed at all. As the precision and the duration of the observations increase, the percentage of parabolic orbits steadily diminishes, but with one or two possible exceptions, none of the comets yet observed has approached the sun in a hyperbolic orbit, though in some cases planetary perturbations have afterward changed the orbit to a hyperbola.

In spite of the fact that all comets probably move in ellipses, and do not come from interstellar space, there are serious difficulties in regarding them as permanent members of the solar system. One of the best-determined orbits—that of 1914 V Delavan, under observation for 629 days—had a major axis of 170,000 astronomical units, and a period of 24 million years, comets with such orbits would be affected by perturbations due to the nearer stars, though it has been shown that they would not be lost to our system. The primeval matter of comets must have extended well out toward the stars, furthermore, hyperbolic comets may once have existed, but would now have disappeared into space. While comets with periods less than 1000 years have their perihelia concentrated near that of Jupiter and their fundamental plane near the plane of the ecliptic, the longer period comets have their fundamental plane in the plane of the Milky Way and the disposition of their orbits is related to the vertex of stellar motions. An extrasolar origin and a participation in stellar drifts are thus indicated for the long-period comets, the short-period ones have been more thoroughly assimilated into the solar system, and have lost their original characteristics—there is evidence that they sometimes ultimately become minor planets. Furthermore, comets are unstable bodies, and are continuously disintegrating and dissipating, there is evidence that their probable age is not over a million years, a very small fraction of the age of the solar system. Yet there is no influx of fresh comets from the depths of the universe to keep up the supply.

Bobrovnikoff has therefore suggested the hypothesis that comets were acquired by the solar system about a million years ago while the system was passing through a region of space (probably in the vicinity of Orion) filled with meteoric material, they are now gradually disappearing. This hypothesis explains the absence of meteoric material from the geologic strata; and it is supported by the fact that there is a definite relation between the distribution of brightness among the various periodic comets and their orbital elements. See *Jack Obs Bull*, No 408, 1929.

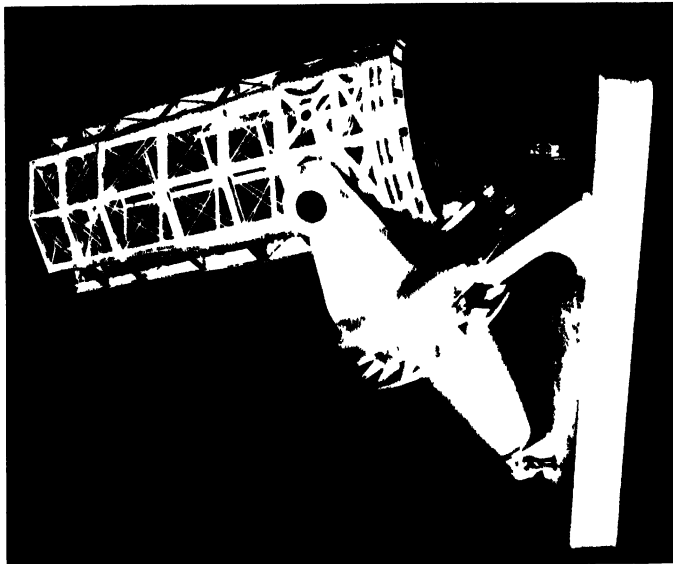
About 100 of the comets have been observed spectroscopically. The spectra are those to be expected if the cometary head be composed of meteorites, nine lines, all of which appear only at small heliocentric distances, remain unidentified. See *Jour Roy Ast Soc Can*, 23, 55-89, 1929.



Science Service Photo

SUN SPOTS

PHOTOGRAPH MADE ON NOV. 30, 1929, BY PROF. G. H. PETERSON AT THE U. S. NAVAL OBSERVATORY, WASHINGTON, AND SHOWN IN AN ITALIAN LAMPHOLDER ON THE SPOT. THE SPOTS HAVE A DIAMETER OF FROM 100 TO 1,000 MILES. IN DIAPHRAGM WHEN THE PHOTOGRAPH WAS MADE THE LONG ROW OF SPOTS COVERED ABOUT 1,000,000 MILES ON THE SUN'S SURFACE.



Science Service Photo

200 INCH TELESCOPE MODEL

PHOTOGRAPH OF TENTATIVE MODEL OF 200 INCH TELESCOPE UNDER CONSTRUCTION FOR THE CALIFORNIA INSTITUTE OF TECHNOLOGY. THE MODEL WAS EXHIBITED BY THE CALIFORNIA INSTITUTE OF TECHNOLOGY AT ITS MEETING FOR THE NATIONAL ACADEMY OF SCIENCES AT ITS MEETING IN WASHINGTON IN NOVEMBER 1929. THE FIGURES IN THE FOREGROUND INDICATE THE LAMENSE SIZE OF THE TELESCOPE AND ITS MOUNTING.

MISCELLANEOUS Plans for the projected 200-inch reflecting telescope were rapidly being completed during the year. They contemplated a tube 60 feet long and over 20 feet in diameter. The total weight of the instrument will be 450 tons, and that of the moving parts, 200 tons, the mirror, consisting of a layer of clear fused quartz on a base of melted quartz sand, will be 3 feet thick and will weigh nearly 30 tons. When pointed near the zenith, the whole instrument will have a height of 85 feet, about that of a seven- or eight-story office building.

The building and mounting for the 61-inch reflector of the Perkins Observatory of Ohio Wesleyan University were completed, the mirror, cast at the U. S. Bureau of Standards, was being figured. A 60-inch mirror for the Harvard Observatory station at Bloemfontein, South Africa, was completed. South Africa is rapidly becoming one of the world's greatest astronomical centres, six large observatories were located there by 1929, and three more were being planned.

A 50-foot interferometer has been completed at Mount Wilson, after nearly eight years in construction. A beam 50 feet long carries a flat mirror at each end, these mirrors reflect light from a star to the centre of the beam, where two additional mirrors reflect the light to a concave mirror that brings the rays to a focus. The two rays produce interference fringes, by sliding the mirrors along the beam until the fringes just disappear and then measuring their distance apart, the angular diameter of the star can be calculated, and from this the diameter in miles can be found if the distance of the star is known.

The first of the famous Zeiss planetariums to come to America has been presented to the city of Chicago by Max Adler, this instrument, by projecting the stars and the bodies of the solar system on the interior of a dome, portrays, in an accurate and inspiring way, the heavens and all the phenomena arising from the motions of the celestial bodies.

ASTRONOMICAL PHENOMENA The total solar eclipse of May 9 in the East Indies was successfully observed by several of the expeditions sent out, the totality lasted over five minutes at some places. There were four comets discovered during 1929, besides one unconfirmed object, the first was possibly a return of 1804 Denning Comet 1928 III proved to be identical with 1818 I Pons and 1873 VII Coggia Winnecke. The peak of the sun-spot cycle was apparently reached with an extensive display of gigantic spots in November.

NECROLOGY Garrett P. Serviss, May 24, Cornelius Easton, June 3, Henri Andoyer, June 12, Worcester Reed Warner, cofounder of Warner & Swasey Co., June 25, Walter Geoffrey Duffield, August 3, Frank E. Baxandall, October 30; Ralph H. Curtiss, December 25. These are discussed under their own names or in the **NECROLOGY**.

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ASTROPHYSICS. See **ASTRONOMY**.

ATHENS. See **ARCHAEOLOGY**.

ATHLETICS, TRACK AND FIELD Although the year following an Olympic meet is usually without any thrilling incidents in track and field events, the year 1929 was different and provided several performances which again showed the United States supremacy. It was a year of sprinters despite America's failure to accomplish anything of note in the sprint events of the Olympic games. Half a dozen speed kings touched 9½ seconds for the 100-yard dash, while George Simpson of Ohio State University was timed for the distance in 9½ seconds. His record was made with the use of starting blocks, however, as was his mark of 20½ for the furlong. Other outstanding sprinters include Eddie Tolan, Michigan, Claude Bracey of Rice Institute, Charley Borah of southern California, and Frank Wyckoff of Glendale, California.

The indoor season, which as a general rule provides most of the thrills of the year, again was replete with sparkling middle-distance running. Phil Edwards, Johnny Gibson, Eddie Blake and Bernie McCafferty all bettered the mark of 1:13 for the 600-yard event, while Ray Conger ran the mile indoors in 4:13½, beating Leo Lermond, Edwin Wide of Sweden, and Eino Purje of Finland. Lermond developed amazingly, however, and became the year's champion by dethroning Conger at the Yankee Stadium in 4:13, second to the fastest time ever registered for the mile in the United States.

The year was notable for excellence in the field events and particularly in discus throwing. Eric Krenz of Stanford University gained the greatest renown by setting a new world record for the toss, 163 feet 8½ inches. He also won the national championship and the intercollegiate title. In the N. C. A. A. games, all six finalists exceeded 150 feet. Fred Sturdy of Yale took pole vaulting honors, grasping the crown worn by Sabin Carr the year previous. The New Haven student was invincible, winning the national indoor and outdoor title, the indoor intercollegiate title, as well as tying for the outdoor collegiate crown. Dick Rockaway of Ohio State and Steve Anderson received recognition for work in the hurdle events.

For the third successive year, the Stanford University athletes dominated the outdoor intercollegiate, and took the title to the West coast. In the indoor I. C. A. A. A. event, the New York University squad captured first honors for the first time in the history of the university. Phil Edwards of N. Y. U. was the individual star of the team, wiping out Meridith's intercollegiate half-mile record and setting the mark at 1:52½. He also captured the national A. A. U. half-mile race. See **UNIVERSITIES AND COLLEGES**.

ATMOSPHERE. See **METEOROLOGY**.

ATOM. See **PHYSICS**.

ATOMIC STRUCTURE. See **PHYSICS**.

ATOMIC WEIGHTS. See **CHEMISTRY**.

AUBURN PRISON OUTBREAKS. See **CRIME**.

AUER, KARL, FREIHERR VON WELSBACH An Austrian scientist and inventor, died Aug. 5,

1929, at Welsbach Castle, in Carinthia, Austria. He was born in Vienna, Sept. 1, 1858, the son of a printer who was himself the inventor of several devices important for printing and paper making. Karl von Welsbach studied under the chemist Bunsen at the University of Heidelberg, where his research in the chemistry of rare minerals had important results. His invention of the incandescent mantle for gas lamps in 1885 led to the formation in 1890 of the company of Auer-gesellschaft to manufacture under the Welsbach patents. This company, of which Karl von Welsbach was president, had large chemical works at Treibach. In 1897 he invented the osmium filament lamp, and six years later the ferro-cerium compound used in the manufacture of pocket lighters. He held membership in the scientific academies of Vienna, Berlin, and Stockholm and in various other technical societies.

AULTMAN, BRIGADIER GENERAL DWIGHT EDWARD American army officer, died Dec. 12, 1929, in Washington. D. C. He was born in Allegheny, Pa., Feb. 2, 1872, and was graduated in 1894 from the U. S. Military Academy. The same year, he was commissioned second lieutenant in the Fourth Cavalry, and was promoted through the grades to the rank of colonel in 1917, and of brigadier general in 1921. He served in the Spanish-American War (1898), and the following year returned to Cuba, first as aide-de-camp to General Wheaton, and then to General Keifer. He organized and commanded the Cuban Artillery in 1901-02, was an instructor of the same army during 1903-06, and was on the staff of the commanding general of the Army of Cuban Pacification in 1906-07. From 1907 to 1911, he was an instructor in the department of languages in the Service Schools of Leavenworth, Kans. At the outbreak of the World War in 1914, he was sent to the German front as a military observer, but the following year was recalled to enter the Army War College, from which he was graduated in 1916, and at which he became an instructor in 1916-17. He commanded the 5th Field Artillery, the 1st Division, A. E. F., in 1917-18, and in 1918 commanded the 51st Brigade of the Field Artillery of the 26th Division. Later in the same year, he was appointed chief of Artillery for the 5th Corps, and yet later, of the 2nd Army. For his services, General Aultman was awarded the Distinguished Service Medal of the United States, the Croix de Guerre of France, and was made commander of the Legion of Honor. He wrote *Military Strength and Resources of the U. S.* (1917).

AURORA. See **PHYSICS**

AUSTIN, CHELLIS A American banker, died Dec. 13, 1929, in Montclair, N. J. He was born in West Berkshire, Vt., in 1876, and was educated at St. Lawrence and Columbia universities. At first a messenger in a broker's office, in 1898 he became a clerk in the president's office of the Erie Railroad, remaining in this position until 1911, when he became trainmaster of the Jersey City Terminal Division on the Lehigh Valley Railroad. He entered the Columbia Trust Company in 1911 as a solicitor of new business, and was steadily promoted. In 1917 he was elected president of the Mercantile Trust Company, and when this company merged with the Seaboard National Bank, he became president of the new Seaboard National Bank. When this company in turn was consolidated with the Equitable Trust Company in 1929, Mr. Austin again became president of the new company. He was also director of

a number of organizations and actively interested in charitable and educational institutions.

AUSTRALASIAN METHODIST CHURCH. See **METHODISTS**.

AUSTRALIA, COMMONWEALTH OF. A self-governing dominion of the British Empire, consisting of the six original states (formerly colonies) of New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania, together with the Northern Territory and the Federal Territory, and comprising the island continent of Australia with its dependencies. The present Commonwealth dates from its proclamation in 1901, under the Act of Union passed in the preceding year. Of the divisions mentioned above, the Northern Territory was transferred by South Australia to the Commonwealth; and the Federal Territory consists of a former portion of New South Wales. At the beginning of 1927, the seat of the government was at Melbourne, but on May 9, 1927, the new capital at Canberra was formally opened by the Duke of York.

ESTIMATED POPULATION OF AUSTRALIA ON JAN. 1, 1929

States and Territories	Males	Females	Total
New South Wales	1,246,234	1,199,046	2,445,280
Victoria	875,449	885,515	1,760,964
Queensland	465,290	431,889	897,179
South Australia	298,679	278,669	577,348
Western Australia	220,209	185,664	405,873
Tasmania	107,371	109,192	216,563
Northern Territory	2,739	1,243	3,982
Federal Capital Territory	4,564	3,523	8,087
Totals	3,241,595	3,095,251	6,336,846

AREA AND POPULATION. The area of Australia is 2,974,581 square miles, the population, according to the census of Apr. 4, 1921, was 5,433,734, while on Jan. 1, 1929, it was estimated by the Commonwealth statistician as 6,336,786, an increase of 101,932, as compared with the total 12 months previous. The figures indicate that since the census of Apr. 4, 1921, the population increased 901,052, about 70 per cent of which was accounted for by the excess of births, and 30 per cent by the excess of arrivals over departures. The average rate of increase of population in the Commonwealth was slightly more than 2 per cent per annum. Net migration to Australia for 1928 totaled 27,232 persons, of whom 15,705 were males and 11,527 females. The total was 12,664 less than the average for the last five years, according to the Commonwealth Bureau of Census and Statistics. Great Britain was the country of origin of most migrants to Australia and was the destination of nearly half the Australian residents who departed permanently during the year.

The figures given in the accompanying table do not include the full-blooded aborigines, whose number was estimated at 60,000. During 1928 there were 134,078 births, 59,378 deaths, and 48,592 marriages. The populations of the capital cities with their suburbs on Jan. 1, 1929, were as follows: Sydney, New South Wales, 1,127,470; Melbourne, Victoria, 1,000,000; Brisbane, Queensland, 308,580; Adelaide, South Australia, 330,217; Perth, Western Australia, 196,231; Hobart, Tasmania, 55,730.

EDUCATION. Throughout Australia, primary education is compulsory and free, while there exists in all states a more or less liberal provision of scholarships and bursaries to the higher state

schools, to the secondary schools, and to the universities. Provided that the requisite standard is reached, it is permissible for children to receive home tuition, or to attend so-called private schools. Early in 1927, there were in the six states of the Commonwealth 11,725 schools of all kinds, with 32,188 teachers. The pupils enrolled numbered 1,147,665 and the average daily attendance was 906,665. There were 10,208 state schools, with 30,992 teachers and an enrollment of 901,326 pupils. The average attendance was 748,712 pupils. For details of education in the respective states and territories, consult the individual articles. At the capital of each state, there is a university.

PRODUCTION, ETC. According to the Commonwealth statistician and actuary, the area under the principal agricultural crops and the yield for each during the season 1927-28 was as follows: Wheat, 12,279,088 acres, 118,198,875 bushels; oats, 1,122,303 and 12,084,265; maize, 400,544 and 11,393,860; hay, 2,632,119 acres, 2,858,963 tons; sugar cane, 291,299 and 3,704,430; and cane sugar 516,000 tons. The total area under crops in 1927-28 was 19,219,380. Final estimates for the wheat acreage and yield in 1928-29 were 14,583,509 acres and 160,474,893 bushels, the average yield per acre being 11 bushels.

VALUE OF AUSTRALIAN PRODUCTION, YEARS ENDED JUNE 30

Item	1926	1927	1928
	Thousand	Thousand	Thousand
Agricultural	£ 89,277	£ 98,295	£ 84,256
Pastoral	117,327	111,718	125,068
Dairy, poultry, bee farming	48,278	46,980	50,261
Forestry and fisheries	12,784	12,790	12,181
Mining	24,592	24,007	22,983
Manufacturing	143,246	157,674	158,562
Totals	471,504	447,424	453,311

In 1926-27, 370,943 acres of barley yielded 6,930,953 bushels; 139,445 acres of potatoes, 373,176 tons; 112,120 acres of vineyards, 13,719 tons of table grapes and 20,456,341 gallons of wine; 276,451 acres of orchards and fruit gardens, yielded produce valued at £8,197,651. The total agricultural yield for the year ending June 30, 1928, was valued at £84,265,000, as compared with £98,295,000 in 1927 and £107,163,000 in 1925.

Livestock in Australia in 1927 included 101,247,476 sheep, 11,616,785 cattle, 2,041,482 horses, and 878,196 swine. Wool production in 1927-28 totaled 888,129,780 pounds and was valued at £75,634,000. The government estimates placed the wool production for 1928-29 at 950,000,00 pounds, with a value of £69,572,000. In 1927-28 the total value of pastoral products was £125,068,000, the highest since 1925, when the figure was £126,773,000.

The value of the manufactured products of Australia increased steadily from £137,977,000 for 1924-25 to £158,562,000 in 1927-28. In the same period, the manufacturing output per head increased from approximately £24 to £26. In 1926-27, 21,579 factories were in operation, with 467,247 employees and a total pay roll of £90,576,166. The value of plants was £220,092,363; the value of materials used, £232,643,518; the value added by manufacture, £162,325,273; and the value of output, £408,692,838. The condition of business depression prevalent in 1927

continued during 1928, although improving somewhat toward the end of the year, in certain lines. Unemployment increased, reaching 11.4 per cent of those seeking work in the middle of 1928, as compared with 6.7 per cent for 1927. Reduced demands, high coal prices, and industrial disputes combined to force out many less efficient manufacturing plants. A financial stringency was relaxed somewhat toward the end of the year, but there was little endeavor to employ available funds in industrial expansion. The production of pig iron and steel declined by 88,127 and 11,969 gross tons, respectively, from the 1927 figures.

The value of mineral production in 1928 was £22,983,000, as compared with £24,007,000 in 1927. The output of the more important minerals in 1927 was as follows: Gold, £2,159,076 (1928, £1,938,971); silver and lead, £3,773,756; copper, £607,038; tin, £842,430; coal, £12,250,769. The development of extensive and high-grade asbestos deposits in Western Australia was begun in August, 1928.

A large building programme for the new capital, Canberra, was commenced during 1929, including the National Memorial, to cost \$1,250,000, and offices and laboratories for the Scientific and Industrial Research Council and various governmental departments. The concentration or rationalization of industry in connection with attempts to reduce production costs made rapid progress during the year. Industrial disputes during 1928 numbered 287 and resulted in the loss of 77,273 working days and £775,359 in wages to 96,422 workmen, according to the Australian Annual Labor Report. In the five years ending in 1928, 58 per cent of all time lost in Australia through industrial disputes was lost by mine workers. The 1928 record for all industries showed a considerable improvement over 1927, but in 1929 conditions became more depressed.

COMMERCE. For the year ended June 30, 1929, Australian imports of merchandise, bullion, and specie totaled £143,628,033, as compared with £147,944,970 for the previous year, while exports increased from £143,213,070 in 1927-28 to £144,780,175 in 1928-29. Merchandise imports in 1928-29 were valued at \$143,271,391, as against merchandise exports of £140,853,655, giving an adverse balance of £2,417,736, as compared with £6,464,218 in the preceding year. Decreases in imports of apparel, textiles, automobile tires, and timber were particularly noticeable, while imports of motor-cars and cycles showed a considerable increase. A comparison of the trade for 1927-28 and 1928-29 and the movement involved, is afforded by the accompanying tables.

SUMMARY OF AUSTRALIAN FOREIGN TRADE

Item	1927-28	1928-29	Movement
	£	£	£
Exports*			
Merchandise	139,472,322	140,853,655	+ 1,381,333
Specie and bullion	8,740,748	3,926,520	+ 185,772
Total	143,213,070	144,780,175	+ 1,567,105
Imports			
Merchandise	146,936,540	143,271,391	- 3,665,149
Specie and bullion	1,008,430	356,642	- 651,788
Total	147,944,970	143,628,033	- 4,316,937
Excess of Imports	4,731,900		
Excess of Exports		1,152,142	

AUSTRALIAN TRADE IN PRINCIPAL COMMODITIES

Item	1927-28	1928-29
Imports		
Apparel and attire	£ 6,506,177	£ 5,903,654
Piece goods—		
Cotton and linen	8,593,908	7,571,121
Silk and linen	5,963,339	6,534,134
Woolen	2,525,179	1,491,128
Petroleum spirits	6,126,562	6,561,385
Lubricating (mineral) oil	3,596,253	1,311,311
Electrical machinery	7,126,915	7,133,028
Other machinery	9,082,180	8,485,712
Motor bodies and parts	1,116,419	1,461,895
Motor chassis and parts	7,140,368	9,204,871
Motor-cycles, side cars, etc	484,509	655,697
Timber—		
Dressed	1,256,227	1,104,793
Undressed	3,812,398	3,084,036
Tires	1,082,640	443,132
Crude rubber	1,959,412	1,381,544
Exports		
Butter	6,905,933	7,543,187
Frozen beef	2,377,967	2,888,287
Frozen lamb	981,120	1,423,490
Frozen mutton	257,586	742,603
Apples	1,636,000	709,671
Dried currants	177,605	597,601
Dried raisins	1,398,595	1,620,477
Other dried fruits	25,632	82,225
Wheat	14,629,899	20,372,624
Flour	5,229,463	6,001,543
Sugar (cane)	4,020,095	5,097,017
Wool—		
Greasy	58,796,318	55,004,868
Scoured	6,812,601	5,543,420
Tops	488,199	166,057
Rabbit skins	2,492,522	2,630,295
Sheepskins	4,453,149	4,586,828
Pig lead	3,516,236	3,233,990
Zinc ore	1,474,546	892,466

The export figures for the year show no variation in trend from those of previous years. Wool, wheat, and flour together furnished 62½ per cent of all exports and other exported pastoral, agricultural, and dairying products raised this percentage to 78½. The proportion of manufactures among the exports was small. The increase in the total value of exports was due almost entirely to the larger wheat crop, exports of which rose from £14,629,899 in 1927-28 to £20,372,624 in 1928-29. Wool exports, on the other hand, were valued at £4,481,873 less than in 1927-28. The accompanying table shows the distribution of Australian overseas trade among the several states.

AUSTRALIAN OVERSEA TRADE BY STATES, 1928-29

State	Exports	Imports
New South Wales	149,291,112	£63,503,493
Victoria	39,437,225	46,000,880
Queensland	23,125,385	11,694,842
South Australia	14,849,993	11,807,376
Western Australia	15,810,089	9,422,104
Tasmania	2,712,661	1,767,395
Northern Territory	53,730	31,943

Trade between the United States and Australia during the year was marked by decreases in

both imports and exports, the decline in exports to the United States being much the greater. Imports from that country into Australia in 1928-29 were valued at £34,908,446, as compared with £35,520,981 in 1927-28, and the percentage of American imports to total imports for the two years was 24.3 and 24, respectively. Australian exports to the United States dropped from £9,113,253 in 1927-28 to £5,009,046 in 1928-29, a decrease of over 38 per cent.

FINANCE As shown in the accompanying table, the Federal government incurred a deficit of £5,450,237 in the fiscal year ending June 30, 1928, the expenditures for the year, exclusive of those from loan funds and special appropriations, having totaled £82,120,459, as compared with revenues of £76,670,222.

RECEIPTS AND EXPENDITURES OF AUSTRALIAN FEDERAL GOVERNMENT*

Item	1926-27	1927-28
Receipts	£78,168,235	£76,670,222
Expenditures	75,612,634	82,120,459
Surplus	2,555,597	
Deficit		5,450,237
Accumulated surplus	2,821,494	2,628,743 ^b

* The 1925-26 figures show a deficit of £2,823,632 and an accumulated surplus of £285,897.

^b Deficit.

The accumulated surplus of £2,821,494 remaining at the end of 1926-27 was thus converted into a final deficit of £2,028,743. Additional expenditures from loan funds during 1927-28 amounted to £33,210,588, as compared to £19,651,093 in 1926-27 and £22,108,970 in 1925-26. Interest on the World War debt amounting to £29,737,657, also was paid in 1927-28, bringing the total Commonwealth expenditure to £115,331,047. In presenting the budget for 1928-29 to Parliament the Federal treasurer made no provision for the extinction of the debt out of the year's revenue or for its funding, apparently hoping that future surpluses would warrant placing the deficit in suspense. The ordinary budget expenditures for 1928-29 were placed at £63,597,000 and receipts, at £63,610,000. The chief cut in expenditures was for national defense, the appropriation being reduced from £7,917,000 in 1927-28 to £4,666,000 in 1928-29.

On Jan. 1, 1929, the total Commonwealth public debt stood at £513,495,619, or £81 034 per capita. Of this amount, £301,401,427 was held overseas and £212,094,192, in Australia. The annual interest payable on the debt was £27,028,677, the average rate being 5½ per cent. The debt included £133,791,293 raised by the Federal Government for the states. Flotations of loans by the Federal Government for itself and for the states in London, New York, and Australia during the period 1924 to 1928 are shown in the accompanying table.

COMMONWEALTH PUBLIC DEBT*—LONDON, NEW YORK, AND AUSTRALIAN FLOTATIONS 1924 TO 1928

Year ended 30th June—	London	Payable in—		Australia	Transferred Properties	Total
		New York	Loans			
	£	£	£	£	£	£
1924	142,524,394		262,215,114	10,860,591		415,600,099
1925	146,117,023		273,972,946	10,858,093		430,948,062
1926	155,883,409	15,411,487	276,085,236	11,065,129		458,445,351
1927	152,853,126	15,365,663	281,818,405	11,035,548		461,067,742
1928	172,497,984	83,563,752	277,081,917	11,035,447		494,129,100

* Includes Loans raised for States.

The combined Commonwealth and states public debt on June 30, 1928, stood at £1,094,974,058, or a per-capita debt of over £174. The division of the debt between states and Commonwealth and its growth from 1924 to 1928 is shown in the accompanying table.

COMMONWEALTH AND STATES PUBLIC DEBT, 1924 TO 1928

At June 30—	Debt on Account of Commonwealth			Debt on Account of States	Total Debt	Debt per Capita		
	War	Works and other purposes	Total			£	s	d
1924	£ 316,149,348	£ 45,815,122	£ 361,964,470	£ 588,322,885	£ 950,287,355	163	14	10
1925	311,194,196	50,878,571	362,072,767	601,064,157	963,136,924	162	8	9
1926	304,546,357	70,392,357	374,938,714	639,061,929	1,014,000,643	167	15	5
1927	296,905,370	89,706,135	386,611,505	670,869,719	1,043,481,224	169	3	10
1928	293,420,107	79,363,982	372,784,089	722,189,969	1,094,974,058	174	4	9

* Including debt on account of Federal Capital Commission

In 1929 a royal commission appointed to investigate the finances of South Australia reported that in the nine years from 1920 to 1929, the total public debt of all Australian states had increased by 82 per cent, while that of South Australia had increased by 116 per cent. All the states showed a deficit as a result of financial operations in 1928-29. The deficits were largely due to losses on state-owned railways, which long had presented one of the outstanding difficulties in state finances.

In the same year, all the states except New South Wales showed a reduction of loan expenditure, the total loan expenditure for the six states being \$188,895,000, or a reduction of \$8,605,000, as compared with 1927-28.

For state finances, see articles on the individual states.

COMMUNICATIONS. The total number of vessels registered in Australia in 1927 was 2,220 of 391,975 tons. In the overseas trade in 1928, 3,167 vessels of 10,925,298 tons entered and cleared Australian ports. The total mileage of government railways open to traffic in 1928 was 25,804. The gross revenue for the year was £48,186,022 and the working expenses, £38,358,104. Three hundred miles of government railway, linking Oodnadatta, formerly the northern terminus of a line running south to Adelaide, with Alice Springs, Central Australia, were completed in August, 1929. Together with some 3,144 miles of private line, this brought the railway mileage in operation in the country in 1929 to about 29,288 miles. Up to Jan. 1, 1929, approximately 4,500 miles of highway had been constructed, formed, or remade in the different states with the assistance of the Federal government under the Federal-aid road agreement entered into between the Commonwealth and state governments two years before. Expenditures in connection with this work were placed at £3,500,000 (£16,979,375), distributed as follows: New South Wales, £1,932,015; Queensland, £1,316,000; South Australia, £798,000; Western Australia, £1,344,000; and Tasmania, £350,000. On Jan. 1, 1929, 53 individuals or companies were operating 106 registered airplanes in Australia, many of them in connection with mail or passenger service.

GOVERNMENT. The executive power is vested in the King, who acts through a Governor-General, assisted by an executive council of responsible ministers, who must be members of the Federal Parliament, comprising the Senate and House of Representatives. The Senate consists of at least

six members from each of the original states, elected for six years, half of whom are renewed every three years, while the House of Representatives consists of approximately twice as many members as there are senators, the representation being apportioned among the several states

according to the population shown at the last census. The number in the House in 1929 was 75 and in the Senate, 36. After the general election of Oct. 12, 1929, which resulted in the defeat of Premier Stanley M. Bruce and the formation of a Labor Ministry, the composition of the House was as follows: Laborites, 46; Nationalists, 14; Country party representatives, 10; Independents, 4; Country Party Progressives, 1. The Governor-General in 1929 was Baron Stonehaven (appointed October, 1925). The new Labor Ministry was headed by J. H. Scullin as Prime Minister, with E. G. Theodore as treasurer.

HISTORY. The failure of Australia to recover from its financial and economic depression gave rise to serious concern during 1929 and had its repercussions in the general election of October 12, at which the National Country party coalition government headed by Premier Stanley M. Bruce was overturned by an unprecedented Labor victory. The issue upon which the election was fought was the Prime Minister's attempt to secure the abolition of Federal compulsory arbitration of industrial disputes except in the maritime industries. Compulsory arbitration had been an important issue in Australian politics since the first Federal Arbitration Act was passed in 1904. The position of Mr. Bruce and his party was that compulsory arbitration had been a failure, except in such nation-wide industries as shipping, due to the divided authority exercised in such matters by the Federal and state governments. Mr. Bruce favored placing upon the individual states the constitutional responsibility for the enforcement of compulsory arbitration. He pointed to the financial and economic condition of the country as evidence that something was wrong with the governmental system. Former Prime Minister William M. Hughes, although the founder of the Nationalist party in 1917, joined with Labor in demanding the extension of the Federal government's powers in compulsory arbitration matters, rather than the delegation of existing powers to the states. Labor also attacked the amusement-tax proposals of the government, its protective tariff policy, which, it was charged, placed a heavy burden upon the consumer and the country producer, and the granting by the government to the Anglo-Persian Oil Company of special advantages in Australia, Papua, and the mandated territory of New Guinea. The government had proposed to meet the Treasury deficit by raising £600,000 from an amusement tax and £2,750,000 from

new revenue duties. The Bruce government was defeated in Parliament on September 10, when an amendment introduced by Mr. Hughes to defer consideration of the government's arbitration bill until a national referendum should have been held was carried by a vote of 35 to 34.

In the election, Labor polled approximately 1,339,000 votes, the Nationalists, 935,000; the Country party, 275,000, and the Independents, 177,000. Mr. Bruce himself lost his seat in Parliament.

The Labor government assumed office faced with a £5,000,000 deficit, and a serious unemployment crisis. The new Prime Minister, Mr. J. H. Scullin, announced that the election was a mandate to amend the Arbitration Act and remove from it the legal technicalities and penal clauses. Impartial tribunals for the regulation of industry would be set up, he said, but he gave notice that the wage standard must not be reduced and that any reduction in the cost of production must not be attempted through a reduction in wages. One of the first acts of the Labor government was the abolition of the compulsory military system inaugurated during the Japanese war scare of 1911. It was decided to maintain an army organization of two cavalry and four infantry brigades and four mixed brigades as a nucleus of a voluntary citizen force.

The government also agreed to the resumption of diplomatic relations between Great Britain and Soviet Russia, providing that the mutual pledge with regard to Communist propaganda applied to Australia, as well as to the mother country. The British Government was asked also to suspend assisted immigration to Australia until the employment situation there improved.

The Federal Parliament, which adjourned Mar 22, 1929, passed laws confirming the drastic regulations imposed by the Bruce government during the shipping strike in September, 1928, ratified a financial agreement with the states, through which the Federal government contributes toward interest and sinking fund on the states' debts, and reconstituted the Tariff Board to insure a division of its labors. An Economic Research Bureau to deal with tariffs, marketing, taxation, finance, and transport was established, as was also a wine export authority.

In May, the government, in a memorandum sent to the State Department of the United States, formally protested against any increase in the American tariff schedule on goods exported from Australia. The memorandum pointed out that American exports to Australia are increasing steadily while Australian exports to the United States are declining, the balance of trade in 1927-28 being \$111,016,680 in favor of the United States.

To meet the accumulated Treasury deficit, the Bruce government increased by 10 per cent the duties on real silk, artificial silk, precious stones, and motor chassis. Duties also were increased on foreign films, liquors, tobacco, cigarettes, and cigars. A drastic curtailment of public works also was agreed upon by the Federal and state governments, the sum appropriated for this purpose during the year being reduced from \$175,000,000 to \$140,000,000. The Labor treasurer, Mr. Theodore, announced after examining his predecessor's budget, that he foresaw a deficit of £1,000,000 instead of the £380,000 surplus estimated. To meet the threatened deficit, the new government raised the duties on a large number

of articles of import. The new tariff measure aroused criticism in Great Britain, where it was said that the preferences given Great Britain were so ineffective as to be valueless.

One of the results of the general election was the formation in November of a new political party by former Premier W. M. Hughes and his associates, who led the revolt within the Nationalist party against former Premier Bruce on the question of the abolition of Federal arbitration.

AUSTRIA. A republic of central Europe, proclaimed Nov 12, 1918, after the revolution following the World War, boundaries defined by the Treaty of St. Germain, signed Sept 19, 1919. It consists of the following nine provinces, the City of Vienna, Lower Austria, Upper Austria, Salzburg, Styria, Carinthia, Tirol, Vorarlberg, and Burgenland. Capital, Vienna.

AREA AND POPULATION. According to the census of Mar. 7, 1923, the total area was 32,369 square miles and the population, 6,534,481, giving a density of 202 persons to the square mile. The estimated population June 30, 1928, was 6,675,283. The area of the Austrian provinces before the World War was 39,012 square miles and the population, according to the census of 1910, 7,529,935. According to the 1923 census, the City of Vienna, which constitutes a province, had a population of 1,865,780, making up 28.55 per cent of the total number of inhabitants. The census of July 31, 1928, showed 1,857,400 inhabitants, of whom 999,922 were women. The other chief cities with their populations on Mar. 7, 1923, were Graz, 152,706, Lanz, 102,081, Innsbruck, 56,401, Salzburg, 37,856, Wiener Neustadt, 36,956, St. Pölten, 31,619, Klagenfurt, 27,423, Steyr, 22,111, Modling, 18,677, Villach, 22,070, Wels, 16,412, and Baden, 22,217. The movement of population in 1927 was births, 118,741; deaths, 99,330, marriages, 48,523, divorces, (excluding Burgenland), 5350.

Of the total population in 1929, about 3,400,000 were wage earners or made an independent living, 1,400,000 of them in agriculture, 1,000,000 in industry and trade, 600,000 in commerce, and 200,000 in the public service. From the end of the World War to Jan. 1, 1929, 57,361 Austrians immigrated to foreign lands, 28,890 going to the United States, 12,867 to Brazil, 7741 to Argentina, 3548 to Canada, 283 to Paraguay, and 205 to Uruguay. Of 5339 emigrants in 1927, 1020 went to the United States, 1396 to Canada, 945 to Brazil, and 1100 to Argentina.

EDUCATION. Primary education is compulsory between the ages of 6 and 14, but exemptions are easily obtained for children of the age of 12 and over. The cost of elementary instruction is borne chiefly by the communes and provinces. In 1926 there were in the Republic 5293 public and private elementary schools, with 28,757 teachers and 712,225 pupils, a decrease of more than 5000 pupils from the 1925 attendance. Secondary education is provided by *gymnasien*, *realgymnasien*, middle schools, and middle schools for girls. In 1926 there were 147 secondary schools of all types with 3672 teachers and 40,122 pupils. There are three universities maintained by the state, namely, Vienna, which had 11,032 students in 1928-29, Graz, 1853 students in 1927-28; and Innsbruck, 2293 students in 1927-28. In 1928-27 670,427 students were enrolled in university extension courses, and 49,841 students in 152 colleges (*gymnasien*, *realgymnasien* and *real-*

schulen). The technical schools of Vienna and Gratz, and the School of Agriculture, Veterinary School, and the Mining Academy (Loeben), all have university rank.

Production. Although compelled to make a new start as a result of changes caused by the World War, agriculture remained the principal occupation of the people and the country's leading economic asset. The accompanying table shows the area under cultivation and the yields of fifteen leading crops in 1928, as compared with similar figures for 1919.

increased from year to year, amounting to 21,000 acres in 1927 and 23,000 acres in 1928. The value of livestock in the country in 1929 was estimated at more than 2,000,000,000 schillings. The latest census (1923) showed 283,000 horses, 1,860,243 cattle, and 302,103 oxen. Cattle and swine were imported in large numbers for slaughter. Timber exported during 1928 totaled 2,200,000 tons, going principally to Germany.

Less than 0.5 per cent of the great coal deposits of the Hapsburg Empire were retained by the Austrian Republic. The output of Austrian

AGRICULTURAL PRODUCTION OF AUSTRIA

Crops	Area under cultivation (in acres)		Harvest yields (in hundredweights)		1928 against 1919 (increase in %)
	1919	1928	1919	1928	
Wheat ..	454,000	504,000	3,352,000	6,459,000	92.7
Rye	810,000	946,000	5,150,000	9,573,000	85.9
Barley ..	286,000	365,000	2,242,000	5,028,000	124.2
Oats ..	659,000	765,000	4,270,000	8,472,000	98.4
Maize ..	141,000	146,000	1,463,000	1,931,000	32.0
Beans ..	9,000	26,000	55,000	201,000	264.3
Peas ..	4,000	9,000	24,000	89,000	174.7
Flax ..	5,000	9,000	43,000	87,000	100.0
Linseed ..	6,000	7,000	20,000	22,000	10.0
Potatoes ..	284,000	454,000	13,093,000	40,108,000	192.9
Beet roots ..	20,000	69,000	2,661,000	13,888,000	421.8
Turnips ..	111,000	131,000	12,526,000	26,516,000	111.7
Clover ..	469,000	560,000	11,949,000	24,902,000	108.4
Vetch ..	40,000	101,000	768,000	3,543,000	361.5
Hay ..	2,499,000	2,339,000	53,630,000	67,972,000	26.7

In 1927 the total area sown amounted to 4,762,740 acres, of which 2,114,281 were in Lower Austria and 1,023,390 in Upper Austria. For almost a decade after the War, the foodstuffs produced in Austria did not suffice for the needs of the population. In 1927-28, however, the national consumption of cereals, with the exception of wheat and maize, was almost entirely covered by the domestic production, more than half of the sugar requirements were produced in the country, and a surplus of some 4000 carloads of potatoes was exported. The expansion of the sugar-beet industry promises to meet the domestic requirements by 1932. It has given a powerful stimulus to the raising of cattle fed on beet fodder. The 1928 sugar production was estimated at 121,240 short tons. Wine production was 804,000 hectolitres, as compared with 226,000 hectolitres in 1927. The total value of agricultural products in 1928 exceeded 2,000,000,000 schillings, as against 600,000,000 schillings in 1927 (the official price as a par value of \$0.1407). The decrease in agricultural land by drainage in

mines in 1928 was about 3,200,000 tons, most of it lignite. This was 5,600,000 tons short of domestic requirements. Production of other important minerals and metal products in 1928 included pig iron, 457,911 metric tons; steel, 635,057 tons; finished, rolled, and wrought-iron goods, 480,898 tons; sinter magnesite, 84,000 tons; magnesite bricks, 40,000 tons; salt, 81,375 tons. Copper, zinc, and lead are also produced. In general, the iron and steel industry showed distinct improvement over 1927. The principal industries are the manufacture of pianos, automobiles (output of seven factories about 10,000 cars annually), machines, furniture, textiles, shoes, and leather goods. The nine factories of the Austrian tobacco monopoly in 1927 made 203,239,000 cigars, 4,605,522,000 cigarettes, and 51,796 metric quintals of smoking tobacco. In 1929 the industrial situation improved somewhat, although hampered by unsettled political conditions. All of the principal industries were fairly well occupied, except the textile plants, a number of which were forced to close for lack

AUSTRIAN FOREIGN TRADE, 1926-28

	1926	1927	1928	1926	1927	1928
	Quantities in tons			Value in million schillings		
IMPORTS						
Live animals	189,547	187,163	197,705	272.6	276.6	265.9
Foodstuffs	1,463,857	1,408,133	1,301,643	777.9	788.9	739.6
Mineral fuel	5,125,982	5,603,832	5,712,914	205.2	224.8	226.0
Raw materials and semi-manufactured goods . .	1,161,052	1,232,013	1,447,008	557.6	673.5	683.0
Finished products . .	322,134	322,973	378,365	952.7	1,124.7	1,266.8
Precious metal	225	302	145	76.6	102.2	69.5
	8,262,797	8,754,416	9,087,770	2,844.6	3,190.7	3,250.8
EXPORTS						
Live animals	16,498	21,550	14,003	22.4	32.0	21.9
Foodstuffs	45,145	49,616	119,769	32.5	35.8	48.0
Raw materials and semi-manufactured goods . .	2,660,852	3,282,902	3,973,188	381.4	477.0	498.5
Finished products . .	505,869	574,181	588,996	1,266.8	1,492.0	1,609.6
Precious metal	325	490	273	41.8	62.8	41.8
	3,228,189	3,928,739	4,696,229	1,744.9	2,099.1	2,219.3

of orders. Chronic unemployment remained a sharp burden upon industry. In 1928 the number of unemployed averaged 150,000 monthly.

COMMERCE. Austria's adverse balance of trade has regularly amounted to over 1,000,000 schillings annually for a number of years. In 1928 imports were valued at 3,250,800,000 schillings and exports at 2,219,300,000 schillings, as compared with imports of 3,184,298,000 schillings and exports of 2,098,093,000 schillings in 1927. In the table on page 79, the chief imports and exports are compared as to quantity and value for the period from 1926 to 1928.

The measures taken by Austria's neighboring states to protect their markets against her exports and the strong sentiment for political union with Germany were reflected in the foreign-trade figures for the years 1926 and 1928. Austrian exports to Germany rose from 202,100,000 schillings in 1926 to 407,000,000 in 1928, an increase of over 100 per cent, while imports from Germany in the same years totaled 472,000,000 schillings and 645,100,000 schillings, respectively. The increase in the total of Austrian exports for the period was 38 1/2 per cent. After Germany, Czechoslovakia, Italy, Hungary, Yugoslavia, Switzerland, and Rumania rank in order as purchasers of Austrian products and Czechoslovakia, Poland, Hungary, the United States, and Switzerland are the principal sources of Austrian imports. The adverse trade balance for 1929 was estimated at 1,100,000,000 schillings.

A treaty of friendship, commerce, and consular rights, concluded between the United States and Austria in 1928, was ratified by the U. S. Senate Feb. 11, 1929. The commercial activities of the nation are largely concentrated in Vienna, which still serves as the principal distributing point for Eastern and Southeastern Europe. The earnings on its important transit trains, the tourist trade, and the income from industries of the former Austro-Hungarian Empire still owned in Vienna serves to offset in a large measure the annual adverse trade balance of the nation.

FINANCE. The budget for 1929 provided for current expenditures of 1,767,400,000 schillings and revenues of 1,801,900,000 schillings. The preliminary figures for 1928 showed current expenditures of 1,725,800,000 schillings and revenues of 1,852,000,000 schillings, an improvement over the slight deficits incurred in 1926 and 1927 brought under the schedule on which the League of Nations established its reform plan, the 1929 budget included as current transactions the sums of 1,022,700,000 schillings for expenditure and 1,057,000,000 schillings for revenue and in addition 2,500,000 schillings for capital expenditures, leaving a total deficit of 183,900,000 schillings. On this basis, the deficit for 1928 was 2,500,000 schillings (preliminary figure), and for 1927, 85,000,000 schillings. These deficits represent the proportion of capital expenditure which could not be met out of current revenue and was defrayed out of the International Loan funds and the existing Treasury reserves. The capital investments were employed principally to electrify the mountainous sections of the government railway system, to advance agriculture, and for the installment of long-distance underground telephone cables. In 1928 the gross amount required for interest and redemption charges on the International Loan was 101,100,000 schillings. The proceeds from the customs duties and tobacco monopoly, which

serve as collateral, exceeded the requirement six times. Excluding relief loans secured from foreign governments in 1919 and 1920, the total foreign indebtedness of the Republic on Jan. 1, 1929, was 1,097,100,000 schillings and the internal debt was 409,700,000 schillings. The redemption of the relief loans under favorable conditions within a period of forty years was arranged by the Austrian Government in 1928 with the majority of the creditor states.

The proposed budget for 1930 estimated ordinary revenues at 1,975,000,000, and ordinary expenditures at 1,940,000,000, schillings. Including investments on capital account, to be covered in part by a \$100,000,000 foreign loan, the proposed budget would show a final deficit of 154,000,000 schillings.

COMMUNICATIONS. The Austrian Federal Railways, according to the official report for 1927, had a fairly successful year despite the economic difficulties which continued to beset the country. The length of the Austrian railways at the close of 1927 totaled 4150 miles, of which 3618 miles were operated by the state and 532 miles by private companies. At the end of 1927, 370 miles of state railways had been electrified. Operating revenues during the year amounted to \$85,300,000 (\$82,100,000 in 1926) and operating expenses to \$78,600,000 (\$77,700,000 in 1926).

In recent years, the Austrian Postal Administration has organized and operated a network of autobus lines in the Alpine districts of the country. In 1929 about 500 buses were operated over 200 lines with a total length of over 4000 miles. Regular air lines, many of them subsidized by the state, were in operation between Vienna, Berlin, Zurich, Paris, Venice, Rome, Munich, Cracow, Warsaw, Budapest, and Constantinople. In 1928, 7858 flights were made, carrying 18,287 passengers without an accident. The number of foreigners visiting Vienna in 1928 was about 537,000.

GOVERNMENT. According to the provisions of the constitution which went into operation on Nov. 10, 1920, Austria was declared to be a federal republic, composed of eight provinces and the City of Vienna. The President is chosen for four years by both Houses of the Legislature. He may not be reelected more than once. The Legislature is bicameral, consisting of the Assembly (Nationalrat) and the Council (Bundesrat). The powers of the latter are advisory. At the elections held on Apr. 24, 1927, the following parties were returned: Christian Socialists, 73, Social Democrats, 71, German Nationalists, 12, Peasants' party, 9. President in 1929, Dr. Wilhelm Miklas (Christian Socialist), elected Dec. 5, 1928, for a four-year term. The Ministry as formed on Sept. 26, 1929, was composed as follows: Chancellor and Minister of Foreign Affairs, Johann Schober, Vice Chancellor and Minister of Defense, Karl Vaugoin, Minister of Interior, Vincenz Shumy, Minister of Commerce and Communications, Michael Hainisch, Minister of Agriculture, Florian Foedenmayr, Minister of Social Welfare, Professor Theodor Innitzer, Minister of Justice, Franz Slama.

HISTORY. The bitter political struggle between Socialist Vienna and the Catholic and conservative provinces continued during 1929, marked by recurrent riots, armed clashes, and the growing power of the Heimwehr, the unofficial provincial militia. A firm stand by Johann Schober,

former Chancellor and Police President of Vienna, who again became Chancellor on September 26, apparently was all that prevented a Heimwehr march on Vienna. Despite political difficulties, the industrial, economic, and agricultural progress of the country continued.

The new Chancellor was the second person called to that office during 1929. Ignaz Seipel, the Roman Catholic priest who had served as Chancellor since 1927, resigned on April 3 due to strife within his Christian Socialist party and criticism of his dual rôle as priest and state official. It was a month later (May 4) before the involved political situation allowed the formation of a new cabinet headed by Ernst Streuowitz. The other members were Vice Chancellor, Vincenz Schunz, Public Instruction, Dr. Emerich Cernak, War, Karl Vaugoin, Finances, Dr. Johan Mittelberger, Social Welfare, Dr. Joseph Resch, Agriculture, Florian Doedemayr, Commerce, Hans Schunz, Justice, Dr. Franz Slama. Outside the ranks of the Pan-Germans, who were delighted with the fact that the cabinet contained six members pledged to promote union with Germany while the remaining members were favorable to union, the new ministry provoked little enthusiasm. The Chancellor and five other members of the cabinet were Christian Socialists, while two were representatives of the Pan-German party, and one, of the Peasants' party.

The interim between cabinets had been marked by repeated threats of a Heimwehr march on Vienna and an ensuing dictatorship and fulminations by Heimwehr leaders generally against all parliaments. The Heimwehr had been a loose but well-recognized institution for centuries in the mountainous sections of Austria and, at the close of the World War, it was organized for the defense of the frontier, particularly in Carinthia before the plebiscite. It was not made use of as a weapon against the Socialists until after the Socialist outbreak in Vienna in July, 1927. The Heimwehr received encouragement from Chancellor Seipel, and other members of his (Christian Socialist, conservative) party objected to its threat against parliamentary government. In February, 1929, the Christian Social workers of Vienna organized another unofficial military force to oppose the dictatorial tendencies of the Socialist municipal guard, but announced that it would side with the Socialists in any attempt of the Heimwehr to establish a dictatorship.

The Seipel government, by massing the combined forces of the army, gendarmerie, and police at strategic points in Vienna on February 24 averted a threatened clash between the Heimwehr and Socialist militia, which staged rival demonstrations within the city. These demonstrations were frequent during the year. Chancellors Streuowitz and Schober both made it plain that the police and the army would be used to quell any open threat against constitutional government. Minor clashes between the opposing factions continued at frequent intervals, however, and for the first time in many years Jewish students at the University of Vienna, were assaulted and driven from university buildings by students affiliated with the Heimwehr (see Jews). On August 18, a clash between the Heimwehr and Socialists resulted in one death and injuries to 62.

Premier Briand of France informed the League

of Nations on June 17 that the armed state of Austria constituted a menace to her neighbors. At the same time, the board delegated to remove Allied military control from Austria, reported that Austria was secretly arming in defiance of the terms of the peace treaty. Austrians denied that the militia activities constituted a threat against neighboring countries. Transformation of the army from the main support of Austrian Socialism to the nonpolitical instrument of the Conservative government went on rapidly during the year under the direction of Karl Vaugoin, Minister of War in the three successive cabinets. The Socialist *Arbeiter Zeitung* in July published a document said to have been stolen from Heimwehr headquarters at Graz, the contents of which indicated a secret liaison between the Seipel ministry and the Heimwehr organization.

The possibility that a Heimwehr coup would bring foreign intervention apparently was a strong factor in the decision of Heimwehr leaders to cripple the power of the Socialists by revision of the constitution. The Streuowitz cabinet was forced to resign September 25 due to its unwillingness to approve the desired constitutional changes and on September 26 a new cabinet was formed by Schober. He selected a moderate but strong cabinet calculated to inspire confidence that any revision of the constitution would be done in accordance with democratic practices. (See under *Government* above.) Chancellor Schober forbade further demonstrations and mass parades on the part of either Heimwehr or socialist militia. The situation again assumed a critical aspect, however, when the cabinet's proposals for constitutional changes strengthening the hands of the President and Federal Government and restricting the power of Vienna and its Socialist administration were submitted to Parliament. Early in November the British Foreign Minister, Arthur Henderson, warned the Government that the British Government was gravely concerned lest a breakdown of parliamentary negotiations for constitutional reform and the adoption of nonparliamentary action should threaten the stability of Europe.

The Constitutional changes proposed by Chancellor Schober were finally passed by Parliament in revised form on December 7. Vienna, in spite of Heimwehr objections, remained a federal state, but part of its revenues were henceforth to go to lower Austria. Provision was made for the dissolution of the Vienna municipal guard, or *Schutzbund*, which was to be absorbed by the state police. The powers of the Austrian President in time of crisis were strengthened but his general powers were restricted in a way rendering the establishment of a dictatorship unlikely. The president henceforth was to be elected by the people instead of by Parliament, education was unified under the Federal Ministry of Education, and the law courts were deprived of their political character. The Constitution represented a compromise between Socialists and Conservatives, thus nullifying the Heimwehr plans for the establishment of a Fascist state. Following its adoption, the Heimwehr issued a proclamation calling upon its members to carry on a still more bitter fight in the future. Chancellor Schober then turned his efforts toward ridding the country of the Heimwehr menace.

UNION WITH GERMANY. The movement for union between Austria and Germany, or "Ansch-

lusa," as it is called, advanced during 1929 to a point where partial if not complete union was considered imminent. The Austrian Schubert Bund was welcomed in the chamber of the Reichstag with the assurance from Paul Loebe, president of the chamber, that union would be achieved. Other more significant indications of the development of *Anschluss* were seen in a meeting of Austrian and German lawyers and judges in Munich, where differences in the penal codes of the two countries were largely eliminated. Unification of the railway and postal services also was begun, the plan being to raise the Austrian and postal tariffs gradually to the German level. It was realized that precipitate action would raise the cost of living for Austrians. While no important political group in Austria has opposed *Anschluss*, the majority of the members of Parliament and nearly every school-teacher and public official signed a manifesto favoring union with Germany. Former Chancellor Seipel, in discussing *Anschluss* before Catholic students on July 8, proved lukewarm if not unfriendly to the movement.

OTHER EVENTS. The announcement on December 13 that Italy had withdrawn its objections to a new Austrian loan marked the restoration of friendly relations between the two powers. They had been at odds since Chancellor Seipel protested in 1928 against Italy's treatment of the South Tyroleans (see ITALY, under *History*). When the League of Nations loan was obtained, Austria bound herself to obtain the assent of the powers to any further issue. All of the other powers had approved Austria's application for a new loan, which was sorely needed to aid in the further economic reconstruction of the country.

Important Austrian archives covering the period from the Bosnian crisis of 1908 to 1914 and shedding new light on the origins of the World War were published by the Austrian Government in eight volumes on December 1. The collection of over 11,000 documents was said to contain evidence that Austria was primarily responsible for the outbreak of the War.

The acquittal of a number of self-confessed murderers in Vienna during the year aroused much public dissatisfaction and lynch law was widely suggested as the alternative to the work of soft-hearted Viennese judges. The situation was attributed to political animosities, underpaid judges, a complicated penal code, overdeveloped sentimentality, inherited distrust of the state, and an overdose of Freudianism.

AUTHORS' LEAGUE OF AMERICA. A national organization of authors, artists, dramatists, and screen writers founded and incorporated in 1912 for the purpose of procuring adequate copyright legislation, both international and domestic, for protecting the rights and property of all those who create copyrightable material; for advising all such in the disposal of their productions and for obtaining for them prompt remuneration therefor, and for disseminating information among them as to their just rights and remedies. The league supplies to its members confidential information relating to publishers, theatrical and motion-picture producers, art buyers, and other persons and companies engaged in the purchase, sale, publication, or production of copyrightable material.

The league is divided into four departments or guilds: The Dramatists' Guild; the Authors'

Guild; the Artists' Guild; and the Screen Writers' Guild. Closely affiliated with the league are the Authors' League Fund and the Literary Council of the Authors' League. The fund is an agency formed by the league to meet its obligations with respect to the care of the sick, the aged, and the unfortunate. The endowment in 1929 amounting to about \$70,000. The Literary Council is a semi-independent group whose purpose is to advise and assist the league in purely artistic or literary matters; its membership in 1929 numbered 60 and included non-members as well as members. The officers of the league in 1929 were President, Arthur Richman; vice president, Inez Haynes Irwin, secretary and treasurer, Louise Silcox. Headquarters are at 2 East Twenty-third Street, New York City.

AUTOGYZO. See AERONAUTICS.

AUTOMOBILE LIABILITY. See INSURANCE.

AUTOMOBILE RACING. The most notable performance of the year 1929 in auto racing was the winning of the 500-mile international motor race at Indianapolis before 100,000 persons by Ray Keech who sprang from the obscurity of the dirt tracks of Philadelphia to prominence. Two weeks later, on June 15, at the age of twenty-eight, he was killed on the Altoona Speedway. Jimmy Gleason, Carl Marchese, and "Speed" Gardner followed Keech to the finish line in the Indianapolis race in which he averaged 97.58 miles an hour.

Sir Henry Segrave of England succeeded in bettering Keech's world mark for a mile down the straightaway course at Daytona Beach, on March 11, when he was clocked at an average speed of 231.36246 miles an hour. A month later, Captain Malcolm Campbell, former holder of the record, reached only 218.54 on the dried bed of a lake in Verneuk Pan, South Africa. He did set a five-mile record of 212 miles an hour on the same course.

AUTOMOBILES. With an increase of more than a million units over the previous year, 1929 set a new record for American production of motor cars and trucks. The total of both built in the United States and Canada during the year was 5,651,000, an increase of 22.8 per cent over that of 1928 which was the previous best year's record. It was the first full year in which Ford had been back in capacity production and Ford alone showed an increase over the previous year of 138 per cent or 1,132,358 units. The rest of the industry showed an actual decrease of 3.6 per cent although Ford's nearest competitor, the Chevrolet, bettered its 1928 record by 8.4 per cent and several other individual manufacturers also made gains.

While so many more new cars were made and sold, it was largely at the expense of the used-car market, for many of those who normally would purchase such cars, instead bought the lower-priced new cars, leaving dealers with an unwelcome accumulation of used-car stocks. Taking cars as a whole—that is used and new—there was undoubtedly "overproduction," even though the new cars were practically all disposed of, and the factories, appreciating this, at the end of the year in general were planning reduced schedules for 1930. It was probably a safe prediction that not over 5,000,000 would be turned out in 1930.

Up to and including 1917, production steadily increased, the first recession coming in 1918. Whether coincidence or not, it is interesting to

observe that since that time production has slumped every third year—in 1921, 1924, and 1927—according to which a falling off was due for 1930.

Truck production in 1929 made the remarkable gain of 40 per cent over 1928, increasing from 578,551 to 805,000. Vehicles of one ton and under represented 75 per cent of the total production. Much of the increased production was exported, for there was a 65 per cent gain in American foreign business in commercial vehicles, reaching 345,000 units, as against 209,560 in 1928.

Several new cars made their début in 1929. The Roosevelt, a low-priced straight eight, was introduced by Marmon in March. The Viking, a V-eight, was brought out by the Olds Motor Works in April. The Marquette, a six, was added to the Buick line in June. Two radically new designs with front-wheel drive appeared about the same time—the Ruxton presented by a new company, New Era Motors, Inc., afterward taken over by the Moon Motor Car Company, and the Cord, built by the Auburn Automobile Company. A third front-drive car, but of considerably lower price, was announced by Gaidner. In June, the Hudson added a commercial car to its line—the Dover.

A few of the old-line cars brought out new models during the year, beginning with the Buick toward the end of July, but it was becoming more and more the practice to withhold the disclosing of new models until the National Automobile Show in New York early in January.

Principal among the innovations developed during the year and to be displayed at that event, in addition to the front-wheel drive cars, was the sixteen-cylinder Cadillac, built as an addition to the V-eight Cadillac and LaSalle models, to cater to the market that desires the maximum in convenience, performance, and luxury. Also the herring-bone transmission of the Geo giving silent intermediate speeds, the clashless gear-shift of the Pierce-Arrow, also using constant-mesh herring-bone gears in its transmission, radio receiving sets as optional equipment on Chrysler and De Soto, and the newcomers in the eight-cylinder field—Hudson, Nash, Dodge, DeSoto, and Oakland—all of straight-eight type except the Oakland, which adheres to the General Motors' policy of building V-eights only.

With these new additions to that field, for the first time the eight-cylinder models offered outnumbered the sixes, which for sixteen years had predominated in popularity. At the end of 1929, for the following year, there were three makes of four-cylinder cars, twenty-three of six, twenty-eight of eight, and one of sixteen cylinders. Only one manufacturer produced fours exclusively, two made both fours and sixes, five made sixes exclusively, fourteen made sixes and eights, nine made eights exclusively, and one made eights and sixteens. Of the total of 268 cars to be displayed at the New York show, 147 were eight-cylinder models. Registration figures from 43 States for the first ten months of 1929 showed that in cars costing more than \$1000 there was a 62 per cent increase in eights and an 18 per cent decrease in sixes.

Practically all of the new cars incorporated changes and improvements that, while not generally new to the industry, were to their lines. For example, several that had not had them previously adopted four-speed transmissions, cen-

tralized chassis lubrication systems, rubber or fabric spring mountings doing away with need of lubricated shackles, shatterless glass in windshields, and closed bodies, stainless steel for bright metal parts, dual ignition, rubber engine mountings, downdraft carburetors, etc. In general, there was a decided trend toward greater engine power, wider seats, roomier interiors and longer, lower lines.

STATISTICS The National Automobile Chamber of Commerce in its preliminary statement of facts and figures of the automobile industry for 1929, showed that of the total production already mentioned, 4,846,000 were passenger cars and 805,000, trucks, and 87 per cent, or 4,218,000 of the passenger cars, were closed models. By contrast, ten years previously, 83 per cent of the passenger cars produced were open models. The wholesale value of the entire production in 1929 was \$3,483,900,000, made up of \$2,952,900,000 for passenger cars and \$531,000,000 for trucks. The average retail price for passenger cars was \$812 and for trucks \$877. The wholesale value of parts and accessories for replacements, and of service equipment was \$920,000,000. The total tire production in the United States was 75,000,000 and the wholesale value of rubber tires for replacement \$600,000,000.

With an 8 per cent gain in registration over 1928, motor vehicles registered in the United States during 1929 (from State reports) totaled 26,400,000; passenger cars being 23,030,000 and motor trucks 3,370,000. The world registration of motor vehicles was estimated at 34,700,000, so that 76 per cent was in the United States. Farmers use 5,800,000 of the motor vehicles registered in the United States. The total miles of highways in the United States are 3,016,281, of which 600,000 miles are surfaced highway. During 1929, \$2,000,000,000 was expended on highways and streets in the United States. The State and Federal governments in 1929 collected a total of \$925,000,000 taxes on motor vehicles. Gasoline taxes alone were \$415,000,000. SEE ROADS AND PAVEMENTS.

As showing to what extent the automobile industry affects other lines of business, the following are interesting figures. Railroads in the United States in 1929 handled a total of 3,600,000 carloads of automotive freight. Of all the rubber used in the country during the year, 85 per cent was taken by the automobile industry, 67 per cent of all plate glass, 19 per cent of iron and steel, 15 per cent of copper, 18 per cent of lumber and hardwood, and 27 per cent of the lead production were used by the automobile industry. Of all the gasoline produced, 80 per cent was consumed by the motor industry. The quantity used in 1929, measured in barrels of 42 gallons each, was 297,000,000. Crude rubber used for tires and otherwise in the motor industry was 913,920,000 pounds for 1929. Likewise used in tires was 287,000,000 pounds of cotton fabric.

The extent to which motor trucks and motor busses figure in the handling of merchandise and passengers shows the important place that they have now taken with other transportation systems. It has already been mentioned that there were 3,370,000 motor trucks in use. The number of owners of motor trucks was 2,460,000, and the motor busses in use numbered 95,000. Not least among the benefits of motor transportation was the better education that was being afforded the youth in rural territory, for there were now

16,500 consolidated schools using motor transportation, 43,000 busses were so used.

Three hundred street railways were using 11,500 busses and 70 steam railroads used 1900 busses, 75 of the railroads were using 7000 motor trucks as a part of their shipping service.

The retail motor-vehicle business in the United States represented in the sale of the vehicles themselves, from service, storage, and supplies was continually increasing. At the end of 1929, there were 50,300 car and truck dealers, 51,200 public garages, 95,800 service stations and repair shops, 76,000 supply stores, and 320,000 gasoline filling stations using a total of 610,000 gasoline pumps.

No part of the industry's expansion was so striking as its increasing foreign market. In 1929 the number of American motor vehicles sold outside of the United States, that is including exports from the United States and the output of Canadian plants owned in the United States, was 1,015,000. The value of these vehicles and the parts and tires sold outside of the United States in 1929 was \$757,400,000. This was a 23 per cent increase in foreign sales over 1928. Of the total automotive output, 18 per cent was sold outside the United States. Insignificant by comparison was the number of motor vehicles imported in 1929—710.

LEGISLATION The year 1929 saw considerable activity in legislation relating to the use and regulation of motor vehicles, for 43 State legislatures were in session. Not all enactments were pleasing to motorists because some increased taxes. The increasing use of motor cars has made them an ever-increasing attraction as a source of tax revenue. The two States not having gasoline taxes adopted them, so that all States now have such taxes, ranging from two to six cents per gallon. Thirty-nine States had a tax of three cents or more. In general, the industry's attitude toward the gasoline tax has been one of approval so long as the income so collected by the State was applied to the roads, and only a nominal registration fee is exacted in addition. Most States made no reduction in the registration fee when adding the gasoline tax and so did not limit the expenditure of the revenue from motor-vehicle taxation to highway maintenance. Even when the income from the gasoline tax is partly expended on improvement of roads, motorists have been patient, though their contention is that new construction should be financed by bond issues and only repair and upkeep should be supported by taxing the users of the highways, because all citizens benefit from road improvements. Objection was made, however, to the diverting of any part of this revenue to any other purpose as was allowed by the laws of Florida, Georgia, and Texas. It was rightfully held to be class legislation when motorists were taxed additionally for purposes that should be covered by general taxes.

The Uniform Vehicle Code proposed by the National Conference on Street and Highway Safety in 1926 and the Model Municipal Traffic Ordinance proposed by the same body in 1928, came before many of the State legislatures last year. To the end of 1929, approximately one-half of the States had adopted the code essentially, or had amended their laws to conform substantially therewith. Several cities had adopted the Model Municipal Traffic Ordinance. In an endeavor to bring about maximum uniformity in traffic rules and regulations, the States of New Jersey and

Wisconsin enacted substantially the entire Municipal Ordinance as a State code, governing all cities within those States. This was gratifying to the industry because it contributed to the convenience and safety of touring motorists and truck and bus operations that are interstate.

The trend was toward higher speed limits or the abolition of any limits, particularly in the open country, for safety no longer demands such restricted speeds as were necessary before four-wheel brakes were common and when roads were not designed for high-speed traffic. Express highways were being built that were wider, better surfaced, had banked long radius curves and few or no grade crossings, for the very purpose of accelerating the movement of traffic between cities, and so naturally, to make them effective, it was necessary to increase maximum speeds and in some places it was becoming the disposition to prescribe minimum speeds to increase the road capacity. Other trends were toward increasing allowable gross weight if carried on six-wheeled vehicles and discouragement of the use of solid tires, either by increased taxation, restriction of allowable weight, or outright prohibition. Oregon was to prohibit all solid tires after July 1, 1931.

The compulsory liability-insurance law made little headway, for conviction grows that it is not the safety measure it was hoped it would be and because it is found that it does not provide assumed compensation to the person who is injured, but merely assures collection of a judgment, if and when one can be secured. Accidents have not decreased where it has been put in effect and the newer laws of this sort do not compel the taking out of liability insurance until the driver has had an accident giving evidence of carelessness or incompetence. Then his license is revoked until he has established responsibility.

Bus regulation continued to present one of the knottiest problems for the law makers. The regulation of those doing an interstate business particularly calls for Federal legislation to avoid the hardships imposed on those that have to pass through States which may and have adopted unfriendly measures directed against vehicles registered outside of their confines. Several bills were before Congress but none had yet been accorded sufficient support to be enacted into law. While 37 States were regulating the truck used as a common carrier to a greater or less degree, it was almost the unanimous opinion of those closely in touch with such matters that the time had not arrived for the Federal regulation of such trucks.

AVIATION. See AERONAUTICS

AVIATION, NAVAL. See NAVAL PROGRESS

AZERBAIJAN, a'zër-lî-jan'. A new state constituted in 1918, consisting chiefly of the two former Russian provinces of Baku and Yelisavetpol, bounded on the east by the Caspian Sea, on the west by Georgia and Armenia, on the south by Persia, and on the north by Georgia, Northern Caucasus, and Daghestan. The official name of the state is the Azerbaijan Socialist Soviet Republic. Area, about 32,086 square miles and the population, according to the Soviet Union Year Book for 1929, 2,302,040, of whom 75 per cent were Moslem. Baku, the centre of the petroleum industry, is the capital and has a population of approximately 447,000. In 1925-26, 134,855 pupils attended primary and secondary schools. There were also trade-technical schools, teachers' training centres, higher educa-

tional institutions, and workers' faculties. The most important industry is the oil industry, which in 1927-28 produced 7,560,000 tons, as compared with 6,893,000 in 1926-27. The country is mainly devoted to agriculture, the chief products being grain, cotton, grapes, kitchen and garden produce, and some tobacco and silk.

In 1927-28 the number of members of industrial productive cooperatives in Azerbaijan was 12,400 as compared with 6200 in 1926-27. The production of the cooperatives in 1927-28 was valued at 31,400,000 rubles, and in 1926-27 at 18,100,000 rubles. After the outbreak of the Russian Revolution in 1917, Azerbaijan, Armenia, and Georgia formed a federation, but this broke up after a few weeks, when the three constituent elements each declared its independence. Two months after the *de facto* independence of Azerbaijan was recognized by Great Britain in 1920, the Bolsheviks overthrew it and established the Azerbaijan Soviet Republic (Apr. 28, 1920). During the first Transcaucasian Soviet Congress of Dec. 13, 1922, Azerbaijan united with the Armenian and Georgian Soviet Republics to form the Transcaucasian Socialist Federated Soviet Republic. A federal constitution accepted at the congress was published on Jan. 16, 1923.

BADEN, Baden. A constituent state of the German Republic, with a republican form of government since Nov. 22, 1918, formerly a grand duchy in the German Empire, bounded by Bavaria on the east and Alsace-Lorraine and the Palatinate on the west. Area, 5819 square miles; population in 1925, 2,312,462, as compared with 2,195,580 in 1919. Capital, Karlsruhe, with 145,694 inhabitants in 1925. The largest city is Mannheim with 247,480 inhabitants in 1925. Of the total population of the state in 1925, 1,115,477 were males and 1,196,985 females. The majority of the population is Roman Catholic. Education is free, general, and compulsory, the schools being under the jurisdiction of the state. For higher education, there are universities at Heidelberg and Freiburg. In 1927 the total area under cultivation was 2,061,747 acres. Among the agricultural products, oats, rye, barley, wheat, potatoes, and vegetables are the most important. In 1927, 30,315 acres were planted to the vine and the yield of wine was 3,559,098 gallons. In 1927, 12,522 acres were under tobacco and the corn crop was 373,850 metric tons. In 1928 there were 649,100 cattle, 467,700 swine, 46,400 sheep, 126,100 goats, and 69,600 horses. The budget for 1928 and 1929 fixed the ordinary revenue at 277,800,000 gold marks and the ordinary expenditure at 283,400,000.

The present constitution dates from Mar. 21, 1919, and vests the executive power in a cabinet comprising the state President, five ministers, and three state councilors without portfolios, all of whom are elected by the Legislature. Legislative power resides in a single chamber body known as the *Landtag*. The constitution abolishes all privileges of birth and religion and under it women are endowed with the same rights as the men, being eligible to all public offices. There is universal suffrage for all persons of either sex over 20 years of age. The initiative, referendum, and proportional representation have been introduced. The *Landtag* elected on Oct. 25, 1929, for the term ending Oct. 25, 1933, had 72 members, which included 34 Centrists, 18 Socialists, 6 Fascists, and 5 Communists. The

remaining seats were divided among the German Democratic party, the German People's party, the Right, and the Economic Union. The new cabinet consisted of Dr. F. J. Schmitt (Centrist), President and Minister of Finance, Dr. A. Remmele (Socialist), Minister of Justice and Education; Dr. Wittemann (Centrist), Minister of Interior.

BADEN, PRINCE OF. See MAX, PRINCE OF BADEN.

BAHAMAS. A group of islands, north of the British West Indies, off the southeast coast of Florida, 29 in number, of which 20 are inhabited. They also include 661 keys and over 3000 reefs. The islands, which are of coral formation, have an area of 4404 square miles and a population, according to the census of 1921, of 53,031. The estimated population on Jan. 1, 1928, was 59,294. The important islands with their populations in 1921, are as follows: New Providence, containing the capital, Nassau, 12,975; Andros, 6976; Eleuthera, 6048; Long Island, 4659; Abaco, 3993; Exuma, 3730; San Salvador, 4273. Elementary instruction is compulsory between the ages of 6 to 14. For the calendar year 1927, the exports totaled £483,773 and the imports, £1,844,932. The principal exports were sisal, sponge, lumber, tomatoes, shells, and preserved pineapples; principal imports, foodstuffs, spirits, raw materials, building materials, and manufactured articles. For the fiscal year ending Mar. 31, 1928, revenues amounted to £485,319 (\$2,367,386) and expenditures to £673,986 (\$3,287,704). For 1926-27 revenues and expenditures were £531,235 and £474,653. The public debt on Mar. 31, 1927, was £154,105, the assets exceeding liabilities by £1,052,312. Ship entries in 1928, 1268 vessels of 678,482 tons, clearances, 1144 vessels of 675,942 tons. An annual line from the United States to the Bahamas was opened on Jan. 9, 1929. The islands are administered by a governor who is assisted by an executive council and a legislative council, each of nine members and a legislative assembly of 20 members, the franchise being based on a small property qualification. Governor and Commander-in-Chief in 1929 Maj. Charles William Orr.

A hurricane which swept the island on Sept. 26, 1929, caused the death of over ten persons at Nassau and damaged or destroyed virtually all of the houses in that city. Among the structures damaged were the Government House, the Bahamas General Hospital, several churches, and the new customhouse sited on the government pier. On September 25, a steamer was wrecked on Abaco Island with the loss of 31 lives. The sponge industry and the vegetable, fruit, and field crops of the islands also suffered severe damage.

BAILEY, JOSEPH WELDON. American lawyer and former United States Senator, died suddenly while pleading a case in court at Sherman, Tex., Apr. 13, 1929. Born in Copiah County, Miss., Oct. 6, 1863, he was admitted to the bar in 1883. A Democrat and strong adherent to the principle of State's rights, he was made presidential elector from Mississippi in 1884. The following year, he moved to Gamesville, Tex., and in three years Texas voted him presidential elector-at-large. He represented that State in the Federal House from 1891 to 1901. He was then sent to the Senate, where he became conspicuous for his independent, dominating personality, and where his persuasive eloquence, and his

thorough knowledge of constitutional law, made him, as an opponent of a free interpretation of the constitution, a leader of the conservative wing of the Democratic party. He resigned from the Senate in 1912, and resumed his law practice in Texas, also remaining active in politics, particularly in his opposition to the Wilson administration, and to Prohibition. Mr. Bailey ran unsuccessfully in 1920 as the anti-Wilson candidate for the governorship of Texas.

BAKU. See AZERBAIJAN

BALKAN STATES. The collective term applied to those states which make up the Balkan peninsula in southeastern Europe north and west of the Aegean Sea. See ALBANIA, BULGARIA, GREECE, JUGOSLAVIA, ROMANIA, and TURKEY.

BALTIMORE, Md., ANNIVERSARY. See CELEBRATIONS

BANKERS' ASSOCIATION, AMERICAN
The dominant national organization of banks in the United States, having a membership of more than 20,000 banks out of a total of 25,000, with assets estimated in excess of 90 per cent of the nation's aggregate banking capital funds of \$9,400,000,000 and total resources of \$72,000,000,000. The association has four major divisions, each devoted to the special interests, technical advancement, and general welfare of the following classes of banks: National, savings, State, and trust company. Within the organization, there are also two sections devoted to general banking interests: the American Institute of Banking section and the State secretaries section. The American Institute of Banking section, which is the educational arm of the organization, has an enrollment of 43,000 students from banks in all parts of the country and a general membership of 63,000; the State secretaries section forms a link between the national organization and the State Bankers' Association. The association has a protective department which prosecutes continually a nation-wide campaign of prevention, protection, and investigation for all member banks in respect to criminal operations. It also conducts a legal department which keeps bankers informed on developments in the field of banking law and, in connection with the association's State and Federal legislative committees and councils, watches the interests of banking institutions and the public in both State and Federal legislation.

During 1929 the organization gave special attention to maintaining equitable bank taxation and to the modernization of such taxation. Through its economic policy commission, it made an extensive research into the chain banking movement, disclosing the existence of 273 chain-bank groups comprising 1858 banks with \$13,275,000,000 in combined resources, together with much theretofore unknown information in this field. The educational foundation of the association completed raising a fund of \$500,000 to be employed in the furtherance of scholarships and research in banking and finance in educational institutions and allocated 200 loan scholarships in annual units of \$250 to students in colleges throughout the country. In addition, its public education commission conducted lectures on banking and business schools and civic clubs throughout the United States, and the commission on banking practices and clearing-house functions developed active studies and methods for more scientific bank management.

The association holds its annual convention in

the autumn of each year, while the executive council meets in the spring. The latter group is a representative body, proportioned to the membership in all States, and is qualified to take action upon certain association matters. The administrative committee, composed of 15 members, including the national officers, heads of the various divisions and sections, and certain others, acts as the *ad interim* governing authority between meetings of the convention and of the executive council. The 1929 convention was held in San Francisco, and the chief topics of discussion were the chain-bank movement and methods for improving bank management. The general national officers elected for 1929-30 were: President, John G. Lonsdale, president of the Mercantile-Commerce Bank and Trust Company, St. Louis; first vice president, Rome C. Stephenson, vice president of the St. Joseph County Savings Bank, South Bend, Ind.; second vice president, Harry J. Haas, vice president of the First National Bank, Philadelphia; treasurer, Grant McPherrin, president of the Central State Bank, Des Moines, Iowa; secretary, William G. Fitzwilson. The continuing activities of the association are carried on by a permanent staff, functioning in the national headquarters at 110 East Forty-second Street, New York City, under the direction of the executive manager, Fred N. Shepherd.

BANKS AND BANKING The year 1929 was a period of exceptional importance and significance in connection with all banking, and particularly that of the United States, but the outstanding features of the period do not show on the surface, except under very close analysis, because of the fact that the turning point of the year came during the later months of the autumn, so that time was not given for the effect of important changes in conditions to show itself. On the surface, the characteristics of the twelve months were chiefly a continuation of the expansion movement, which had carried matters so far ahead during the preceding two years. After the close of October, very great changes in assets and liabilities occurred, as a result of the panic that broke out on the 23d of that month. These changes were chiefly seen in an immense exaggeration of loans, particularly loans on securities, but the immediate effects of this great change were short-lived, and within three weeks, figures had sunk back to about the level of the pre-panic period. They continued in the remainder of the year in a nearly "normal" condition, but factors tending to force a greater development of liquidity had now come into operation, and toward the close of the twelve-month, symptoms of change had begun to make themselves apparent, whose full meaning, however, was not yet positively determined at the close of December.

NATIONAL BANKS. The National Banking System did not reveal very great changes from the situation at the close of 1928, although it had become apparent early in the year that the same influences which were leading to the shrinkage, relatively speaking, of the national banks, and which had produced the McFadden Act of Feb. 25, 1927, were still at work and undergoing no material alteration. According to the report of the Comptroller of the Currency, published immediately upon the assembling of Congress in December, the total number of associations existing at the close of the report year (Oct. 31, 1929)

was about 201 less than a year earlier. As against the year 1928, when there had been a growth of \$1,200,000,000 in resources, a reverse movement occurred in the year 1929, the aggregate of re-

year, the total number being granted such powers during the twelvemonth being 69, while trust assets had increased \$940,000,000, or 28.52 per cent.

CHANGES IN NATIONAL BANK POSITION (In thousands of dollars)

	June 30, 1924	June 30, 1925	Per cent in crease (+) or decrease (-) since June 30, 1924	June 30, 1926	Per cent in crease (+) or decrease (-) since June 30, 1925	
Demand deposits	9,593,250	10,430,254	+ 8.73	10,778,603	+ 3.34	
Time deposits	5,259,933	5,924,658	+ 12.64	6,113,809	+ 6.57	
Loans and discounts *	11,978,728	12,074,067	+ 5.80	13,417,674	+ 5.87	
United States and other bonds, stocks, etc	5,142,328	5,730,444	+ 11.44	5,842,253	+ 1.95	
Lawful reserve with Federal Re- serve banks	1,198,670	1,326,864	+ 10.69	1,381,171	+ 4.09	
	June 30, 1927	Per cent in- crease (+) or decrease (-) since June 30, 1926	June 30, 1928	Per cent in crease (+) or decrease (-) since June 30, 1927	June 29, 1929	Per cent in crease (+) or decrease (-) since June 30, 1928
Demand deposits	10,923,729	+ 1.35	11,003,795	+ 0.73	10,504,268	- 4.54
Time deposits	7,315,624	+ 15.87	8,296,638	+ 13.41	8,317,095	+ 0.25
Loans and discounts *	13,955,696	+ 4.01	15,144,995	+ 8.52	14,801,130	- 2.27
United States and other bonds, stocks, etc	6,393,218	+ 9.43	7,147,418	+ 11.80	6,656,535	- 6.87
Lawful reserve with Federal Re- serve banks	1,406,052	+ 1.80	1,453,183	+ 3.37	1,744,951	- 7.46

* Includes rediscounts and customers liability under letters of credit

sources showing a loss of \$1,001,170,000 or a recession of about 3.58 per cent. Consolidations and combinations were as before, the chief factors in reducing the numerical growth of the system, while an unusual number of retirements also took place, and failures continued on about the same level as previously, the total number being seventy-nine, as compared with sixty-one in 1928.

According to the American Bankers' Association, which appointed a commission to study the subject especially, the year was a record breaking period in the development of chain and group banking, it being estimated by the Bankers' Association, that nearly 1800 institutions were controlled by groups and chains (at midyear) with about \$13,000,000,000 of assets, or nearly one-quarter of the active commercial banking resources of the System. The Bankers' Association did not state to what extent national banks figured in this group or chain of banking, but the indications were that they shared in it to the full proportion of their numerical strength, while in the cities they were engaged to an unusual degree in bringing about combinations and mergers which in a good many cases resulted in the acceptance of State charters, rather than national. The increasing tendency of national banks to take on trust functions continued during the

Brief analysis of the condition of national banks is furnished in the table in which the chief assets and liabilities of the system are contrasted for a series of dates. From this showing, the continuous growth of operations characteristic during recent years is seen to have been brought to a halt and the decline both of deposits and of lending operations, already indicated in speaking of recession of gross resources, stands out conspicuously. For the report year 1929, the average earning of national banks (measured by capital and surplus) was approximately 8 per cent, and the total net addition to profit was \$437,000,000 or about \$51,000,000 more than the net increase for the preceding year.

FEDERAL RESERVE MEMBERS. The position of Federal Reserve member banks, included, as is well known, the facts as to a body of banks and trust companies, which comprise not only the national banks themselves but also about 1136 institutions organized under state charters. Inasmuch as this group of banks includes a large fraction of the entire body of assets of commercial banks, it affords a rather better reflection of actual changes in bank credit, than can be obtained from the national figures alone. The weekly report now covers about 600 representative members, situated in 100 cities.

SUMMARY OF MEMBER BANK POSITION

	Dec 31, 1928	Dec 24, 1929	Jan 2, 1929
Loans and investments—total	\$23,163,000,000	+ \$273,000,000 *	+ \$428,000,000
Loans—total	17,649,000,000	+ 344,000,000 *	+ 846,000,000
On securities	8,304,000,000	+ 373,000,000 *	+ 486,000,000
All other	9,344,000,000	- 30,000,000 *	+ 359,000,000
Investments—total	5,514,000,000	+ 71,000,000 *	+ 417,000,000
United States Government securities	2,598,000,000	+ 117,000,000 *	+ 414,000,000
Other securities	2,921,000,000	+ 45,000,000 *	+ 4,000,000
Reserve with Federal Reserve Banks	1,726,000,000	+ 23,000,000 *	+ 133,000,000
Cash in vaults	262,000,000	+ 29,000,000 *	+ 30,000,000
Net demand deposits	14,118,000,000	+ 529,000,000 *	+ 185,000,000
Time deposits	6,787,000,000	+ 64,000,000 *	+ 125,000,000
Government deposits	82,000,000	+ 10,000,000 *	+ 85,000,000
Due from banks	1,816,000,000	+ 194,000,000 *	+ 65,000,000
Due to banks	3,150,000,000	+ 953,000,000 *	+ 268,000,000
Borrowings from Federal Reserve Banks	405,000,000	- 97,000,000 *	- 525,000,000

+ Increase - Decrease. * Dec 24 figures revised.

Continuation of the great increase in operations of banks in general and particularly in loans and discounts, which had previously been so notable, is here reflected, notwithstanding, as already remarked, the powerful factors making toward liquidation, which had gone into force during the latter part of the autumn. It will be noted that the aggregate increase in loans for the year was \$846,000,000, notwithstanding that the loan account was already tremendously enlarged at the beginning of the year. Expansion of demand deposits had put this item ahead by \$135,000,000, even after the heavy drafts to which the banks had been subjected in November and December. The reduction in the borrowings from Federal Reserve banks reflects the status of the liquidation process that had begun to take effect late in the year.

STATE BANKS AND TRUST COMPANIES As in former years, the development of the state banks and trust companies, ran closely parallel to that of national banks. The table herewith given, however, relates to an earlier period (June 30, 1929), and is therefore not exactly comparable with the figures for Federal Reserve members (which include both national and State banks and trust companies). The great expansion of loans is noteworthy, while the growth of deposits on a lower ratio follows the same lines of development as in the case of the national banks. Decline of investment holdings in both classes of banks, reflects the fact that effort was being made by the leading institutions in both groups to rid themselves of some part at least of the tremendous burden of bonds and other securities which they had taken on during the boom period of the preceding two years. Analysis of both statements, strongly indicates that a definite turning point in the development of the assets and liabilities both of state and national institutions had been reached in 1929, inflation having been carried fully as far as it was at all safe to go

9 when the rate of discount was raised to 6 per cent, an action followed not long afterward by a similar measure on the part of the Bank of England. This advance, combined with the acceptance restriction, to which reference has already been made, was decidedly helpful in reducing the aggregate commitments of the banks, so that they reached the panic period, in October, with a substantial amount of free resources. These had been materially augmented by the fact that during the first ten months of the year, the Reserve institutions gained gold quite steadily, there being a net importation to the United States of about \$175,000,000.

During November and December, the tide turned, and a loss of \$112,000,000 occurred. Reserve banks, however, closed the year materially stronger in gold than they had been at the outset, notwithstanding that very substantial transfers of gold had been made from New York to the interior banks during and after the panic. The panic gave the signal for the abandonment of restrictive policies, and the discount rate was twice cut, bringing it finally to $4\frac{1}{2}$ per cent. Meantime, very liberal purchases of Treasury bills and certificates, and of acceptances had been ordered, and the total volume of these classes of paper held by Reserve banks mounted rapidly. At the close of the year, the Reserve banks were holding fully \$400,000,000 of acceptances for their own account. The situation is reflected in the accompanying tabular statement showing the general position of the Reserve banks at the beginning and end of 1929.

One feature of the year in Reserve banking, which deserves to be very carefully noted, is the fact that during the year large withdrawals of funds were made by foreign bank and individuals who had previously sent them to the United States, with a view to sharing in the high rates of interest which were prevalent here. The panic which broke out in October, caused a great shock

PRINCIPAL ITEMS OF RESOURCES AND LIABILITIES OF STATE (COMMERCIAL) SAVINGS, PRIVATE BANKS, AND LOAN AND TRUST COMPANIES
[In thousands of dollars]

Items	1925	1926	1927	1928	1929
Loans *	21,073,990	23,623,107	23,849,344	24,437,341	26,621,803
Investments	9,669,669	9,972,888	10,861,875	11,024,366	10,692,201
Cash	591,681	636,569	643,692	572,732	521,925
Capital	1,800,276	1,860,431	1,902,325	1,931,666	2,109,603
Surplus and undivided profits	2,580,134	2,858,653	3,130,367	3,394,758	3,742,528
Deposits (individual)	30,411,030	31,789,884	32,893,301	33,944,265	34,316,418
Resources	37,706,174	39,577,738	41,550,615	43,066,089	44,732,277

* Including overdrafts

FEDERAL RESERVE BANKS. Federal Reserve banks had entered the year 1929 in a much over-expanded condition. They had taken on a heavy burden of acceptances, and they were also largely involved in rediscounts, made during the period when they were furthering the inflation that had expanded all banks in the United States so very greatly during the two years preceding. The Reserve banks, soon after the opening of the year, began to send out warning letters to their members, in which they sharply cautioned the latter against new speculative engagements, or engagements to assist in maintaining a speculative position already assumed by clients. This period of warnings was accompanied by raising the rate for buying acceptances, and as a result, a large amount of this paper was gradually eliminated from the portfolios of the banks. The climax of the restriction period came on August

to confidence abroad, and many institutions hastily sent for their balances. Reserve banks had been in the habit of indorsing acceptances for foreign banks at a moderate commission whenever requested. They now broadened this policy, and indorsed a much larger number of acceptances than at any time in the past. At the close of the year, they had about \$500,000,000 of such indorsed acceptances, which they were carrying in their vaults in trust for the account of foreign, central, and private banks and bankers. Reduction of the discount rate toward the close of the year had some effect in preventing this outflow of funds, by convincing foreign bankers that conditions here were more conservatively managed than they had supposed. On the other hand, however, it tended to stimulate withdrawals in certain quarters because of the fact that after the panic, lending rates were no longer profitable in

RESOURCES

	Twelve Federal Reserve Banks		
	Dec 31, 1929	Dec 31, 1928	Jan 2, 1929
Gold with Federal Reserve agents . .	\$1,676,918,000	\$1,732,160,000	\$1,233,332,000
Gold redemption fund with U S Treasury . .	78,287,000	78,787,000	73,693,000
Gold held exclusively against Federal Reserve notes	1,750,205,000	1,805,947,000	1,307,025,000
Gold settlement fund with Federal Reserve Board	511,243,000	489,879,000	685,346,000
Gold and gold certificates held by banks	595,004,000	525,814,000	595,256,000
Total gold reserves	2,857,051,000	2,821,640,000	2,587,627,000
Reserves other than gold	158,877,000	129,106,000	180,898,000
Total reserves	3,010,928,000	2,950,746,000	2,718,525,000
Nonreserve cash	81,909,000	61,310,000	83,308,000
Bills discounted	353,559,000	430,558,000	757,451,000
Secured by U S Government obligations	278,862,000	332,225,000	394,013,000
Other bills discounted	654,697,000	108,333,000	363,438,000
Total bills discounted	632,421,000	762,781,000	1,151,464,000
Bills bought in open market	392,209,000	354,948,000	484,358,000
U S Government securities	76,817,000	68,683,000	52,666,000
Bonds	215,604,000	201,266,000	120,818,000
Certificates and bills	218,166,000	215,124,000	70,469,000
Total U S Government securities	510,587,000	485,043,000	248,958,000
Other securities	12,300,000	9,770,000	9,886,000
Total bills and securities	1,547,517,000	1,612,537,000	1,889,660,000
Due from foreign banks	721,000	721,000	728,000
Uncollected items	748,736,000	776,546,000	826,187,000
Bank premises	57,359,000	59,329,000	58,591,000
All other resources	11,275,000	11,089,000	7,715,000
Total resources	\$5,458,445,000	\$5,472,278,000	\$5,584,714,000

LIABILITIES

Federal Reserve notes in actual circulation	\$1,909,728,000	\$1,989,159,000	\$1,829,364,000
Deposits			
Member bank—reserve account	2,855,263,000	2,320,118,000	2,497,757,000
Government	28,852,000	30,671,000	30,999,000
Foreign bank	5,710,000	5,539,000	5,935,000
Other deposits	23,850,000	18,883,000	33,042,000
Total deposits	2,413,675,000	2,375,211,000	2,568,733,000
Deferred availability items	672,932,000	874,746,000	776,626,000
Capital paid in	170,973,000	170,760,000	146,952,000
Surplus	276,936,000	254,398,000	254,398,000
All other liabilities	14,216,000	48,604,000	13,641,000
Total liabilities	\$5,458,445,000	\$5,472,278,000	\$5,584,714,000
Ratio of total reserves to deposit and Federal Reserve note liabilities combined	69 6%	67 6%	91 9%
Contingent liability on bills purchased for foreign correspondents	\$547,962,000	\$540,863,000	\$325,064,000

* Revised figures

the New York market, so that better returns could be earned in almost any European market.

BANK CREDIT Reference has already been made to the panic of 1929, but a somewhat further explanation is necessary, with a view to making clear the inter-relation of bank credit with the investment situation. So-called brokers' loans, or loans on securities, made by banks to brokers had been increasing very rapidly, throughout the year 1928, but assurance had been given by the Federal Reserve authorities that they were not dangerously high. From the beginning of 1929 onward, these loans continued to expand, the total as reported by the New York Stock Exchange, eventually reaching a figure near \$8,550,000,000 in September. Immediately upon the outbreak of the panic, heavy withdrawals of call funds were made by non-banking lenders, while the banks themselves found it necessary to absorb a large part of these loans. The result was a tremendous process of shifting, while at the same time the rapid decline of stock prices reduced brokers' loans very greatly and continued to cut them back throughout the remainder of the year, the final total being nearly \$4,000,000,000 less than at the beginning of the twelvemonth. It should be noted that the growth in brokers' loans

was paralleled by a similar growth of loans based on securities throughout the whole body of banks of the country. These loans undoubtedly constituted a great menace to liquidity and were perhaps the outstanding feature of financial discussion during the year. The following figures reported by the New York Stock Exchange trace the development of the loan account.

BROKERS' LOANS, 1929

	Demand	Time	Total
Dec 31	\$3,376,420,785	\$613,089,488	\$3,989,510,273
Nov 30	3,297,293,032	719,305,737	4,016,598,769
Oct 31	3,238,028,979	870,795,889	4,108,824,868
Sept 30	7,831,991,269	717,392,710	8,549,383,979
Aug 31	7,161,977,972	719,641,454	7,881,619,426
July 31	6,870,142,664	608,651,530	7,478,794,294
June 29	6,444,459,079	626,762,195	7,071,221,275
May 31	6,009,920,475	565,217,450	6,565,137,925
April 30	6,203,712,115	571,218,280	6,774,930,395
Mar 30	6,209,986,520	594,458,888	6,804,445,408
Feb 28	5,948,149,410	730,396,507	6,678,545,917
Jan 31	5,982,672,410	752,491,801	6,735,164,242

BANK FAILURES There had been a decided recession in bank failures during the year 1928, and it had been expected that returns for 1929 would show a still further movement toward

normal. Instead of that, the tendency of bank failures was to increase quite materially, and the failures appeared to be growing more numerous among the larger banks, rather than, as in former years, primarily among the smaller. Experience showed that the so-called remedies proposed by the American Bankers' Association a year earlier were of no avail and toward the close of the year it began to be freely said by bankers that there would be no definite improvement in the failure situation except for the weeding out of weak banks through amalgamation with stronger institutions, either under group banking, chain banking, or under some modified system of chain banking. The accompanying figures summarize the development of the failure situation during the year 1929.

BANK SUSPENSIONS, BY CLASS OF BANK

Month	[Amounts in thousands of dollars]					
	All banks		Member banks		Non member banks	
	Num- ber	Total de- posits	Num- ber	Total de- posits	Num- ber	Total de- posits
1927						
Total, 12 mos.	662	193,891	124	66,336	538	127,555
1928						
January	53	12,721	8	3,456	45	9,265
February	50	20,767	11	10,082	39	10,685
March	65	19,443	9	4,373	56	15,070
April	44	9,910	6	3,361	38	6,549
May	39	9,968	5	2,387	34	4,681
June	28	15,209	2	1,609	26	13,510
July	24	6,076	2	468	22	5,608
August	21	6,927	4	2,493	17	4,434
September	20	8,849	4	3,806	16	5,043
October	41	9,011	3	803	38	8,208
November	72	24,784	9	11,021	63	13,763
December	44	11,076	10	3,919	34	7,157
Total, 12 mos.	491	138,642	73	42,240	418	96,402
1929						
January	54	17,905	6	10,158	48	7,747
February	60	21,498	14	4,924	46	16,574
March	49	8,449	8	2,490	41	5,959
April	29	9,162	4	1,922	25	7,240
May	110	34,219	7	4,913	103	29,307
June	48	21,274	7	3,353	41	18,371
July	69	70,426	11	24,136	58	46,290
August	17	7,912	3	1,005	14	6,907
September	39	10,242	3	1,326	36	8,916
October	41	13,964	6	4,509	35	9,455
November	69	24,609	4	2,319	65	22,290
December	50	15,459	9	3,029	41	12,430

BRANCH BANKING A very decided change of opinion with reference to branch banking was to be noted during the year 1929. The two years prior to the opening of 1929 had been a transition period, in which there was an inclination to temporize with the whole subject. With the opening of the year, however, a fairly definite shift of view began to make itself felt. No definite advance in the branch situation was observable, and little progress under the MacFadden Law, which had allowed the establishment of city branches, was observable. For the entire year 1929, a total of new branches amounting to 173 was authorized, but at the close of the year, the Comptroller of the Currency in surveying the situation had to note that some eighty-six branches, established under the MacFadden Law had been closed, and that the total remaining in existence was only 1061. Although his predecessors in office had been vigorously opposed to branch banking, the comptroller now took a different attitude and in his report to Congress he made his appearance as a frank advocate of

branch banking, definitely requesting that Congress should authorize banks to establish branches practically anywhere within their own Federal Reserve district. Such action he asserted, would undoubtedly result in affording the community a better and safer banking system, and would probably tend to hold in the national system a good many banks which would otherwise leave it. The change of front thus indicated was too extreme to permit any immediate action to take place in Congress, and at the close of the year, legislators were still discussing the best course to be adopted.

INTERNATIONAL RELATIONS One striking development in international relations made its appearance in 1929. As the result of the Paris conference on reparations during the months of February and later, there had been developed a plan for an international bank, whose purpose it would be to take over the task of supervising reparations payments, but which would also serve as a joint agency for the central banks of the world, and for the clearance of accounts among them, as well as the establishment of a centralized management of their gold. It was proposed that this bank should be capitalized from contributions made from the central banks of several countries, of which the United States was to be one, but the plan met with the prompt opposition of President Hoover, and announcement was made that the Federal Reserve System would not be permitted to participate. Later conferences resulted in the acceptance of the International Bank plan by practically all countries except the United States, so that at the close of the year matters were in a position to proceed. American bankers having been freely drawn into the conferences, it was assumed that in some way they would see to it that the resources of Federal Reserve banks were connected with, or made available to, the new bank. Other than this, and the continued withdrawal of foreign funds previously deposited in the United States, after the panic, the international banking relations of the United States were little altered.

CONDITIONS AT CLOSE OF YEAR The main problems at the close of the year in the American banking community were largely concerned with the final results of the panic, and the fact that country banks had been so little able to liquidate their loans on securities. The existence of a heavy draft on the gold of the nation, and the prospect of still larger shipments, naturally tended to cause doubt as to the extent to which this movement would go, and it was realized that, should it continue, as expected, the effect might easily be to bring about a rather embarrassing narrowing of the banking reserve of the country, already so small, relative to the total structure of bank credit as a result of the tremendous expansion of the deposits and loans of local banks. On the other hand, the brokers' loan situation had been largely corrected, and the worst of the fears entertained at the close of the year 1928 realized. The chief unfavorable expectation for the future, with the opening of the year 1930, was thus naturally seen in the possible growth of bank failures on a serious scale, due to prospective inability to liquidate.

BARNARD, OTTO TREMONT American lawyer and banker, died at sea, Jan. 16, 1929. Born in Brooklyn, N. Y., Apr. 28, 1854, he was graduated from Yale in 1876, and from the law school

of Columbia University in 1878. Being admitted to the bar, he practiced in New York until 1889, when he was appointed vice president of the Dolphin Jute Mills, becoming president the following year. He entered banking in 1893, as president of the Continental Trust Company, and when that concern merged with the New York Security and Trust Company, Mr. Bannard was made president, remaining with the firm as chairman of the advisory committee until his death. He also served as director of the Dolphin Jute Mills, the Herring-Hall-Marvin Sales Company, the Niagara Fire Insurance Company, and the Metropolitan Life Insurance Company, and he was a trustee of the Commonwealth Fund, and a member of the Board of Education of New York for two years. He was president of the National Employment Exchange, organized in 1909, and in July, 1918, was appointed chairman of the advisory committee to the alien property custodian. Mr. Bannard was defeated as the Republican candidate for mayor in 1909. Interested in charity work, he served as vice president of the Charity Organization Society of New York, and as trustee of the Provident Loan Society, and in 1916 he represented the American Red Cross and the war relief committee of the Rockefeller Foundation in the Balkan States. He was a fellow of the Corporation of Yale University until 1928. The honorary M. A. degree was conferred on him by that institution in 1908, and the LL.D. degree in 1924.

BAPTISTS In 1929 there were in the United States 14 groups comprised in the denomination known as Baptist, which maintains that baptism should be administered to believers only and generally by immersion. The first Baptist Church in America probably was established by Roger Williams in Providence, R. I., in 1639, although this honor is claimed by the First Baptist Church of Newport, R. I., organized the same year or shortly after. As a result of political differences, and particularly on account of the question of slavery prior to the Civil War, the Southern Baptists withdrew from the national organization in 1845, forming the Southern Baptist Convention, which, since that time, has functioned not as a new denomination but as an organization for the purpose of directing missionary and general evangelistic work in the White Baptist churches of the Southern States. The National Baptist Convention, representing the Negro churches, was formed in 1880. Other divisions were known as Primitive, General, Regular, and United Baptists.

According to the *American Baptist Year Book*, 1929-30, there were in the United States in 1929 a total of 55,603 churches of the Northern, Southern, and National (Negro) Baptist conventions, with 50,477 ordained ministers and 2068 local associations. Baptisms during the year numbered 319,911, making the total membership 8,729,025. Sunday schools numbered 47,233, with an enrollment of 5,132,016 pupils. Church property was valued at \$471,479,200, and contributions amounted to \$76,138,298, of which \$62,445,744 was for current expenses and \$13,692,554 for benevolence. The churches are congregational in polity, each church being sovereign as to its own discipline and worship. Applicants for the ministry are licensed to preach by the churches in which they hold membership.

NORTHERN BAPTIST CONVENTION In 1929 the Northern Baptist Convention, composed of 37

conventions in 35 States, reported 429 local associations, 8213 churches, 8805 ordained ministers, 61,147 baptisms during the year, 1,404,685 members, 7343 Sunday schools, 1,159,447 Sunday-school pupils, and contributions amounting to \$33,087,577. The twenty-second annual meeting of the Northern Baptist Convention was held in Denver, Colo., June 14-18, 1929, the general theme being "A Christ-like World." This convention marked the tenth anniversary of the New World Movement which was started in 1919. The keynote address was given by Dr. Avery A. Shaw, president of Denison University. Other important speakers were Bishop F. J. McConnell of the Methodist Episcopal Church, president of the Federal Council of Churches of Christ in America, Mrs. Honoré Willis Morrow, author of *Splendor of God*, a new biography of Adoniram and Ann Hasceltine Judson, and Dr. J. C. Massee on "Evangelism for a Christ-like World." The officers elected for 1929 were: President, Dr. Alton L. Miller of Boston, Mass.; first vice president, Prof. David J. Evans of Colgate-Rochester Divinity School, Rochester, N. Y.; second vice president, Mattison B. Jones of Glendale, Calif.; secretary, the Rev. Maurice A. Leitch of Mass.; recording secretary, the Rev. Clarence M. Gallup of Providence, R. I.; statistical secretary, the Rev. Charles A. Walker of Dover, Del.; and treasurer, Orin R. Judd of New York City. The next annual meeting was to be held in Cleveland, Ohio, May 28-June 2, 1930.

In 1929 the Northern Baptist Convention maintained 59 educational institutions, including 11 theological seminaries, 7 training schools, 22 colleges, 3 junior colleges, and 16 academies. These institutions in 1928 had 36,266 students, 2264 instructors, 542 buildings, property aggregating \$78,759,292 in value, endowments valued at \$107,092,902, and an annual income for the year of \$14,588,873. The foreign-mission field of the Northern Baptist Convention included Burma, Assam, South India, Bengal-Orissa, South China, East China, West China, Japan, Belgian Congo, and the Philippine Islands, 723 missionaries working at 126 stations. In 1927 churches numbered 2368 with 282,737 members, native workers, 9800, schools, 3903 with an enrollment of 149,377 pupils, and hospitals and dispensaries, 113 with a total of 24,404 in-patients and 285,227 out-patients.

In December, 1928, John D. Rockefeller, Jr., gave \$1,000,000 each to the Woman's American Baptist Home Mission Society and to the Woman's American Baptist Foreign Mission Society to further Baptist missions. The field of the home mission societies included, in addition to the United States and its dependencies, Mexico, the West Indies, Central America, and South America. Their greatest activity was among the Negroes, Indians, and new Americans. The denomination also maintained six hospitals, the largest being the New England Baptist Hospital in Boston and the Northwestern Baptist Hospital in St. Paul, 20 homes for the aged, and 15 children's homes. The official periodical of the Northern Baptist Convention is *The Baptist* (Chicago); other denominational papers are the *Watchman-Examiner* (New York City), *Baptist Observer* (Indianapolis), *Baptist Banner* (Parkersburg, W. Va.), and *Baptist Record* (Pella, Iowa). Headquarters of the American Baptist Publication Society are in Philadelphia.

SOUTHERN BAPTIST CONVENTION In the *Southern Baptist Handbook, 1929*, there were reported 17 State conventions, 24,274 churches, 22,700 ordained ministers, 183,020 baptisms during the year, 3,705,876 members, 21,399 Sunday schools, 2,797,129 Sunday-school pupils, 22,850 Baptist Young People's Unions with a membership of 500,564, contributions totaling \$39,927,910, and church property valued at \$205,705,949. The receipts of the boards of the convention in 1929 were as follows: Southern Baptist Foreign Missions Board (Richmond, Va.), \$1,428,666; Southern Baptist Home Missions Board (Atlanta, Ga.), \$854,184; Sunday-school board of the Southern Baptist Convention (Nashville, Tenn.), \$1,950,202; and ministers' relief and annuity board (Dallas, Texas), \$400,268. The denomination maintained 99 schools and colleges, including 5 theological schools, 31 senior colleges, 28 junior colleges, and 35 academies, with a total enrollment of 39,948 students, 1841 instructors, endowment valued at \$10,977,702, and property valued at \$40,136,689. It also reported 26 hospitals (two fostered by the Southern Baptist Convention) and 24 by the State conventions) valued at \$15,122,740 and a \$1,921 patients during the year, ... homes with a property value of \$5,740,971 and accommodating 4588 children, and 3 homes for the aged.

Some far-reaching changes, both in the organization and in the leadership of the Southern Baptists, took place in 1929. Owing to the defalcation in 1928 of the treasurer of the home missions board, there was brought about a complete change of the personnel of the directors, as well as of their methods of operating the board. Another change ordered by the convention was the setting up of a minimum-operating budget to be based upon definite and specified amounts of money to be given to certain objects, rather than relying upon certain fixed percentages of the total receipts, to take care of the causes and institutions of the convention. A third radical change was the convention's decision to ask that the State convention and the churches, beginning Jan. 1, 1929, should forward all funds for South-wide or world-wide causes directly to the executive committee in Nashville, Tenn. The following officers were elected at the 1929 session of the Southern Baptist Convention, held in Memphis, Tenn., May 9-12: President, Dr. George W. Truett, Dallas, Tex.; vice presidents, Dr. W. A. Hewett, Jackson, Miss.; Dr. J. C. Hardy, Belton, Tex.; M. P. Love, Hattiesburg, Miss.; and the Rev. W. C. Reeves, Hot Springs, Ark.; secretaries, Dr. Hight C. Moore, Nashville, Tenn., and J. Henry Burnett, Macon, Ga.

NATIONAL BAPTIST CONVENTION (NEGRO). In 1924 there was reported for the National Baptist Convention 728 local associations in 30 States, 21,712 churches, 17,743 ordained ministers, a constituency of 3,515,542 members, of whom probably 75,000 were baptized during the year, 17,592 Sunday schools with an enrollment of 1,448,250 pupils, and contributions amounting to \$3,537,000. Could statistics have been correctly reported, they would have revealed a Negro Baptist constituency approximating 5,000,000.

OTHER GROUPS In addition to several unorganized groups of foreign-speaking Baptists in the United States, there were the following organized bodies which held their own conferences:

German, Swedish, French-speaking Baptists of New England, Finnish Baptist Mission Union, American Magyar (Hungarian), Italian, Danish, Norwegian, Czechoslovak, Polish, Rumanian, Portuguese, and Russian-Ukrainian conferences. Spanish-speaking (Mexican) Baptists were well organized in some sections, North and South; and there were unorganized bodies of Chinese and Japanese Baptists. Statistics for these bodies in 1929 were as follows: Churches, 979; ministers, 848; baptisms, 4436; membership, 92,264; Bible schools, 941; Bible-school enrollment, 90,758; property valuation, \$12,366,700; and contributions, \$2,429,505.

Smaller branches of the denomination, differing in various respects from the main branches of the church, included the following Baptists. General Six-principle, Seventh-day, Free Will, United American Free Will (Colored), Free Will (Bullockites), General, Separate, Regular, United, Duck River, Primitive, Colored Primitive, Two-Seed-in-the-Spirit, Predestinarian, Independent Baptist Church of America, and American Baptist Association. The total number of members, according to the Federal Census of Religious Bodies of 1920, was 429,955. See also **BAPTISTS, FREE**.

In the Dominion of Canada there were three conventions, that of Ontario and Quebec; that of the Maritime Provinces, including New Brunswick, Nova Scotia, and Prince Edward's Island; and the Western Baptist Union, embracing Manitoba, Saskatchewan, Alberta, and British Columbia. In these conventions in 1929, there were 1260 churches, with 883 ordained ministers, 141,384 members, 4805 having been baptized during the year, and 1163 Sunday schools with an enrollment of 108,642 pupils. Property valuation, exclusive of Ontario and Quebec, aggregated \$5,822,200, and contributions for the year amounted to \$2,567,237, of which \$2,000,386 was devoted to current expenses and \$566,851 to missionary beneficence. In Mexico, there were 92 churches, 75 ordained ministers, and 6107 members, of whom 562 were baptized during the year.

The Baptist World Alliance, which was organized in 1905, meets every five years. A meeting was held in Toronto, Canada, in July, 1928. The relationship of the World Alliance to the Baptist churches is purely advisory, its purpose is the discussion of interests common to the denomination. The *British Hand Book* for 1929 prepared the following statistics of the denomination in 1928:

	Churches	Ministers	Members
America	58,030	50,978	8,931,956
Europe	8,157	4,750	1,636,366
Asia	8,231	1,645	859,160
Africa	1,247	390	78,751
Australasia	474	392	34,088
	71,139	58,195	11,040,321

BAPTISTS, FREE A branch of the Baptist denomination, which by 1929 had practically completed its policy of merging with the Northern Baptist Convention. There was but little independent activity of the Free Baptists, yet the General Conference of the Free Baptists, the national incorporated organization, still preserved its legal existence and powers. Estates in which life interests terminated or other entailments were removed were still coming to its treasury. The majority of Free Baptist ministers, churches,

and members were included in the enumeration of the Northern Baptist Convention. Alfred Williams Anthony was serving as corresponding secretary and treasurer. See BAPTISTS

BAR ASSOCIATION, AMERICAN A national association organized in 1878 to advance the science of jurisprudence, the administration of justice, harmony in legislation, and the observance of legal precedents throughout the United States, as well as to uphold the legal profession and promote good understanding among its members. The fifty-second annual meeting was held Oct. 23 to 25, 1929, in Memphis, Tenn., and was attended by more than 2200 delegates. The retiring president, Gurney E. Newlin of Los Angeles, in his opening address, "Conservation of the Traditions of the Legal Profession," struck the keynote of the convention. To raise the ethical standards of the bar and qualifications for admission, and to simplify and lessen the lawyer's task by more uniform laws and lawful methods of law enforcement and more effective trial-by-jury procedure. The address of the Hon. Newton D. Baker, former Secretary of War, "The World Court," provided a valuable summary of the historical setting of the idea and a clear statement regarding the American reservation as to advisory opinions. Hon. Walter Simons, former President of the Supreme Court of the German Republic, gave renewed evidence of his understanding and appreciation of American constitutional arrangements in his address, "The Relation of the German Judiciary to the Executive and Legislative Branches." The recognized importance of proper educational requirements for admission to the study of law and the bar was attested by the symposium conducted by Judge William C. Coleman of the Federal District Court, Baltimore, Md., Emory R. Buckner of the New York bar, and Dean H. W. Arant of the Ohio University School of Law.

Among the decisions reached by the association on the various proposals submitted to it by the executive committee and the sections were the following: The adoption of a resolution condemning the conduct of law schools for commercial purposes, favoring making psychiatric facilities available for criminal and correctional courts, reaffirming its stand in favor of a legal and fair method of settling the disputes arising in industrial controversies connected with interstate commerce, expressing its approval of the creation of the President's Commission on Law Observance and Law Enforcement, approving the view of the committee on international law that the protocol of jurists seemed to offer full protection to American interests in the matter of advisory opinions, and approving a uniform securities act and amendments to the uniform vehicle act. Reports submitted and adopted at the convention included those of the conferences of commissioners on uniform State laws and of bar association delegates, those of the sections on criminal law and criminology, legal education and admissions to the bar, mineral law, patent, trade-mark and copyright law, public-utility law, those of the standing committees on admiralty and maritime law, aeronautical law, American citizenship, commerce, commercial law and bankruptcy, insurance law, international law, jurisprudence and law reform, legal aid, noteworthy changes in statute law, professional ethics and grievances, radio law, and those of special committees on division of the eighth cir-

cuit, Federal taxation, judicial salaries, removal of government liens on real estate, and uniform judicial procedure.

The total membership of the association in 1929 was 27,620. The officers elected for 1929-30 were Henry Upson Sims of Birmingham, Ala., president, John H. Voorhees of Sioux Falls, S. D., reelected treasurer, and William P. MacCracken, Jr., of Chicago, reelected secretary. The headquarters of the organization are at 209 South LaSalle Street, Chicago. See CRIME.

BARBADOS An island colony of Great Britain, lying to the east of the Windward Islands, the most easterly of the Caribbean Islands. The area is 166 square miles and the population, according to the census of 1921, 150,312; estimated, Jan. 1, 1928, 168,209. The capital and chief city is Bridgetown, with a population of 13,486. In 1927 the average attendance in the elementary schools was 14,649 out of an enrollment of 22,732. Births (1927), 5317, deaths, 3401.

In 1927-28 the imports totaled \$2,300,108, exports, \$1,603,531, revenue, \$414,884, expenditure, \$481,252, and the public debt, \$585,000. The principal imports in 1927 were cotton manufactures, fertilizer, flour, rice, dried fish, lumber and shingles; the principal exports were sugar, molasses, rum, raw cotton. The trade of the island was principally with the United Kingdom, the United States, and Canada. A governor administers the affairs of the island with the assistance of an executive council, an executive committee, a legislative council of nine members appointed by the governor, and an assembly of 24 members elected annually by the people. Governor in 1929, Sir W. C. F. Robertson.

BARCELONA INTERNATIONAL EXPOSITION. See EXPOSITIONS

BARING, JOHN See RIVERSTONE, SECOND BARON OF

BARLEY. The barley production in 1929 of 30 countries reporting to the International Institute of Agriculture, Rome, not including the Soviet Republics and South American countries, was estimated at 1,335,109,000 bushels, a decrease of 17 per cent below the yield of 1928 and an increase of 26.8 per cent above the average production for the five years 1924-1928. The area in these countries was 57,068,000 acres, which was 5.8 per cent above the area of 1928 and 20.7 per cent above the five-year average. The yields of the leading barley-producing countries, exclusive of the United States, were as follows: Germany, 137,583,000 bushels; Rumania, 125,717,000; Canada, 100,467,000; Spain, 97,109,000, and Japan, 80,257,000. The Soviet Republics usually rank next to the United States in production. Argentina, by far the most important barley-growing country of South America, produced in 1928-29 nearly 17,000,000 bushels on an area of 1,402,000 acres.

The estimates by the Department of Agriculture of barley production in the United States were 307,105,000 bushels for 1929 and 357,487,000 bushels for 1928, as compared with a five-year average of 208,783,000 bushels. The increase in acreage from 1928 to 1929 was considerably below the large increases in several earlier years. In 1927 the area harvested was 9,476,000 acres, as against 12,598,000 acres in 1928 and 13,212,000 acres in 1929. The average yield was only 23.2 bushels per acre, or 5.2 bushels below that of 1928. The average farm price on Dec. 1, 1929, was 55 cents per bushel, or practically the same

as in the preceding year. On this basis, the total value of the crop was \$168,807,000, which was \$28,652,000 below that of the crop of 1928.

The production for the year of the leading barley-growing States, among the 35 reporting yields, was as follows: Minnesota, 59,400,000 bushels, South Dakota, 37,296,000, North Dakota, 30,210,000, California, 29,363,000, Wisconsin, 22,848,000, Iowa, 19,581,000; Nebraska, 18,892,000, Colorado, 13,671,000, Kansas, 12,464,000, and Illinois, 12,084,000. The production of all other States was placed at less than 10,000,000 bushels. The average yield per acre in the reporting States ranged from 14.2 bushels in North Dakota to 40 bushels in Utah. During the fiscal year ended June 30, 1929 the United States exported 56,996,000 bushels valued at \$48,069,000. The scab disease of barley caused losses in 1928 in sections of the Corn Belt States and the feeding of the scabbed grain to hogs was found to produce digestive troubles.

BARNARD COLLEGE. See COLUMBIA UNIVERSITY.

BARRY, COMMODORE JOHN, ANNIVERSARY See CELEBRATIONS.

BASEBALL. The major league baseball contests in 1929 were without interest, as the Philadelphia club of the American League, the Athletics, won its race by a margin of eighteen games over the New York Yankees, erstwhile champions, and the Chicago Cubs of the National League won that pennant by a 10½ game margin over the Pittsburgh Pirates. The Athletics went on to win the World's Series from the Cubs, four games to one. The winners took the first two games, lost the third and then won the fourth and fifth contests when they seemed hopelessly lost. The features of the World Series were that Connie Mack, leader of the Athletics, came back to win his first pennant in fifteen years, and that Howard Ehmke, a veteran, struck out thirteen Cubs in the first game of the series.

After the two championships had been practically settled by Labor Day, the interest centered on the battle for home-run honors in the National League which were finally won by Chuck Klein of the Philadelphia team, with forty-three. Melvin Ott of the New York Giants was next, with forty-two. Babe Ruth of the Yankees successfully defended his laurels by hitting forty-six home runs in the course of the season. Frank O'Doul of the Philadelphia team led the National League in batting with a mark of 0.389, while the American League was topped by Lou Fonseca, Cleveland first baseman, who hit for an average of 0.369. Other hitters who pressed these players for the honors were Herman of Brooklyn, Hornsby of Chicago, and Terry of New York in the National, and Simmons of Philadelphia, Manush of St. Louis, Fox of Philadelphia and Lazzeri of New York in the American League.

Bob Grove of the Athletics was considered the leading pitcher in the American League, with 21 victories and 6 defeats. In the National League the leader in the older league with 19 triumphs and 6 losses. Tom Zachary of the New York Yankees and Carl Hubbell of the New York Giants were other hurlers who turned in remarkable performances. The former went through the season without losing a game, winning twelve, while Hubbell had the distinction of winning twelve, but, no-run game.

The Athletics won the International League race, but lost the little World's Series to Kansas

City, champions of the American Association. The Albany Club won the Eastern League title.

College baseball again showed a great waning of interest, but the Holy Cross team stood out with a splendid record. Bots Nekola was the Worcester team's main pitcher. He signed a contract with the New York Yankees at the end of the season. In September the whole baseball world mourned the death of Miller J. Huggins, manager of the New York Yankees.

BASKETBALL. This winter sport showed a marked increase in ability to draw huge crowds and became more popular than ever in 1929. Thousands of industrial, Y M C A, school, and college fives played through long schedules. The championship of the Eastern Intercollegiate League was captured for the second successive year by the University of Pennsylvania, which gained permanent possession of the Arthur D. Alexander cup. Although Pennsylvania won the League race, the best team in the East was Fordham which went through a hard schedule with but one defeat. In three years, this team had lost but four games. In the Western Conference, the race was close with Michigan and Wisconsin tying for the leadership. Purdue was next. In the Far West Conference, the University of California team had the best record.

The National Amateur Athletic Union championship was again won by the Cook County Paint Company team over Kansas City, Mo. The Y M C A international championship was won by Buffalo Oak Park, Ill., was second. In the national High School Tournament held under the auspices of the University of Chicago, Athens High School, Texas, won the title. Claxson High School of Oklahoma City was second.

BATES, KATHIAIRNE LEE An American author and educator, died in Wellesley, Mass., May 28, 1929. Born in Falmouth, Mass., Aug. 12, 1859, she was graduated from Wellesley in 1880. She then went to the Natick High School until 1881, then to Dana Hall in that year. Appointed an instructor in English literature at Wellesley in 1885, she became associate professor in 1888, and professor in 1891, holding that position until made professor emerita in 1925. Miss Bates received the A.M. degree from Wellesley in 1891, and the LL.D. degree in 1925, and the honorary Litt.D. degree was conferred on her by Middlebury College in 1914, and by Oberlin in 1916. She wrote the words for the national hymn, "America the Beautiful," and numerous volumes of poetry and prose, including the juvenile stories, *College Beautiful* and *Other Poems* (1897); *Rose and Thorn* (1889), *Hermit Island* (1891), *The English Religious Drama* (1893, 1902), *American Literature* (1898), *Spanish Highways and Byways* (1900, 1912); *From Gretna Green to Land's End* (1907), *The Story of Chaucer's Canterbury Pilgrims Retold for Children* (1909); *In Sunny Spain* (1913); *Fairy Gold* (1916); *The Retinno, and Other Poems* (1918), *Sigurd, Our Golden Collar and Other Comrades of the Road* (1919); *Yellow Clover* (1922); *Little Robin Stay-Behind, and Other Plays in Verse for Children* (1923); and *The Pilgrim Ship* (1926). Miss Bates also edited, among many others, editions of the *Early Poems of Alice and Phoebe Cary* (1903), *Hollywood's A Woman Killed With Kindness*, and *The Fair Maid of the West* (1917). She translated, with Cornelia Bates, Becquer's *Romantic Legends of Spain* (1909).

BATES COLLEGE. A nonsectarian college for men and women in Lewiston, Me., founded in 1864. The enrollment for the autumn term of 1929 was 632, of whom 378 were men and 254, women. In the 1929 summer session, there was a total of 275 students, of whom 121 were men and 154, women. The faculty and administrative officers numbered 50. The permanent funds amounted to \$1,800,000, total expenditures for the year were \$261,607, and the budget involved an appropriation of \$292,991. The library contained 57,375 volumes. President, Clifton Daggett Gray, Ph.D., LL.D.

BATTLE CRUISER. See NAVAL PROBES

BATTLESHIPS. See VESSELS, NAVAL

BAUER, COL. MAX. German soldier and military adviser to the Chinese Government and military leader in the World War, died in Shanghai, China, May 6, 1929. Joining the German Army, 1890, he became an officer in the field artillery, and from 1908 to 1912, he was a member of the general staff working on the development of heavy artillery. From 1914 to the close of the World War, Colonel Bauer was in the operations section of the general staff. In 1920 he was forced to leave Germany because of being involved in plots against the Republican government, but was allowed to return in 1925. He was offered the post of military adviser to China in 1928, and he was active in overcoming the opposition to the Nanking government. See CHINA

BAUMES LAWS. See CRIME

BAVARIA. A constituent state of the German Republic, formerly a kingdom within the German Empire, ruled for more than a century by the Wittelsbach dynasty, which was deposed after the revolution following the World War. The new state adopted a republican form of government on Nov. 22, 1918. Area 29,334 square miles, population according to the census of 1919 7,140,340, according to the census of 1925, 7,379,594. Chief cities: Munich, with a population of 680,704 in 1925; Nuremberg, 392,494; Augsburg, 165,522; Ludwigshafen, 101,869. In 1927 there were 58,449 marriages, 150,782 births, and 96,989 deaths. The religious division of the population of Dec. 1, 1925, was: Roman Catholic, 5,164,786; Protestants, 2,110,327; Jews, 49,163. Education is compulsory between the ages of 6 and 16. In 1927 the chief crops were: wheat, 680,242 acres, 449,804 metric tons; rye, 987,105 acres, 544,875 tons; oats, 1,077,505 acres, 644,318 tons; potatoes, 947,580 acres, 5,165,410 tons; vines, 49,687 acres, 9,058,810 gallons; hops, 32,220 acres, 5841 tons. The census of livestock, on Dec. 1, 1928, showed 402,200 horses, 3,812,800 cattle, 393,200 sheep, 2,081,800 swine, and 354,300 goats. Production of coal during 1927 was 2,144,540 metric tons; pig iron, 302,539 tons; cast iron, 202,475 tons; sulphuric acid, 327,251 tons.

The ordinary budget for the year 1928 provided for a revenue of 748,965,640 marks and an expenditure of 774,565,640 marks. The extraordinary budget balanced at 30,062,000 marks. The public debt at the end of the financial year 1927 was 1,997,500,847 paper marks or 297,508,069 Reichsmarks (par value of Reichsmark is \$0.2382).

The constitution dates from Aug. 14, 1919. Under it, the supreme power is vested in the people, who are represented by the Diet of one Chamber elected for four years on a basis of universal, equal, direct, secret, and proportional suffrage, all citizens over 21 years of age having

the right to vote. There is one representative for every 62,000 inhabitants, making a Legislature of 129 members. The membership of the Bavarian Landtag, as constituted following the election of May 20, 1928, follows: Bavarian People's party, 46; Social Democrats, 34; National Socialists, 9; German Nationalists, 13; Bavarian Peasants' and Middle-Class Union, 17; German People's party, four; Communists, 5. The cabinet as constituted in 1929 was as follows: Premier and Minister of Foreign Affairs, Dr. Held; Education, Herr Goldenberger; Agriculture and Labor, Professor Febr; Interior, Herr Stuetzel; Finance, Dr. Schmelzle; Justice, Herr Gurtner.

BEAL, ALVIN CASEY. American floriculturist and educator, died in Ithaca, N. Y., May 7, 1929. He was born Nov. 30, 1872, in Mt. Vernon, Ill., and was graduated in 1897 from the University of Illinois. He was chairman of the horticultural division of the Illinois Experimental Station until 1900, when he became an instructor of floriculture at the University of Illinois. After 1913 he was a professor at Cornell University. He specialized in the culture of gladioli and wrote *The Gladiolus* (1927).

BEAUX-ARTS INSTITUTE OF DESIGN.

A school of fine arts in New York City, planned after the *Ecole des Beaux-Arts* in Paris. It was organized in 1916 by the Society of Beaux-Arts Architects for the purpose of furnishing "instruction in the arts, under the Regents of the State of New York, at a minimum cost to students, to bring art students under the criticism of artists who are engaged in active practice, to carry students beyond the academic study of the arts into the province of their application and practice, and to bring about cooperation among the various art schools of the country." Working under the auspices of the institute during the year 1928-29 were 2146 architectural students, 200 students of sculpture, and 75 students of mural painting. Except in the case of the Paris Prize competitions, there are no restrictions as to the nationality or age of entrants.

The institute maintains a department of sculpture, the courses offered including life modeling and architectural sculpture, architectural ornament, antique modeling, composition, and sketching. The instructors are sculptors of high standing, who volunteer their services: those in the life classes each serving a term of three months and those in the architectural-ornament classes, a term of one month or more depending on the duration of the treatment of the style which is the subject of the study scheduled. A department of architecture also is maintained for the purpose of furnishing systematic training in architectural design for draughtsmen in offices and for students of architecture in general.

Prizes in architecture, sculpture, and mural painting are offered to students throughout the United States. During the year 1928-29, the committee on education in the department of architecture conducted 29 competitions for the study of architecture and six for the study of archaeology, in addition to the three competitions for the Paris Prize. The most important of the various prizes and scholarships offered to students through the institute is the prize amounting to \$3600, given by the Society of Beaux-Arts Architects, which affords two and one-half years' study in architecture at the *Ecole des Beaux-Arts* in Paris. (All the competitors, including the winner, in the final competition re-

ceive \$150 each provided their work is considered satisfactory) There is also the Paris Prize in Sculpture, representing a scholarship of \$1200 for one year's study in Paris

The institute issues a monthly *Bulletin* in which are published the results of all contests, with reproductions of the best designs submitted Officers elected at the annual meeting in November, 1929, were Director, Whitney Warren; secretary, Henry R Sedgwick, director of architectural department, Philip A. Cusachs, director of department of sculpture, Edward McCartan, director of department of mural painting, J Monroe Hewlett, chairman of the board of trustees, Benjamin W. Morris, vice chairman, William Adams Delano Headquarters are at 304 East Forty-fourth Street, New York City.

BEEF. See LIVESOCK

BEER-WALBRUNN, ANTON. A German composer, died in Munich, Mar 23, 1929 He was born at Kohlberg, Bavaria, June 29, 1864, and received his musical training at the Akademie fur Tonkunst in Munich In 1901 he joined the faculty of this institution as professor of composition His works consist of four operas *Die Sukne* (Lubeck, 1894); *Don Quichote* (Munich, 1908), *Das Ungeheuer* (Karlsruhe, 1914), and *Der Sturm* (not produced); *Symphonie in E, Symphonische Fantasia, Lustspielouverture, Volkenwackelkuehlein*, three burlesques for orchestra, a violin concerto, a choral work with orchestra, *Mahomets Gesang, Der Polenfluchtlings*, for baritone and orchestra, incidental music to *Hamlet* and *The Tempest*, numerous male and mixed choruses, and some chamber music

BEEFLES. See ENTOMOLOGICAL, ECONOMIC

BEGBIE, HAROLD English author and journalist, died in London, Oct 8, 1929 Born in Farnham St Martin, Suffolk, in 1871, he was privately educated and at the age of 20 went to live in Devon, from there sending contributions to papers in London In 1914 he visited America, where he won attention by his vigorous defense of the English cause in the World War and by articles sent to London, warned the British of German propaganda in America All his writing was of a didactic, social, or political nature The authorship of his *The Mirrors of Downing Street* (1920) written under the nom de plume "The Gentleman with the Duster" studies of well-known figures of English public life, was kept a secret from a curious public He was a prolific writer, being connected first with *The Globe* and later with *The Daily Mail* in London, and writing novels, biographies, literary criticisms, and political papers. A well-known biography, *The Life of William Booth, Founder of the Salvation Army* (1920), was written from personal knowledge of Booth and his work

BELGIUM. A kingdom of western Europe, situated between France and the Netherlands Capital, Brussels, reigning monarch in 1929, Albert I.

AREA, POPULATION, ETC The total area, including the districts of Eupen and Malmédy, which were ceded to Belgium after the Treaty of Versailles, is 11,755 square miles The population --- to the official census of 1920, was 7, --- estimated, Jan 1, 1929, at 7,995,558, which represented a density of 680 per square mile The chief cities with their populations as of Jan 1, 1928, are: Brussels (with suburbs), 815,198, Antwerp, 300,001; Liège, 168,823; Ghent, 163,207. The movement of population

in 1927 was Births, 145,275, deaths, 100,751; marriages, 71,921 The emigrants in 1927 numbered 29,941 and the immigrants, 41,169

EDUCATION For primary instruction, there were in 1928, 8350 primary schools, with 803,620 pupils, 3666 infant schools with 245,650 pupils; and 1941 adult schools with 56,510 pupils For higher education, there were 24 atheneums and colleges, with 8020 pupils, five special atheneums, with 374 students, four communal and provincial colleges, with 2017 students, and ten private colleges, with 1609 students The next grades of schools are the higher grade schools, of which there were 134 State schools, with 27,090 pupils, 15 communal and provincial schools with 6182 pupils, and eight private higher grade schools, with 1022 pupils There are six normal schools for training secondary school-teachers (448 students) and 80 for training elementary school-teachers (8617 students) There are many private and free schools, mostly under ecclesiastical care For collegiate education, there are universities at Brussels (1045 students in 1927-28); Ghent, 1551, Liège, 2278, and Louvain, 3551, and the Colonial University at Antwerp

PRODUCTION, MINERAL RESOURCES, ETC Of the total area of 2,945,104 hectares, there were in 1926, 1,786,750 hectares under cultivation, of which 38.98 per cent were under cereals, 1.18 per cent under vegetables, 5.58 per cent under industrial plants, 13.80 per cent under root crops, and 40.46 per cent under forage The acreage and yield of the principal crops in 1927 were as follows: Wheat, 389,000 acres, 14,449,000 bushels, barley, 78,000 and 3,637,000, rye, 573,000 and 20,078,000, oats, 657,000 and 43,991,000, potatoes, 416,000 and 11,359,000, sugar beets, 175,000 acres, 1,083,000 metric tons, fodder beets, 191,000 and 4,732,000, tobacco, 8000 acres, 13,492,000 pounds On Jan 1, 1928, there were 256,465 horses, 1,738,714 horned cattle, and 1,124,243 swine The most important industries in Belgium are artificial silk, automobiles, glass, iron and steel, lace, linen, and gloves In 1927 there were 54 sugar factories with an output of 259,490 tons of raw sugar, 19 sugar refineries, output, 100,124 tons, 37 distilleries, output 43,300 kiloliters of alcohol, 1844 breweries, output 1,325,685 kiloliters of beer, 15 margarine factories, output, 34,814 tons, 56 vinegar factories, output, 12,668 kiloliters, 19 meat factories, output, 69,733,000,000 matches In 1926, 13,082 industrial concerns employed 1,080,331 workers, of whom 874,309 were men and 206,022, women There were, in addition, 96,567 salaried officials

Mineral production has always been an important industry in Belgium The country has natural resources of coal and zinc and after the economic union with Luxembourg in 1922 gained ready access to iron ore On the whole, 1928 was a favorable year for the Belgian coal industry The critical situation confronting the industry in 1927 improved steadily, prices recovering to a moderate degree, and the individual output of the miners increasing considerably A policy of amalgamation pursued by coal and coke companies culminated in January, 1929, in the formation of organizations controlling much of the output of coke and industrial coal, which planned to unite their forces for the improvement of the industry With more favorable prices during 1928, stocks decreased from 1,847,000 to 1,088,000 tons, leaving the coal mines of the Kingdom in a better position to resist price cuts.

The principal coal deposits in Belgium are in the vicinity of Charleroi. Next in order come the mining centres of Mons, Liège, Centre, Limburg, and Namur. Coal production during 1928 totaled 27,642,780 metric tons, or 30,770 tons less than in 1927. The coke output was 5,924,000 metric tons, an increase of 530,080 tons over 1927, setting a record for the country. Briquet production increased to 1,961,000 tons. See COAL.

The output of other minerals in 1928 was pig iron, 3,905,320 metric tons, steel, 3,820,910 tons, wrought steel, 3,378,490 tons, and crude zinc, 209,280 tons.

The cement industry experienced a generally satisfactory year, both the domestic and export demand remaining good throughout 1928.

A labor shortage developed during 1928 which became more acute in 1929, a rapid rise in wages resulting. The shortage was attributed to the continuance of the low war-time birth rate and the immigration of laborers to France. In June, 1929, there was a shortage of 10,000 workmen in the Charleroi district alone, and mining companies were obliged to establish recruiting agencies abroad.

COMMERCE In commerce, as well as in industry, 1928 was a year of marked prosperity in Belgium, the country showing an almost complete readjustment to currency stabilization and to general postwar conditions. Practically all major lines of manufacture were stronger at the close than at the beginning of the year. The internal markets were satisfactory with improved purchasing power, and the foreign markets expanded considerably. As a result, the adverse trade balance for 1928 was the smallest recorded for many years. Exports amounted to 30,145,321,000 paper francs and imports to 31,564,240,000 paper francs, as compared with exports of 26,196,614,000 francs and imports of 29,188,507,000 francs in the preceding year. It was anticipated, however, that the rising wage scale due to the labor shortage experienced in 1928 and 1929 would lessen the advantage which Belgian manufacturers have hitherto held over competitors in foreign markets. This was confirmed by the returns for 1929, showing an adverse balance of 3,276,000,000 francs, with imports totaling 35,510,000,000 francs and exports, 32,234,000,000 francs.

Imports from the United States fell off during 1928, amounting to 2,913,236,000 francs, as compared with 3,200,393,000 francs the previous year. This was due largely to lower cereal purchases. Imports of some other lines showed substantial increases. Exports to the United States rose to 2,127,960,000 francs in 1928 from 2,420,864,000 francs in 1927. Trade with other leading countries in 1928 was as follows: France, imports from, 6,625,048,000 francs, exports to, 3,907,730,000 francs, United Kingdom, imports from, 3,766,566,000, exports to, 5,184,812,000, Netherlands, imports from, 3,333,564,000, exports to, 3,479,281,000, Germany, imports from, 3,925,586,000, exports to, 4,236,197,000, Argentine Republic, imports from, 2,318,270,000, exports to, 1,114,513,000.

The bulk of Belgian imports in 1928 were raw materials, provisional figures placing the value of these imports at 16,592,427,000 francs, foodstuffs and beverages at 6,794,598,000 francs, manufactures at 7,996,794,000 francs, live animals at 61,342,000 francs, and gold and silver bullion and coin at 119,079,000 francs. The exports were mainly manufactures, the respective

values in 1928 being: manufactures, 17,508,044,000 francs, raw materials, 9,876,857,000 francs, foodstuffs and beverages, 2,528,710,000 francs, live animals, 157,612,000 francs, and gold and silver bullion and coin, 74,299,000 francs.

FINANCE The budget estimates for 1929 (ordinary and extraordinary) called for revenues of 11,485,090,000 francs and expenditures of 10,253,206,000 francs, as compared with revenues of 10,563,562,000 francs and expenditures of 9,282,731,000 francs in 1928. In the 1929 budget, the total of all ordinary receipts was placed at 9,543,161,000 francs, including direct taxes, 2,821,250,000 francs, customs and excise, 1,874,300,000 francs, stamp duties, 2,307,500,000 francs, succession duties, 1,025,000,000 francs, and tolls, 23,750,000 francs. Included in the total for ordinary expenditures of 8,253,328,000 francs were public debt, 2,923,260,000 francs, foreign affairs, 76,235,000 francs, justice, 299,468,000 francs, science and arts, 866,111,000 francs, public works, 195,936,000 francs, social insurance, 596,661,000 francs, national defense, 846,631,000 francs.

The budget adopted for 1930 provided for ordinary and extraordinary expenditures of 11,513,669,000 Belgian francs (exchanging at \$0.0278) and for total revenues of 11,561,008,000 Belgian francs, leaving an estimated surplus of 47,839,000 francs. The budget incorporated tax reductions of approximately 1,600,000,000 francs, including 645,000,000 francs applied to direct taxes, 23,000,000 francs to customs and excises, 160,000,000 francs to inheritance taxes, and 770,000,000 francs to registration, stamp, and transmission taxes. In spite of these reductions the tax revenue for 1930 was estimated at 8,509,770,000 francs, as against the 1929 estimate of 8,028,350,000 francs. The budget was relieved of more than 1,000,000,000 francs through the completion in the 1929 fiscal year of the establishment of a debt-amortization fund. Under the Young plan reparations from Germany were estimated at 901,130,000 francs in 1930, as compared with estimates of 1,180,930,000 in 1929, but annual receipts from Germany were expected to increase through the payment of war-time German marks left in Belgium. The estimates omitted accounts for the administration of the telegraph and telephone services which were to be turned over to private operation.

The Belgian public debt on Sept. 30, 1928, amounted to 55,366,287,198 Belgian francs, divided as follows: internal long-term debt, 22,188,885,327 francs, internal short-term debt, 4,855,734,805 francs, total internal debt, 27,044,620,132 francs, external long-term debt, 28,321,667,066 francs. Between Sept. 30, 1928, and the same date in 1929, the debt was reduced by 1,349,896,000 francs, despite the issue of new internal bonds to the amount of 247,000,000 francs.

COMMUNICATIONS The Belgian government-owned railways began operation as a private company on Sept. 1, 1926, under the company name of Societe Nationale Chemins de Fer Belges. The length of the lines owned by this company, as of Jan. 1, 1928, totaled 6460 miles, of which 2988 miles were main line and 3483 miles branch line. There were 280 miles of private line. In 1927 the gross receipts of the government railways were 2,885,890,000 francs (\$80,288,000). Operating costs were equivalent to 82 per cent of the receipts. While the volume of traffic was considerably less than in 1926, the total re-

ceipts represented a 30 per cent increase over receipts for 1920

The Belgian inland waterways are navigable over 1040 miles and their traffic exceeds 28,000,000 metric tons annually. The Belgian Parliament by the law of Aug 13, 1928, provided for the central administration of the affairs of these waterways which, with the introduction of motor power since the World War, have new importance in Belgian trade and transportation. The programme of motorization calls for 300 hauling tractors in service in 1931. The number of vessels entering Belgian ports in 1927 was 18,684 of 27,825,095 tons, cleared, 18,713, of 27,828,989 tons. In 1928, 11,333 vessels of 23,604,634 tons entered the port of Antwerp. Excellent facilities for the handling and storage of goods and its communications with the interior and with other European ports have made Antwerp one of the leading entrepôts of trade for central Europe. The harbor recently was enlarged by the opening of a new canal dock 3 miles long and 985 feet wide, which, at high tide, would receive ocean liners drawing over 40 feet. The traffic of the port increased from a total of 14,146,819 net tons in 1913 to 24,326,939 in 1929.

GOVERNMENT Belgium is a constitutional, representative, and hereditary monarchy. Executive power is in the King, acting through a responsible ministry, legislative power is in the King and two chambers, namely the Senate and House of Representatives. The former is elected partly by the direct and partly by the indirect vote of the people, the number being equal to half the number of members of the Lower House and proportioned to the population of each province. Those elected indirectly are chosen by the provincial councils. The parties in the senate elected in May, 1929, were Catholics, 41, Liberals, 13, Socialists, 36. The 186 members of the Lower House are elected by universal suffrage directly for four years. The party alignment in the House was Catholics, 76, Socialists, 70, Liberals, 28, miscellaneous, 13. The reigning monarch in 1929 was Albert I, who succeeded his uncle, Leopold II, Dec 17, 1909. The cabinet as appointed Nov 22, 1927, was composed as follows: Prime Minister and Minister of the Colonies, Henri Jaspar (Catholic), Foreign Affairs, Paul Hymans (Liberal), Justice, M Janson (Liberal), Education, Maurice Vauthier (Liberal), Finance, Baron Houtart (Catholic), Agriculture and Public Works, Henri Baels (Catholic), Industry, Labor, and Social Insurance, M Heyman, (Christian Democrat), Railways, Marine, Posts and Telegraphs and Aeronautics, M Lippens (Liberal), National Defense, Comte de Broqueville (Catholic), Interior, M Cunoy (Christian Democrat).

HISTORY Two outstanding problems engaged the attention of Belgium during 1929—efforts to reach an agreement with the Netherlands giving Antwerp improved access to the sea and the movement of the River Scheldt, and the Flemish movement.

The Flemish movement produced repercussions throughout the social and political life of the nation, among them being the resignation of the Jaspar cabinet on November 25 over the failure to obtain Liberal support for the government bill on the language question in Ghent University. Other issues were the Flemish language question in the army, and the political problems arising from the exclusion of Dr August Borms from

the Belgian Parliament in December, 1928, because of his pro-German activities during the World War. Dr. Borms, a leader of the Flemish separatist movement, was elected to Parliament from Antwerp Dec. 9, 1928. He was in prison at the time and had been sentenced to the loss of his civil rights for serving as a member of the Council of Flanders during the German occupation, but nevertheless defeated his Liberal opponent by nearly two to one. An amnesty law was passed by Parliament January 16 under which Borms was released from prison the following day. These events were climaxed by two great demonstrations by Flemist Nationalists in Antwerp.

The Flemish Nationalist party, which was organized in 1910, made considerable gains in the elections of May 26, 1929, winning its first seats in the Senate. A section of Flemish public opinion would apparently be satisfied with reforms, but there was a strong demand in some quarters for complete separation from Belgium. The Roman Catholic bishops were reported to have attempted to deter Catholic voters from supporting Nationalist candidates. The Flemish autonomist members of the new Chamber announced that they had abandoned complete independence as their goal and would henceforth seek the establishment of a federated state in which the Flemish provinces would enjoy administrative autonomy under King Albert. The nationalistic agitation centres to a considerable extent in the demand that Flemish be made the recognized language where Flemings predominate.

French is spoken in the Walloon provinces, containing about half of the population of Belgium, and the inhabitants are reluctant to learn Flemish. The seaboard provinces are inhabited mainly by Flemish fishermen and peasants who refuse to learn French. In other Flemish provinces, the people speak both Flemish and French. The government bill which resulted in the resignation of Premier Jaspar and his Catholic-Liberal coalition cabinet provided that the regular classes in Ghent University should be conducted in Flemish, but offered to those desiring French optional courses in that language. The Liberal members of the cabinet, representing the French cultural elements, refused to support the bill without first submitting it to their party, whereupon the Premier resigned. M Jaspar was asked by the King to form a new Ministry, which he consented to do on December 3.

Little apparent progress was made toward the settlement of the dispute with Holland, which indirectly involves the commercial rivalry between Antwerp and Rotterdam. Antwerp is on the Scheldt, which leaves Belgian territory below the city and flows through Holland to the sea. By the treaty of 1839, Holland assumed responsibility for the improvement of the river to meet the demands of traffic, but since the beginning of the present century, the Belgians have complained that not enough was being done in this connection. In the meantime, Rotterdam had grown much faster than Antwerp, which was not readily accessible to the larger ships. Besides the commercial rivalry involved, the Dutch were said to be reluctant to see the Scheldt made accessible to large warships in view of the fact that Belgium was no longer a neutralized country. The Dutch agreed to further dredging of existing channels, but the Belgians wanted modification of the Treaty of 1839 to permit the dredging of a canal between Antwerp and Moerdijk. The

Dutch Cabinet consented to this in 1925, but the Senate rejected the draft treaty. Negotiations were reopened in September, 1928, and were continued intermittently during 1929 without an agreement being reached.

Early in 1929, Belgium ratified the Kellogg-Briand Pact by the unanimous action of both the Senate and Chamber of Deputies. A treaty of arbitration and conciliation was also concluded with the United States.

Laws regulating the sale of liquor, enacted during the previous Socialist administration, were attacked in the Chamber of Deputies on the ground that they had resulted in fraud and the multiplication of night clubs where illicit sales of alcohol were made. A committee of inquiry reported on July 10 in favor of maintaining the so-called "blue laws" and extending them in some respects. The cabinet was enlarged by the addition of three members on October 18. Besides the gains made by the Flemish Nationalist party, the election of May 26 was marked by an increase in the Liberal and a decrease in the Catholic representation in the Senate and Chamber. The Liberals opposed the "blue laws." For the composition of the new Parliament, see under *Government* above. On October 18, three new members were added to the cabinet.

The engagement of Princess Marie José, daughter of King Albert, and Crown Prince Humbert of Italy, was announced in November. The date of the wedding was set for Jan. 8, 1930.

A severe crisis on the Belgian bourse followed the break in the New York Stock Exchange in November. An 80,000,000-franc consortium to support the market over the monthly settlement date was formed by a group of important banks. Signs of a general economic crisis due to the excess of imports from the United States over exports to that country were voiced in the Belgian press. The American tariff was held largely responsible. Unsettled political conditions and the cabinet crisis late in the month added to the general uncertainty and lack of optimism, although production was maintained at a high level.

Belgian troops evacuated Aix-la-Chapelle and other towns in the second zone of the occupied area of the Rhineland on December 1, in accordance with the agreement reached with Germany at the Hague Reparations Conference during the summer. For Belgium's part in the reparations settlement, see *REPARATIONS*.

BELGIAN CONGO. See *CONGO, BELGIAN*.
BELGIAN INTERNATIONAL EXPOSITION. See *EXPOSITIONS*.

BELL LABORATORIES. See *PHYSICS, TELEPHONY*.

BENZ, KARL. German mechanical engineer and pioneer in the motor-car industry, died Apr. 3, 1929, in Ladenburg, Germany. He was born in Karlsruhe, Germany, on Nov. 25, 1844, and studied at the technical college there. On finishing his course, he worked in an engine factory. In 1878 he developed a two-stroke internal-combustion engine, and founded a factory to manufacture engines of this type. Later, he established the firm Benz & Co., and in 1885 he built and demonstrated a three-wheeled motor vehicle with an internal-combustion engine, filing a patent for it the following year. There were many scientists at work simultaneously on the development of the motor car, but Karl Benz shared with Gottlieb Daimler, also a German, the credit of building the first complete vehicles propelled by internal-

combustion engines. Daimler's car, which was four-wheeled, was patented in 1885-86. Benz also developed a high-speed, four-stroke engine. His inventions had an important place in the growth of the motor-car industry.

BEREA COLLEGE. A nonsectarian, coeducational institution in Berea, Ky., founded in 1855 and designed to serve the educational needs of the mountain people of the Southern Appalachian region. The enrollment for the autumn of 1929 was 1956, distributed as follows: College, 448, normal, 367, academy, 414, Foundation junior high school, 611, training school, 116. The enrollment in the summer session of 1929 was 495, of whom 223 were in the college, 146 in the normal school, and 126 in the academy. The faculty numbered 106, distributed as follows: College, 31, normal, 12, academy, 22, Foundation junior high school, 28, training school, 5, music, 8. The endowment amounted to \$8,894,739, and the income for the year ending June, 1929, was \$357,223. The library contained 57,994 volumes. President, William J. Hutchins, D.D., LL.D.

BERGER, VICTOR L. American editor and first Socialist elected to the United States Congress, died in Milwaukee, Wis., Aug. 7, 1929. Born in Nieder Rehbach, Austria-Hungary, Feb. 28, 1860, he attended the universities of Budapest and Vienna, and in 1876 moved to the United States with his parents. After working at various odd jobs in New York and Wisconsin, he became a public school teacher in Milwaukee. Berger was converted to Socialism, and was a pioneer in organizing the Socialist party in the United States, serving on the National Executive Board of the Socialist party from its organization in 1898 until 1923. In 1892 he resigned from school work and undertook the editorship of the Milwaukee *Daily Worker*, an outgrowth of the old German Socialist paper, *Die Volkszeitung*. He later filled a similar position on the *Wahrheit*, and in 1900 transferred to the *Social Democratic Herald*. He became the editor of the Milwaukee *Leader* in 1911, and made it a factor in the development of the Socialist party, remaining with that paper until his death. Berger had been a delegate to the People's Party Convention in St. Louis in 1896, where he attempted to unite the followers of Eugene Debs. After being defeated as the Social Democratic candidate for Mayor of Milwaukee and for Congress in 1904, he was elected alderman-at-large in 1910. The following year, he took his place as the first Socialist in the United States House of Representatives, sitting for the fifth Wisconsin district until 1913. Because of Socialist principles, Berger was outspoken in his opposition to the entry of the United States in the World War. In December 1918, he was brought to trial for violation of the Espionage Act and on Jan. 8, 1919, was sentenced to 20 years imprisonment. In November, 1918, he had been reelected to Congress, but was excluded from membership, Nov. 10, 1919, by a vote of 309 to 1, on the ground of disloyalty to the United States; he was again returned, with an increased majority, in 1919, and again excluded. In the meantime, he had carried the espionage conviction to the Supreme Court, and in 1921 that body reversed the decision of the lower court, and the Federal Government withdrew all other indictments against him. He was elected to Congress once more, with an even greater majority, in 1922, and seated, the only Socialist in the

House, without a dissenting vote. He again served in Congress, 1925-29, and was chairman of the national executive committee of the American Socialist party, from October, 1927, until his death.

BERIBERI. The disease which has long been known as the first of a number dependent on vitamin deficiency seemed in danger of being thrown from its pedestal. For although it was still quite true that a diet of polished rice was a most prominent causal factor, the actual cause of beriberi has been held to be a microorganism as a result of a research by a board of 13 Japanese scientists, whose report appears in the *Journal of the American Medical Association* for April 20. Until recently, no one doubted that beriberi was due solely to lack in the diet of vitamin B, but after reading the report in question, it is evident not only that the problem is by no means so simple, but that some doubt has been thrown on the entire problem of deficiency diseases. Various data which have slowly accumulated during a term of years have been assembled by the investigators, and the polished-rice theory is seen to be quite unequal to meeting all conditions involved. Thus, it has been shown that a single case of the disease, originating say on board a ship, the diffusion to others cannot be explained by any suppositions in regard to diet. There is a distinct evidence of spread from man to man, as if by contagion. Again in fowl beriberi, only about half those fed on polished rice actually contract the disease. The germ does enter the body with the food and a polished rice diet must lower resistance to it. The beriberi bacillus has been isolated and beriberi patients give a positive agglutination test.

BERKELEY, BISHOP GEORGE, ANNIVERSARY. See CELEBRATIONS.

BERLINER, EMILE. German-American inventor, died in Washington, D. C. on Aug. 3, 1929. He was born in Hildesheim, Germany, May 20, 1851, educated at Wolfenbuttel, and emigrated to America in 1870. Though without scientific training, he became keenly interested in electricity and acoustics. He invented the gramophone in 1877 and also invented and perfected the method of duplicating disc records. In 1908 in aeronautical experiments, he first used the light-weight revolving-cylinder combustion motor, employed on airplanes. Under his direction, his son Henry designed and used the first successful helicopter in 1919. Mr. Berliner also was actively interested in the prevention of sickness, and in 1901 conducted a campaign against the dangers of raw milk and other dairy products, and planned the Washington Milk Conference of 1907.

BERMUDA. A British colony in the West Indies consisting of a group of small islands lying about 580 miles from Cape Hatteras, N. C. About 20 of the islands are inhabited. Because of its picturesqueness and proximity to New York (677 miles), it is a favorite winter resort for American tourists, who number some 30,000 annually. Area, 19.3 square miles, population, according to the census of 1921, 20,127 (7000 white). The chief town, Hamilton (population 3000) is an important naval base. The estimated civil population in 1927 was 30,814 (15,833 white). Statistics for commerce and finance are given in the next column.

In 1927 the total tonnage of vessels entered and cleared was 3,041,350 tons of which 2,466,895 were British. The public debt in 1927 was

BERMUDA—COMMERCE AND FINANCE

	1926 £	1927 £
Imports	1,404,824	1,532,794
Exports	839,563	249,958
Revenue	314,398	290,236
Expenditure	291,209	249,420

£70,000. The chief products are potatoes, onions, lily bulbs, and various vegetables. The chief imports in 1927 were provisions, beef, bran, clothing, cotton goods, electrical goods, flour, hardware, fuel oil, and woolen goods. The chief exports are potatoes, onions, other vegetables, bulbs, and whisky. A new tariff, effective from Jan. 1 to Dec. 31, 1929, increased the customs surtax levied on goods not produced in the British Empire from 10 to 25 per cent of the import duty. Other changes raised the import duties on fuel oil, fresh vegetables, cream, and pork. The administration is under a governor assisted by an executive council of seven members and a legislative council of nine members appointed by the King and an elected Assembly of 36 members. Governor in 1929, Lieut.-Gen. Sir Louis Jean Bols.

BERRIES. See HORTICULTURE.

BERRY, REAR ADMIRAL ROBERT MALLORY. American naval officer and explorer, died in Tynon, N. C., May 19, 1929. Born in Henry County, Ky., Jan. 28, 1846, he was graduated from the U. S. Naval Academy in 1866. After serving with the Union Navy through the Civil War, 1864-68, he was stationed on various ships, going to the Arctic as watch officer of the *Tyress*, 1873. In 1881 Berry was commissioned commander of the U. S. S. *Rodgers*, to search for the *Jeannette*, which had been wrecked in the Arctic during the De Long expedition. On his return, he again received various commissions, commanding the *Castine*, 1896-99, throughout the Spanish-American War. He retired with the rank of rear admiral on Jan. 28, 1908, but returned to service during the World War, as commander of the U. S. Naval Unit at the University of Michigan, from Sept. 23, 1918, to Jan. 3, 1919.

BERYLLIUM. See METALLURGY.

BESSARABIA. Formerly a government of the Russian Empire, joined to Rumania in March, 1918. See RUMANIA.

BIBLE SOCIETY, AMERICAN. This society, founded in 1816, has the definite and sole purpose of "circulating the Holy Scriptures without note or comment," without denominational or racial discrimination, and both throughout the United States and in foreign lands. Its Bibles, Testaments, and Portions are priced without purpose of profit. They are distributed through 10 home agencies, covering the United States, and 12 foreign agencies, covering all Latin America and countries in the Near East and the Far East.

In 1928 the society issued 11,032,494 volumes of Scripture, of which 4,547,368 were distributed in the United States and 6,484,826, in foreign lands. The Scriptures were issued in 182 languages, including editions in Roman and Gothic characters in some languages and embossed systems for the blind. During its 113 years of service, the society has issued 205,096,251 volumes. There were 1076 workers participating in this service in the United States, of whom 628 were volunteers, and 3087 workers in foreign lands, of whom 1175 were volunteers.

During the year 1929, the society published new translations in several languages. The *Four*

Gospels were published for the first time in the languages of the Hopi Indians and of the Eskimos of the district of the Kuskokwim River and Bristol Bay in Alaska. Publication of *Acts* in Cheyenne was in process. In Central America, a translation of the *New Testament* into Cakchiquel was completed, and work was progressing on translations into Quiche and Mam. In South America, the *Psalms* were translated into the language of the Bolivian Quechuas and the *Gospel According to Mark* was published in Aymara. The modern version of the Spanish Bible was reissued with corrections. The increasing Japanese population of Brazil made it advisable to issue a Japanese-Portuguese edition of the Scriptures. For distribution in Africa, the society issued revised editions of the *Four Gospels* and *Acts* in Benga and the *New Testament* in Tswa, while new translations were published of the *New Testament* in Luragoli, of the *Gospel According to Matthew* in Shilluk, and of *I Corinthians* through Jude (with the exception of *Hebrews*) in Olunvoro. Advantage was taken of the recent Turkish law, substituting Roman for Arabic characters, to correct the Turkish version of the Bible at the same time as the transliteration was made. In the Far East, work progressed on improved translation of the Scriptures in Siamese and in the Ilocano, Tagalog, and Samarano languages of the Philippines.

The total receipts of the society for the year from invested funds, gifts, sale of books, etc., amounted to \$1,077,097, while its expenses totaled \$1,075,849. The society continued to have the cooperation of about 100 auxiliary Bible societies throughout the United States, which assisted in the circulation of the Scriptures in their own localities and contributed to its work elsewhere. The officers in 1929 were: E. Francis Hyde, president; the Rev. Eric M. North and the Rev. George William Brown, general secretaries; the Rev. Lewis B. Chamberlain, recording secretary; and Gilbert Darlington, treasurer. The official organ of the society is the *Bible Society Record*. Headquarters are at the Bible House, Astor Place, New York City.

BIBLIOGRAPHY See PHITTOLOGY. MODERN **BICKERTON, ALEXANDER WILLIAM**, English astronomer, died Jan. 23, 1929, in London. He was born Jan. 7, 1842, in Alton, Hampshire, and was educated in the grammar schools there and at the Royal School of Mines and the Royal College of Chemistry in London. In 1874 he became professor at the New Zealand University, where he taught chemistry and was also analyst for the New Zealand government. While teaching in New Zealand, he became interested in astronomy and in 1878 formulated his astronomical theory of partial impact. This theory explained the appearance of new and temporary stars as being caused by the collision of comical masses, during which new bodies were formed of the detached material. His advocacy of this theory, for which he could offer no substantial proof, brought him into disfavor with the board of governors of New Zealand University. In 1902 he resigned and gave all his time to scientific research. In 1910, with the assistance of a fund started by Lord Dudley, Governor-General of Australia, he went to live in London, hoping to obtain wider acceptance of his astronomy of cosmic impact. Though he was never able to prove his astronomical theory, his work evoked a great deal of scientific interest in London and he organized the London Astronomi-

cal Society. He was the originator of London Popular Technical Classes, an organizer of science in Hartley Institution, and a lecturer at Winchester College, the Royal Colonial Institute, and the Royal Institution. He was a fellow in a number of scientific societies, among them the Chemical Society and the Institute of Chemistry, and he received two international gold medals for new scientific apparatus. His published works include *New Story of the Stars*, *Romance of the Earth*, *Romance of the Heavens*; *Atoms, Suns, and Systems*, *Birth of Worlds and Systems*, *Perils of a Pioneer*.

BICYCLING, See CYCLING. **BIGHAM, JOHN CHARLES**, FIRST VISCOUNT OF MERSEY, English lawyer and judge, died Sept. 3, 1929, in Sussex, England. He was born Aug. 3, 1840, and was educated at the Liverpool Institute and in Berlin and Paris. He was called to the bar (1870), was Queen's Counsel (1883), and became Benchler of the Middle Temple (1886). He was a Unionist member of Parliament for the Exchange Division of Liverpool (1895-97), and a member of the South Africa committee of the House of Commons in 1896-97. From 1897 to 1909, he was judge of the King's Bench Division of the High Court of Justice, and in 1909-10, as president of the Probate, Divorce, and Admiralty Division, won commendation for bringing stability to English divorce laws. Upon retirement from the bench in 1910, he was made a peer. Lord Mersey was a member of the Royal Commission for the Revision of Martial Sentences in South Africa in 1902, president of the Railway and Canal Commission (1904-09), and a commissioner inquiring into the wreck of the *Titanic* (1912) and of the *Lusitania* (1915). In 1913-14 he was president of the International Conference on Safety of Life at Sea.

BILLIARDS Ralph Greenleaf's world's-record run of 126 which was a part of his campaign which regained the world's title at pocket billiards was the high spot in the 1929 billiard performances. Greenleaf scratched in the first inning and then ran 126 to defeat Frank Taberski, 1928 titleholder, in the final match of the tourney held in December at Detroit. Young Jake Schaefer was another former champion to regain his laurels, winning the 182 halckline title at the Level Club in New York and supplanting Edouard Horemans, of Belgium, as champion. Johnny Layton of Sedalia, Mo., was a holdover champion at three-cushion billiards, not being called upon to defend his title in 1929.

Percy Collins of Chicago won the national amateur 182 title in tournament play only to lose it in a challenge match with Ray Fessenden of Madison, Wis. Fessenden in turn lost a challenge match to M. C. Wallgren of Edmonds, Wash., who retained the title. The world 181 amateur Class A title was taken by Edouard Soussa of Egypt in an international tournament which was held at the Crescent Athletic Club in Brooklyn, N. Y.

Charles E. Jordan of Los Angeles forfeited his national amateur three-cushion crown when he turned professional. His title was captured by Max Shimon of Milwaukee. Other amateur titleholders in the halckline class were Seymour Kling in Class B, Claude Lewis in Class C, and Harry Tatar in 142 halckline. Cy Yellon of Jersey City won the national amateur pocket-billiard championship, while Frank Gray won the national straight-rail title.

BIOGRAPHY. See LITERATURE, ENGLISH AND AMERICAN, FRENCH LITERATURE, GERMAN LITERATURE, ETC.

BIOLOGICAL CHEMISTRY. See CHEMISTRY.

BIOLOGY. See ZOOLOGY.

BIOPHYSICS. See PHYSICS.

BIRDS. See ZOOLOGY.

BIRMINGHAM-SOUTHERN COLLEGE. A coeducational institution for higher learning in Birmingham, Ala., founded in 1859. The enrollment for the autumn of 1929 was 879, of whom 470 were men and 409, women. The enrollment for the 1929 summer session was 802—309 men and 493 women. There were 63 faculty members. The endowment amounted to \$750,000, and the income for the year was \$312,500. There were 25,000 volumes in the library. President, Guy Everett Snively, Ph.D., LL.D.

BIRTH RATE. See CHILD WELFARE, VITAL STATISTICS.

BLAKESLEY, THOMAS HOMER. An English physicist and archaeologist, died Feb. 15, 1929, in London. He was born in 1847, and was educated at King's College, Cambridge University. Although he was a civil engineer, he was much better known for important contributions to various fields of theoretical science. In 1875 he gave to the Royal Asiatic Society an account of the ruins by Sigiri in Ceylon. He discovered a mass of meteoric iron by the local effect on the magnetic declination; he experimented and developed optical instruments, constructing new forms of lenses and spectroscopes; he invented a portable mercurial barometer and mechanical methods of solving cubic equations and related problems, and he showed the connection of logarithmic curves with the curves of Spanish-Arabian architecture. In the field of electricity, he experimented with alternating currents and problems in telegraph cables and electrical power transmission. He wrote widely on scientific subjects, his work being published chiefly in the *Proceedings of the Physical Society of London* and in the *Philosophical Magazine*. He wrote *Alternating Currents of Electricity* (1899), *Geometrical Optics* (1903).

BODE, WILHELM VON. German art critic, died in Berlin, Mar. 1, 1929. Born in Galverde, Brunswick, Dec. 10, 1845, he studied law, but gave up that profession to study art and archaeology at Berlin and Vienna. Having become associated with the Berlin Museum in 1872, he was made director of the Department of Christian Sculpture in 1883, and of the Gallery of Paintings in 1890. Under Dr. von Bode's management, the museum developed into one of the foremost collections in the world. He was given the general direction of all the Royal Museums in Prussia in 1905, and four years later made privy counselor. Dr. von Bode was familiar with every branch of art since the Middle Ages, but his most profound study was in Dutch and Flemish paintings, and Italian and German sculptures. He belonged to the academies of Berlin, Munich, and Amsterdam and, among other decorations, he received the Prussian Order of the Red Eagle; hereditary nobility was conferred upon him in 1914. Dr. von Bode retired in 1920, only retaining his directorship of the Kaiser-Friedrich Museum. His many books include *Geschichte der deutschen Plastik* (1887); *Rembrandt, with Hofstede de Groot* (1897-1905); *Florentiner Bildhauer der Renaissance* (1902); *Die Meister der holland und vldmen Malerschulen* (1917); *Bottoelli* (1922);

Fünfzig Jahre Museumsarbeit (1922); and *Adriaen Brouwer* (1924).

BODENBINDERITE. See CHEMISTRY, under *Mineralogical Chemistry*.

BOHEMIA. A constituent member of the State of Czechoslovakia since the defeat of the Central Powers in 1918; formerly a crownland of Austria, situated in the northwestern part of the former Austro-Hungarian Empire, with Saxony and Silesia to the north, Moravia on the east, and Lower and Upper Austria on the south. Area, including the small Austrian and German territories which were added by the peace treaty to Czechoslovakia, 20,102 square miles; population, Feb. 15, 1921, 6,670,582, estimated population, Jan. 1, 1927, 6,922,600, or 344.3 persons to the square mile. Bohemia is represented in the Czechoslovak Legislature by nine Deputies and five Senators. See CZECHOSLOVAKIA.

BOILERS. **STEAM.** Few radical changes in boiler design were witnessed during the year 1929, although there were many improvements in detail, and the trend toward still larger units and wider application of high steam pressures continued. The number of 1200-1400-pound central stations practically doubled, the Ford Motor Company announced a 1400-pound addition to its plant in Detroit in which each of the boilers were to be designed to produce 700,000 pounds of steam per hour—the largest boilers yet attempted for this pressure. The 1800-pound Philip Carey installation at Lockland, Ohio, previously announced, was nearing completion, and tentative plans were being considered for the first boiler plant in the United States to operate at or near the critical pressure of 3200 pounds. Two boilers already had been placed in service at this pressure in Germany and another was under construction in Belgium.

A record in boiler output was attained toward the close of the year when one of the new boiler units at the East River Station of the New York Edison Company turned out 1,250,000 pounds of steam per hour at 400 pounds pressure. This was five times the maximum capacity of any boiler operating ten years ago. The ever-increasing size of both boilers and turbines was pointing toward the supply of a single large turbine with steam from a single boiler. This point was reached in one plant, the Gould Street Station in Baltimore.

In the United States, the general design of high-pressure boilers has followed that of medium pressure, with the exception of forged drums and heavier parts. This is in contrast to European practice where high pressures have involved special designs, however, Europe in high-pressure boilers are of much less capacity than those found in the United States.

There were no recent changes in practice as relates to steam temperatures, although higher temperatures were viewed favorably as a means of increasing the efficiency of the steam cycle. With one or two exceptions in American stations, power-plant practice has held to a maximum of about 750 degrees. This has been due to uncertainty as to the behavior of materials in service under a combination of high pressure and high temperature. The 1000-degree boiler and turbine unit that was ordered in 1929, as an experimental installation at the Delray Station in Detroit was not yet in operation.

The practice of forcing boilers to high rates of steaming in vogue has brought water-cooled furnace walls into general use. Also the resulting

high temperatures of the products of combustion have made it necessary to provide more heat-absorbing surface, in the form of economizers or air preheaters, in order that the gases entering the stack will not carry away too much heat. As economizer and air preheater surfaces are less expensive, with high-pressure boilers, than boiler heating surface, later boiler units embody a larger proportion of the former. While the efficiency of the boiler proper had not increased materially over that of ten or fifteen years previously, that of the combined unit, including water-walls, boiler, economizer, air preheater, and superheater, was appreciably higher. Efficiencies exceeding 90 per cent have been obtained with such units on test, and 85 per cent under normal operations was not uncommon.

A recent development was the application of forced circulation to small-tube water walls in which exceedingly high rates of heat transfer were obtained.

In the firing of boilers, pulverized coal and mechanical stokers were strong competitors, with pulverized coal somewhat in the lead for large units. Oil and gas firing were extensively employed in certain localities where such fuel was abundant and relatively cheap. For heating boilers, the oil burner and small mechanical stoker were close competitors.

Renewed interest in smoke prevention was being taken by many cities and resulted in closer attention being given to boiler settings and to firing. With pulverized coal, about two-thirds of the ash in the coal is carried up the stack in very finely divided particles. This does not appear to create a nuisance in the immediate vicinity of the plant because of the fineness of the ash which is diffused by the wind and spread over a wide area. Nevertheless the ash is in the air and must come down. Stoker cinders, being larger in size, are more likely to be deposited in the vicinity of the plant. Many devices were on the market for arresting this ash dust and cinders before reaching the stack. Some were fairly satisfactory but the whole subject was still in a development stage.

The slagging type of furnace for collecting and disposing of the powdered coal ash that falls to the bottom of the furnace was gaining in favor among larger plants that employ coal having ash of relatively low-fusing temperature.

BOKHARA, *bokh'ra* A state in central Asia, formerly a dependency of the Russian Empire, later known as the Bokharan People's Republic, and since May, 1925, a part of the Soviet Socialist Republic of Uzbek. It is bounded on the north by the Kazak Soviet Socialist Republic and the autonomous regions of Kara Kalpak and Kirghizia, on the south by Afghanistan and the Tadzhik Soviet Socialist Republic, on the east by the Tadzhik Republic and Fergana, and on the west by Turkmenistan, Samarkand and Syr-Daria. The Uzbeks, who form the majority of the population, ruled Central Asia until the arrival of the Russians. Estimated area, 79,000 square miles, estimated population, 3,000,000. The chief towns with their estimated populations are Bokhara, 75,000, and Kairati, 25,000. The religion is chiefly Mohammedan. The chief products of Bokhara are corn, fruit, silk, tobacco, cotton, hemp, and fur animals, and the chief minerals are gold, salt, alum, and sulphur. The trade is mainly with India, to which raw silk is exported and

from which tea, indigo, Dacca muslin, etc., are imported. By the revolution of Aug. 30, 1920, the Amir was dethroned and the Soviet government was set up, which formed a military and political agreement with Russia. In the autumn of 1924, congresses of the three Soviet republics of Turkestan, Khiva, and Bokhara decided to redistribute their territories on a national basis. Parts of Russian Turkestan, the states of Khiva and Bokhara, and the Trans-Caspian Province were united to form the two Socialist Soviet Republics of Uzbekistan and Turkmenistan, Bokhara being incorporated in Uzbekistan. Both republics were admitted to membership in the Union of Socialist Soviet Republics in May, 1925.

BOLIVIA, A South American republic situated in the interior and bounded by Brazil and Paraguay on the east, by Argentina on the south, by Chile and Peru on the west, and by Brazil on the north. Sucre is the seat of the supreme court and is historically regarded as the capital, but the actual seat of the Government and the largest city is La Paz.

AREA AND POPULATION Estimated figures for 1927 place the area at 514,155 square miles and the population at 2,974,904, including 1,624,111 Indians, 496,642 whites, and 858,152 of mixed race. The census of 1910 showed a population of 1,766,451. In 1927 the estimated population of La Paz was 142,043 (54,713 by census of 1910). Other large towns with their estimated populations were Cochabamba, 43,643; Potosi, 33,723; Sucre, 30,200; Oruro, 39,618; and Santa Cruz, 23,515.

EDUCATION Elementary education is free and compulsory and is under the care of the municipalities and the state. In 1927 there were 70,228 pupils in public elementary schools, 15,619 pupils in private schools of various grades, and 5082 students in secondary and superior schools. The eight institutions offering university instruction have 107 teachers and 802 students. At Sucre and La Paz are the only two universities which possess more than one faculty. There are also a number of training colleges for teachers.

PRODUCTION AND COMMERCE The enormous preponderance of the mining industry is the chief feature of economic life, while the inadequacy of the transportation system, owing to the great geographical and topographical difficulties which beset road building in the Republic is a serious handicap to development. Mineral exports, consisting chiefly of tin, have constituted over 90 per cent of Bolivia's total exports since 1920. The tin industry is comparatively recent, and was established during the last century. The price of tin is the barometer of Bolivian prosperity, notwithstanding the fact that other minerals, notably silver, gold, lead, bismuth, zinc, antimony, tungsten, and nickel are also produced. Bolivia is the chief source of antimony outside of China. The production of lead has shown a considerable increase owing to the greater demands for this metal in the automobile, radio, and cable industries.

Agriculture is relatively unimportant and although about 4,910,000 acres are under cultivation, the cultivation methods have improved but little since primitive times. Irrigation by means of atesian wells is attempted in some places. Potatoes, cacao, coffee, barley, highland rice, and rubber are the principal products, Colombia ranking next to Brazil as the chief rubber-exporting country of South America. The demand, how-

ever, has fallen with increasing development of the East Indian product. The livestock of the country in 1927 was estimated at 1,404,315 cattle, 4,150,560 sheep, 415,781 goats, 700,000 llamas and alpacas, 1,168,330 donkeys, 267,680 swine, and 320,000 horses. Oil is found in various parts of the republic but is undeveloped. Forest resources are abundant but the lack of transportation facilities and the fact that the natural river systems flow away from the Pacific coast prevent any marked exploitation. Coal is too costly for general use, native fuels are poor and the vast potential hydroelectric resources lie undeveloped. This lack of fuel has been a sharp deterrent to the establishment of various industries, notably smelters and refineries.

In general, Bolivia experienced a continuous business depression since the middle of 1927, with the exception of a brief period early in 1929. The downward trend of the prices of tin, which since 1920 had constituted 90 per cent of the total exports, was immediately reflected in the commercial and economic condition of the country. Toward the end of 1929, the continued low price of the metal led to a critical situation, with business of all kinds seriously curtailed. On November 13, the mine owners petitioned the Government to allow a 30 per cent reduction in wages and a 50 per cent reduction in freight rates while the price of tin remained below \$220 per ton. In recent years, the government has been endeavoring to foster manufacturing industries by heavy protective duties. A cotton mill opened in La Paz early in 1929 was expected to stimulate the growing of cotton, an American-owned cement plant began production at Viacha in February, 1928, and in March, 1929, the government awarded a highly favorable concession to a company formed to establish a sugar industry.

The purchasing power of the country is extremely limited, the population, predominantly Indian and Mestizo, has a small earning capacity. The Indians buy few imported goods. It is estimated that not over 10,000 families have incomes exceeding \$1800 a year and that fewer than 100 families have incomes exceeding \$15,000.

In 1928 Bolivia had a total foreign trade of 178,606,908 bolivianos, as compared with a total of 193,188,600 bolivianos in 1927, a decrease of 7.55 per cent (1 boliviano has a par value of \$0.39).

Imports for 1928 totaled 62,699,055 bolivianos, as compared with 66,104,673 in 1927, a decrease of 5.15 per cent, while exports amounted to 115,906,853 bolivianos, as compared with 127,083,927 in 1927, a decrease of 8.8 per cent. A large favorable balance of trade had characterized Bolivian foreign commerce for many years. The bulk of the imports in 1928 were manufactures, valued at 44,324,384 bolivianos. Other imports were food products and beverages, 8,890,770 bolivianos, raw and slightly wrought materials, 7,240,733 bolivianos, live animals, 2,234,168 bolivianos. Imports of the principal classes of textiles were valued at \$7,094,000 in 1927 and \$5,580,000 in 1928.

Of the total exports in 1928, minerals represented 108,029,873 bolivianos, or 93.2 per cent. The leading mineral exports for the year were tin, 89,710,122 bolivianos; copper, 5,205,696 bolivianos; lead, 2,820,483 bolivianos; silver, 6,875,720 bolivianos; and zinc, antimony, bismuth, wolframite, and gold in lesser amounts. Leading non-mineral exports in 1928 and their

respective values, were rubber, 3,451,365 bolivianos; live animals, 3,070,777 bolivianos; hides, 1,548,259 bolivianos, cacao, 1,002,640 bolivianos. Other exports were alpaca, sheep, and llama wool, dried fruit, leather goods, and quinine. Exports to the United States declined considerably in 1927 and 1928, due chiefly to a depression in the mining industry. Of the total mineral exports in 1928, 79.6 per cent went to Great Britain and only 8.4 per cent to the United States. In 1929 both imports from the United States and exports to that country showed a slight increase over 1928.

FINANCE. The budget for 1929, issued by President Siles after Congress had failed to act within the required time, balanced at 94,950,619 bolivianos. Ordinary receipts (in bolivianos) included those from national services, 2,514,403; direct and indirect taxes, 41,055,938; other sources, 3,007,997. Special receipts of departmental and municipal obligations were estimated at 3,763,945 bolivianos and receipts of the departments at 41,511,102 bolivianos. Ordinary expenditures (in bolivianos) included judiciary, 2,000,000; interior, 2,512,356; communications, 2,270,388; education, 4,380,276; war, 9,626,000; national collections, 2,220,000; service of the direct public debt, 18,258,637. There was also included as special expenditures for the service of the indirect public debt, 3,763,945 bolivianos, and as departmental expenditures, 44,511,102.

A new Central Bank, known as the Bolivian National Bank, was created July 1 in accordance with the recommendations of Professor E. W. Kemmerer, former financial adviser to Bolivia, with Alberto Palacios, former Secretary of the Treasury, as manager. It was hoped that the new bank would stabilize the national currency.

The Fiscal Permanent Commission reported in October, 1929, that the public debt totaled \$63,886,128, of which \$61,904,000 represented the external debt, \$52,544 the internal debt, and \$1,828,584 the floating debt. The per-capita debt was \$24.64.

Under a contract signed between the Minister of the Treasury and E. O. Dettelsen, a banking expert of New York, in December, 1928, Mr. Dettelsen agreed to act as superintendent general of the banks of Bolivia for a period of at least three years.

COMMUNICATIONS. Bolivia in 1929 was making determined efforts to remedy the lack of transportation facilities which had hindered the economic development of the country. The total length of railway in operation in 1927 was 1302 miles. An extension of the Oruro-Cochabamba line to Santa Cruz, a distance of 225 miles, was nearing completion in 1929. In the same year, Congress approved a new internal loan of 2,000,000 bolivianos for the construction of a railroad from Cliza to Aquila and 1,300,000 bolivianos for the completion of the Potosi-Sucre railroad. A decree issued by the Republic was issued in Apr. 3, 1929, and a local firm was granted a concession to establish and operate aerial railways between Hichuloma and the Provinces of North and South Yungas for 25 years.

The main highways, totaling 1125 miles in 1927, were being considerably extended in 1929. In addition, there were 6843 miles of cart roads connecting the important towns. There were about 4008 miles of telegraph, and 3589 miles of

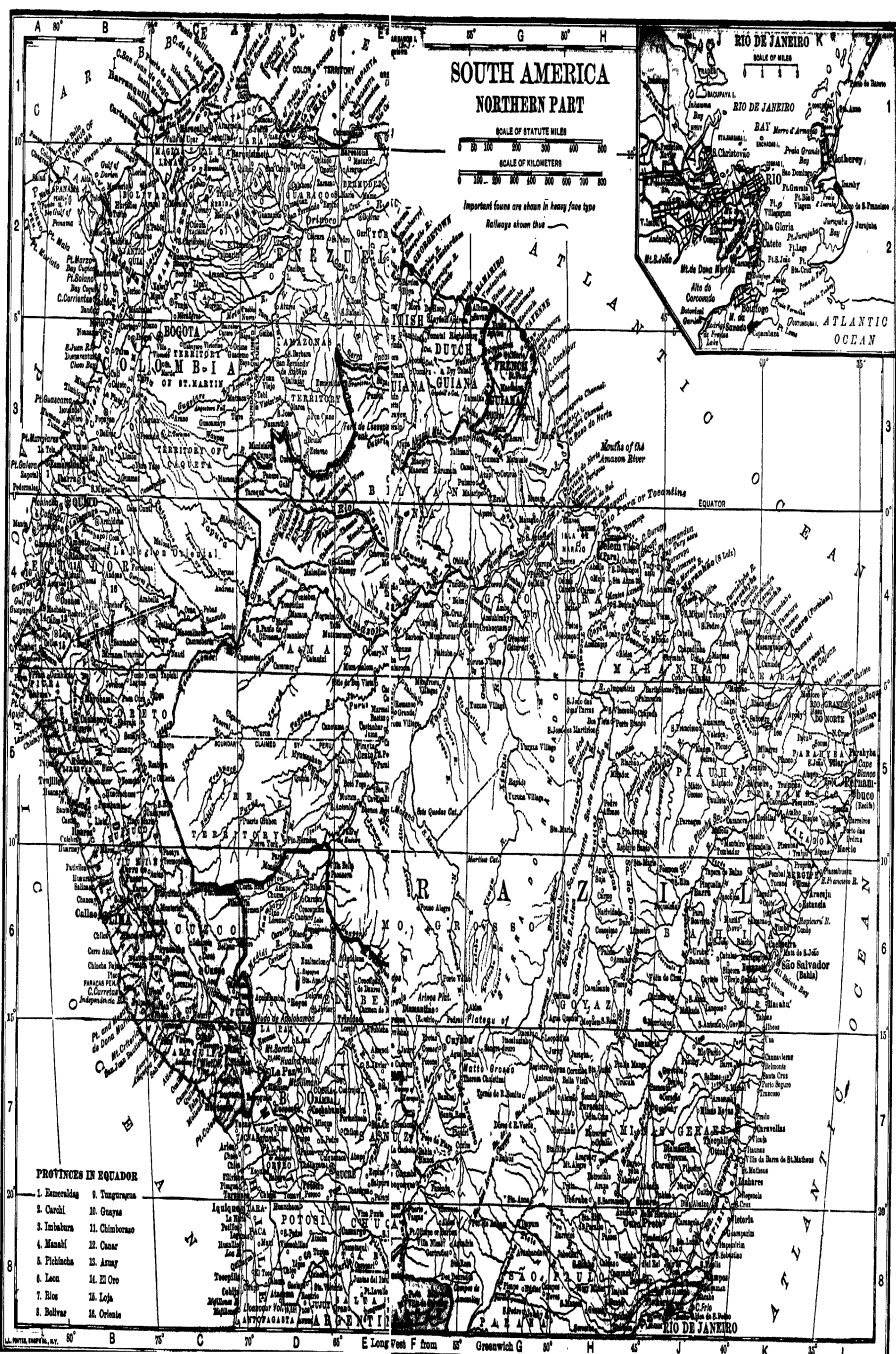
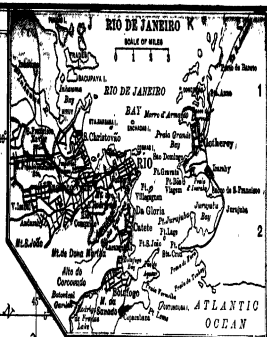
SOUTH AMERICA NORTHERN PART

SCALE OF STATUTE MILES

SCALE OF KILOMETERS

Important towns are shown in heavy face type

Reliefs shown thus



PROVINCES IN EQUADOR

- | | |
|--------------|----------------|
| 1. Duenos | 8. Tungurahua |
| 2. Cuzco | 9. Guayas |
| 3. Imbabura | 10. Chimborazo |
| 4. Manabí | 11. Azuay |
| 5. Pichincha | 12. Bolívar |
| 6. Loja | 13. El Oro |
| 7. Rios | 14. Loja |
| 8. Bolívar | 15. Orellana |

telephone, lines. In 1928 the Bolivian Power Company was given a concession to build and operate a country-wide telephone system.

GOVERNMENT. The President, who is elected by direct popular vote and is ineligible for reelection, is the head of the executive department, and is aided by a cabinet of six members, each in charge of a separate department. Legislative power is vested in Congress of two chambers, the Senate of 16 members elected for six years, and the Chamber of Deputies of 75 members elected for four years. One-third of the Senate and one-half of the Chamber retire every two years. President in 1929, Dr. Hernando Siles, who assumed office Jan. 10, 1926, for the term 1926-30. In January, 1920, he proclaimed a virtual dictatorship.

The Bolivian Army, brought into prominence by the threat of war between Bolivia and Paraguay in 1928-29, consists of a regular army of 8000, a militia reserve of approximately 200,000 well-trained men, and small bodies of from 100 to 200 infantry, called *columnas*, stationed at the chief towns of the six military districts into which the country is divided. The *columnas* can be expanded to battalions if necessary. Military service is compulsory for all males between the ages of 19 and 50.

HISTORY. Negotiations to avert the threatened war between Bolivia and Paraguay over the Chaco boundary question and the Fort Vanguardia incident of Dec. 6, 1928 (see 1928 YEAR BOOK), succeeded temporarily on Jan. 3, 1929, when both countries signed the peace protocol drawn up by the International Conference of American States on Conciliation and Arbitration, in session at Washington at the time. The agreement provided for the arbitration of differences arising from the clashes at Fort Vanguardia and other border posts by the Pan-American Commission of Inquiry and Conciliation. No authority was given the commission to deal with the fundamental dispute over the Chaco boundary. The commission, of which Brig.-Gen. Frank R. McCoy of the United States was president, remained in session from March 3 to September 13. Repatriation of military prisoners was arranged and Bolivia and Paraguay were induced to agree to resume diplomatic relations with the the boundary situation was on the same basis as prior to Dec. 5, 1928, that is, Paraguay was to restore the buildings of Fort Vanguardia attacked by Paraguayan troops December 6, and Bolivia was to evacuate Fort Boqueron, which was occupied by Bolivian troops subsequent to the Fort Vanguardia clash. Two Uruguayan officers were to supervise the carrying out of the agreement. Direct negotiations between the two governments over the restoration of the forts were held later in the year in Montevideo, the capital of Uruguay. A report on the responsibility for the border incidents was deemed unnecessary, in view of the prospect that diplomatic relations would be reestablished.

On July 1, both governments formally accepted General McCoy's suggestion that the commission should prepare and submit plans for a settlement of the entire boundary dispute. Unable to arrive at a satisfactory plan in the brief time remaining to it, the commission prepared a formula for arbitral settlement of the dispute, which both Bolivia and Paraguay accepted in principle but with reservations which made

necessary a new approach to the problem. On recommendation of the neutral members of the commission, which expired on September 13, their respective governments—Mexico, Colombia, Uruguay, Cuba, and the United States—then suggested that Bolivia and Paraguay attempt to settle the dispute by direct negotiation and that a commission of representatives of the five neutral powers be authorized to take up the negotiations if the two governments should find themselves unable to reach an agreement. Paraguay accepted this proposal on October 5. Bolivia made no response until November 11 when the Bolivian Minister to Argentina formally stated that Bolivia's acceptance was dependent upon a previous agreement between Bolivia and Paraguay outlining the territory to be submitted to arbitration. The Bolivian Government issued a similar announcement November 13. This reservation, as expected, proved a serious hindrance to the peaceful settlement of the dispute.

The Uruguayan Foreign Office then attempted to secure an agreement between Bolivia and Paraguay as to the manner in which the liquidation of the Fort Vanguardia and Fort Boqueron clashes should be carried out. On December 14, Bolivia announced its acceptance of the Uruguayan suggestion that Paraguay should reconstruct Fort Vanguardia before Bolivia would be required to return to Paraguay Fort Boqueron. Paraguay rejected this proposal, however, on the ground that it carried the implication that Paraguay was responsible for the Fort Vanguardia incident. Bolivia then officially notified Paraguay that unless the proposal was accepted, Bolivia would consider the negotiations at Montevideo ended and would cancel plans for the renewal of diplomatic relations. Toward the end of the year, the conflict had apparently reverted to the same status as when it was taken up by the Washington Conference in 1928.

Bolivia's stand in these negotiations was complicated by the activities of political opponents of President Hernando Siles, who declared a dictatorship in January. Unconfirmed reports from Bolivia during the year stated that Vice President Saavedra was under arrest, and that former President Ismael Montes, having returned from residence abroad, saved himself from arrest only by taking refuge in the Chilean Legation. The cabinet resigned in the middle of September and on October 5, Constantino Carrion, the Minister of Public Instruction in the new cabinet, followed suit. President Siles was accused by his enemies of stirring up national enmity toward Paraguay to divert public attention from the internal political situation.

The settlement of the Tacna-Arica dispute between Chile and Peru in May without provision for Bolivia's much desired outlet to the Pacific intensified another problem which promised to involve Bolivia and her western neighbors for some years to come. Bolivia protested against any agreement between Peru and Chile which precluded the subsequent cession of any portion of the disputed territory to a third power, the protest being addressed to the State Department at Washington following President Hoover's announcement of the Tacna-Arica settlement. Secretary of State Stimson replied that the draft treaty did not preclude a later adjustment of Bolivia's claim with either Peru or Chile. Chile soon afterward made plain her attitude by officially announcing that she would "never break

the continuity of her territory" as established in the treaty with Peru.

President Siles and other government officials publicly declared that the Tacna-Arica settlement, as it stood, was not acceptable to Bolivia. For terms of the settlement, see under CHILE and PERU.

The first Congress of Bolivian Women, which adjourned May 4, reflected the national sentiment in adopting a resolution supporting the Government's demand for an outlet to the Pacific. The congress also asked equal civil rights for men and women. The second lynching in the history of the country occurred during the year, when Saturnino Balderrama, who assassinated Dr. Luis Farooz during the heat of an electoral campaign, was hanged by a mob.

The T. J. J. Dramatic Company was organized during the year in connection with the movement for a national theatre. It proposed to present the Creole and indigenous drama and folklore of Bolivia throughout the principal capitals of the continent and to stimulate the development of a native drama. See ARBITRATION, INTERNATIONAL, also PARAGUAY, under HISTORY.

BOLL WEEVIL, BOILWORM. See COTTON, ENTOMOLOGY, ECONOMIC.

BOLTON, BENJAMIN MFADE, American bacteriologist, died in New York, Aug. 12, 1929. He was born in Richmond, Va., and received the M.D. degree from the University of Virginia in 1879. He also studied at South Carolina College 1882-83, and at the universities of Heidelberg, Göttingen, and Berlin. He taught bacteriology and pathology at The Johns Hopkins University, South Carolina College, University of Missouri, and University of St. Louis. Dr. Bolton was an expert on the diseases of animals being connected with the Cuban Agricultural Experiment Station, 1914-15, and with the Bureau of Animal Industry at Washington, D. C. After 1921 he was pathologist at St. Joseph's Hospital, Paterson, N. J.

BOND, EDWARD AUSTIN, An American engineer, died Dec. 10, 1929, in New York City. He was born in 1849 in Dexter, Mich. He began his work as an engineer in 1868 in New York State with the Utica, Chenango & Susquehanna Railroad. In 1898 he became State engineer and surveyor, holding the position until 1904. During his term of office, he had charge of the surveys and plans for the construction of the New York Barge Canal. He also undertook with the aid of the Federal government, a system of stream measurement with the object of flood prevention in view. After 1904 Mr. Bond was a consulting engineer in general practice. In 1914 he visited Uruguay in the interest of a harbor improvement. He was also president of the waterworks companies at Barrie, Chatham, and Napenée, Ont., and consultant to important banking organizations on various engineering problems.

BOOK CLUBS. See LITERATURE, ENGLISH AND AMERICAN.

BOOTH, GENERAL (WILLIAM) BRAMWELL, British Salvation Army leader, died in Hadley, near London, on June 16, 1929. He was born at Halifax, Nova Scotia, Mar. 8, 1856, the eldest son of General William Booth, founder of the Salvation Army. The elder Booth was a crusader and evangelist, while Bramwell Booth, in his position as chief of staff from 1880 to 1912, was an executive. In 1912 he succeeded his father as

head of the Salvation Army. As leader, Gen. Bramwell Booth changed his policies to conform with the times, with the result that the influence of the organization steadily increased. Especially during the years of the World War, the position of the Salvation Army grew in importance. On his seventieth birthday, General Booth received gifts from 24 nations for furthering his work, and in 1928 he was appointed by the King a member of the Order of Companions of Honor. Autocratic methods, however, brought General Booth into conflict with his associates. In 1922 he ordered the removal of his sister, Miss Evangeline Booth, commander of the Salvation Army in the United States, in order to appoint American commissioners who would be under direct jurisdiction of the English headquarters. Though the order was never carried out because of protests raised, friendly relations were not reestablished between brother and sister until 1926. Because of his increasing feebleness and on account of dissatisfaction with his autocratic methods, there arose within the organization a movement to depose General Booth. In January, 1929, the High Council of the Salvation Army, by a vote of 55 to 8, ordered his removal because of physical disability. General Booth, refusing to resign, appealed to the courts and won the nullification of the vote on the grounds of his having lacked a representative at the meeting of the council, but the movement to depose him went on. After a full hearing had been given his representative, another vote was taken, Feb. 13, 1929, which was 52 to 5 in favor of removing General Booth and appointing Edward J. Higgins, chief of staff, in his place, a choice meeting with wide approval. General Booth died four months later, and all over the world was mourned and honored as a great leader. He was the author of *Books that Bless, Our Master, Servants of All, Social Repatriation, On the Banks of the River, Bible Battle Axes, Life and Religion, Echoes and Memories, General Booth's Journal*. See SALVATION ARMY.

BOOTH-TUCKER, FREDERICK ST. GEORGE DE LAUTOUR, English commissioner in the Salvation Army, died in Stoke Newington near London, July 17, 1929. He was born at Monghyr, Bengal, India, on Mar. 21, 1853, was graduated from Cheltenham College in England and in 1876 became a member of the Indian Civil Service at Punjab. He resigned in 1871 to join the Salvation Army, and soon entered upon organization work in India. With three helpers, he adopted the costume of religious mendicants, begging and preaching in the public streets. These spectacular methods brought upon them the disfavor of Indian officials, and they were even imprisoned for a month. This method of reaching the poor, however, was so successful that in 1913 he was awarded the Indian Gold Medal, Kaiser-i-Hind, given for meritorious public service. In 1888 he married Emma Ross Booth, daughter of William Booth, founder of the Salvation Army, and changed his name from Tucker to the hyphenated form, Booth-Tucker. He was appointed foreign secretary at Salvation Army headquarters in London in 1891, where he remained until 1896, when he was sent to America as commander of the Salvation Army there. He served again in England from 1904 to 1907, and then returned to India, where he remained until 1919. During those years, he was engaged in the social uplift side of the organization, inaugurat-

ing silk and weaving schools, agricultural settlements, and reformatory work among the Indian criminal tribes. He returned to England in 1919, where he remained until his retirement in 1927. He often came into conflict with his brother-in-law, and was active in calling the meeting of the council which deposed General Booth in 1929. Commissioner Booth-Tucker was the author of several works important in Salvation Army history. He wrote *The Life of Catherine Booth* (1892), *Muktsauji, or Forty Years with the Salvation Army in India* (1923); *Jesus at His Home in Nazareth* (1900).

BOOTLEGGING. See PROHIBITION

BOOTS AND SHOES. During the year, this industry was vitally interested in new tariff legislation discussed in Congress. The Hawley Tariff Bill as passed by the House of Representatives on May 28, placed a tariff of 20 per cent on boots and shoes imported, while the tariff put on hides was 10 per cent. This rate of duty, however, did not meet with the approval of the Senate, and by it boots and shoes, as well as hides and leather, were restored to the free list. The duty was demanded because imports of leather footwear, which were free of duty, had increased rapidly, especially from Czechoslovakia, a country that in 1928 supplied over two-fifths of the total imports in terms of value. The United Kingdom, France, Switzerland, Austria, Canada, and Germany, named in the order of rank in value of imports, were the other sources of supply. The major portion of the imports were women's shoes, which in 1928 represented 77 per cent of the total number and 71 per cent of the total value. Imports for 1929 are given below.

The total production of boots and shoes, other than rubber, as reported by the U. S. Department of Commerce for the year 1929, was 361,402,183 pairs. This represented an increase of 5 per cent over the production for 1928, namely, 344,350,724 pairs, and was to be compared with 343,605,905 pairs for 1927. The output of men's leather boots and shoes increased 42 per cent, of women's, 61 per cent, of misses' and children's, 75 per cent, of athletic and sporting shoes (principally men's), 42 per cent, and of slippers for house wear, 137 per cent. There was a decrease of 0.2 per cent in boys' and youths' shoes, of 0.4 per cent in infants' footwear, of 17 per cent in satin, canvas, and other fabric uppers (principally women's) of 18.9 per cent in moccasins (partly due to changes in classification) and of 6.2 per cent in barefoot sandals, play shoes, and other footwear. Massachusetts led the other States, as usual, in the production of boots and shoes, its total output during the year being 83,539,555 pairs. Next in rank were New York, with 76,007,919 pairs, Missouri, with 50,745,213 pairs, Illinois, with 27,870,945 pairs, New Hampshire, with 22,975,832 pairs, Wisconsin, with 19,483,253 pairs, Pennsylvania, with 17,233,118 pairs, Maine, with 16,400,103 pairs, and Ohio, with 15,427,350 pairs. The total output for all other States was 31,719,865 pairs.

In the accompanying table is summarized the production of boots and shoes in the United States, as compared with 1928. The establishments reporting manufactured approximately 95 per cent of the total output of footwear, other than rubber.

In 1929 there was a considerable increase over 1928 of the number of shoes imported into the United States. The imports were as follows: All-leather boots and shoes (free), 6,182,041 pairs

BOOT AND SHOE PRODUCTION

Kind	United States Number of pairs	
	1929	1928
Boots and shoes, total	361,402,183	344,350,724
High and low cut (leather), total	312,742,744	298,724,547
Men's	94,770,112	90,969,621
Boys' and youths'	22,992,557	23,031,757
Women's	131,703,209	127,752,653
Misses' and children's	39,926,828	37,135,374
Infants'	23,759,040	23,855,142
Athletic, sporting (leather) *	1,611,920	1,547,084
Satin, canvas, other fabric *	3,121,492	3,760,069
Slippers for house wear, total	35,798,289	31,483,157
All leather	7,875,041	6,825,897
Part leather, felt, etc	27,923,248	24,657,260
Moccasins	1,016,835	1,253,198
Barefoot sandals, play shoes, and all other footwear	7,110,903	7,582,689

* Excludes footwear with rubber soles

valued at \$17,025,931 in 1929, as compared with 2,616,884 pairs valued at \$8,254,224 in 1928, all-leather slippers (free), 975,522 pairs valued at \$1,432,705 in 1929, as compared with 633,908 pairs valued at \$1,019,435 in 1928, and other footwear (durable), 1,199,990 pairs valued at \$314,289 in 1929, as compared with 1,171,923 pairs valued at \$316,633 in 1928. The total value of 8,358,153 pairs of shoes imported in 1929 was \$18,772,925, as compared with 4,422,805 pairs valued at \$9,590,292 in 1928.

Exports of leather footwear in 1929, although increasing in value, had not materially increased in quantity. This was largely owing to the fact that the trade had not fully recovered from the adverse conditions prevailing in 1927, which were a result of the unsatisfactory financial situation in certain countries, tariff changes, increased local production, and increased foreign competition. The total exports to foreign countries in 1929 amounted to 4,807,212 pairs valued at \$11,047,583 as compared with 4,744,325 pairs valued at \$11,342,656 in 1928.

The exports of men's and boys' shoes in 1929 showed a decrease in value, 1,863,263 pairs valued at \$5,581,107 being exported as compared with 1,870,493 pairs valued at \$5,796,517 in 1928. There was, however, an increase in the value of women's and children's shoes and of athletic shoes, sandals, leggings, and other leather footwear. In 1929, 1,731,865 pairs of women's shoes valued at \$4,703,584 were exported as compared with 1,783,342 pairs valued at \$4,309,877 in 1928, 470,731 pairs of women's slippers valued at \$499,032, as compared with 361,500 pairs valued at \$392,099 in 1928, 686,251 pairs of children's shoes valued at \$763,726, as compared with 666,435 pairs valued at \$750,199 in 1928 and 55,102 pairs of athletic shoes, sandals, leggings, and other leather footwear valued at \$100,134, as compared with 62,555 pairs valued at \$93,964 in 1928. The largest exports of men's and boys' shoes, 431,191 pairs, and of children's shoes, 255,560 pairs, were to Cuba, the largest exports of women's shoes, 399,372 pairs, were to Canada.

BOERNEO. An island in the Malay Archipelago. See BRITISH NORTH BORNEO, BRUNEI, SARAWAK, and DUTCH EAST INDIES.

BOSNIA AND HERZEGOVINA, *hà'tsà-go-vô-na*. Formerly provinces in the Turkish Empire, now provinces of the newly established State of Yugoslavia. In 1908 control over them was acquired by the Austro-Hungarian Empire. In 1918 after the collapse of this empire, they were turned over to Yugoslavia. Area, 19,708

square miles; population, according to the census of Jan 31, 1921, 1,889,929 See JUGOSLAVIA.

BOSTON MUSEUM OF FINE ARTS. See ART MUSEUMS

BOSTON UNIVERSITY. A nonsectarian institution of higher education in Boston, Mass., founded in 1869 The enrollment for the autumn term of 1929 was 13,986, distributed as follows College of liberal arts, 797, college of business administration, 4032, college and extension courses, 745; college of practical arts and letters, 812, college of music, 213, school of theology, 274, school of law, 534; school of medicine, 216, school of education, 3277, school of religious education, 293, graduate school, 585. Of the total registration, 11,777 were full-time students working for degrees and 2209 were part-time, special students The 1929 summer-session enrollment was 1750 The faculty numbered 492 in the autumn of 1929, other personnel, 107; and trustees and council members, 64 The productive funds of the university exceeded \$3,886,000 Important gifts for the year approximated \$300,000 These included a duplex club house, valued at \$53,000, at Nickerson Field for the housing of visiting as well as home football teams and to serve as a student social centre, and the Sargent School of Physical Education in Cambridge, Mass., assessed at \$82,900 In the eight libraries of the university there were 150,000 volumes, the liberal arts library alone containing 45,688 volumes In 1929 the school of religious education became a senior college and graduate school, requiring two years of liberal arts training before a student may specialize in the religious education field President, Daniel L Marsh, A M, S T B, Litt D, L H D, LL D

BOTANY. It was significant of the modern trend in botanical research that students in all branches of the science were realizing the close interrelation between lines of investigation once regarded as wholly distinct Systematists are beginning to recognize the value of genetics, ecology, and physiology, as well as morphology, in determining relationships. Pathologists find that the study of plant diseases from the economic standpoint is closely associated not only with physiology but with many other sciences. As all botanical investigations contribute ultimately to the promotion of agriculture and horticulture, they may be considered to have a direct bearing upon the welfare of the human race, and it is therefore an encouraging sign that interest in the science, judging from the number of active students in different fields, appears to be increasing from year to year

The eighty-sixth annual meeting of the American Association for the Advancement of Science was held in Des Moines, Iowa, Dec 27-31, 1929 Numerous papers relating to botany were presented at the meetings of Section G, the Botanical Society of America, the American Phytopathological Society, and many other affiliated organizations

An accidental discovery by Prof George W Hendry of the University of California that the sun-dried adobe bricks in many ancient buildings in that State contain chopped-up plants has proved of great interest It has been possible to determine the approximate dates of introduction and sources of many plants from a study of the ages of the buildings in which they occur. There is now definite proof, for example, that wheat was introduced into California dur-

ing the Spanish period, and that barley was cultivated throughout the ascendancy of the Spanish missions. Remains of garden crops, fruits, and fibre plants also have been identified

That plant study aids medical research has been demonstrated by Dr David I Macht of Baltimore, who has found that certain substances having a toxic effect on living animal tissues do not injure living plant tissues, while other substances may have the opposite effect Thus, human blood serum in the skin disease known as pemphigus is toxic to certain plant seedlings

Professor N C Fassett of the University of Wisconsin explained how botanical studies had aided the geologists in fixing the limits of the vast inland fresh-water sea which once occupied the area of the Great Lakes On the margins of many existing small lakes in Wisconsin, he has found numerous species characteristic of the Atlantic seaboard that are plainly relics of the ancient vegetative zones around the margin of the great body of water, as they are now foreign to the Wisconsin flora

Professor E J Lund of the University of Texas described experiments on the electrical energy of plant cells, establishing the doctrine that all living cells generate minute but measurable currents of electricity, which regulate their growth and determine their form These currents have been checked or made to disappear by applying certain toxic substances to the cells or by depriving them of oxygen, and the subjection of growing plants to the flow of an outside current on the other hand, has caused marked modifications in their final form In the Douglas fir and white fir, the current has been shown to flow continuously upward in the outer layers of the wood and downward through the inner layers of the bark Professor Lund observed that the results of these experiments seem to open a new avenue of approach to many obscure and difficult problems in embryology, growth, and regeneration

Professor J B Overton of the University of Wisconsin has conducted investigations on the structure and chemistry of the long-lived cells of certain cacti In the giant cactus and barrel cactus, some of these cells attain an age of from 150 to 200 years They are thick-walled, with a large central cavity, and contain more dry matter, less nitrogen, and less phosphorus than young cells

From experiments made by Dr Charles Sheard and Dr A Frances Johnson of the Mayo Clinic, it would appear that plants are susceptible to the influence both of infra-red and ultra-violet rays, which are imperceptible to human beings Sun-flowers and poinsettias were tested, and it was found that infra-red radiation causes a change in potential of as much as three-tenths of a volt, which is one-fifth the voltage of a new dry cell Ultra-violet rays produce a lesser change of from five-thousandths to fifteen-hundredths of a volt It has been found by these and other investigators at the Mayo Clinic that plants will sprout and grow faster beneath a glass which allows the passage of ultra-violet light These plants have the largest leaves and the greatest development of chlorophyll, although ordinary window glass produces the longest stalks

At a symposium of the Ecological Society of America, the degree to which soil acidity governs the lives of wild and cultivated plants was discussed. It was formerly assumed that acid soils were bad for all crops, but it is now known that

some will tolerate a considerable concentration, while others, as blueberries, cranberries, and the heath family in general require a highly acid soil. It is therefore possible for a skilled botanist to determine the character of a soil by inspection of its flora, even in the absence of chemical tests.

The Dutch elm disease, which has already devastated the elms of western Europe, and which may prove a menace to the American elm, was described by Dr. Christine Buisman, of the University of Utrecht. No method of control has yet been discovered, and efforts are being directed toward the propagation of resistant varieties. The disease first appeared in Holland in 1920. It is marked by curling up of the twigs and withering of the leaves. The wood of a diseased tree also shows conspicuous reddish-brown streaks. The spores are disseminated by the wind and probably enter the wood through wounds or abrasions.

PATHOLOGY. The somewhat unusual climatic conditions which prevailed throughout the United States during the spring and summer of 1920 resulted, as might be expected, in variable prevalence of plant diseases. The rainy weather of early spring caused an extensive infestation of apple scab in most of the apple-producing States of the eastern half of the country, while the prolonged summer droughts, although favorable to crops in diminishing rot infection, were generally conducive to the spread of rust and smut fungi. Thus, in California, alfalfa rust (*Uromyces medicago*) was very prominent, and this crop also suffered materially from bacterial wilt (*Aplanobacter maderosum*) and a disease of unknown origin. The winter wheat crop for the most part matured before the rust attacked it severely, though localities differed in this respect, Pennsylvania reporting an especially bad infestation. Corn smut (*Ustilago zea*) was prevalent in many sections, particularly in Iowa. The cotton crop suffered in Arkansas and adjacent territory from wilt (*Fusarium vasinectum*). Anthracnose of strawberries in Florida was common, and was found to be spreading. Studies were being made by the Bureau of Plant Industry in connection with the Louisiana Experiment Station on various strawberry diseases of the virus type, reported under such names as yellows, xanthosis, mosaic, yellowing, etc.

According to W. D. Valleau (*Plant Disease Reporter*, 13: 52), who had made extensive observations in Kentucky, the appearance of peach yellows in that State in small orchards and gardens is directly connected with potatoes, from which it appears to be transmitted. Peach yellows in commercial plantings had not yet been reported from Kentucky. In Georgia, it had been found necessary by the Department of Agriculture to extend the quarantine against the so-called "phony" peach disease, of which the insective principle appears to be confined to the root.

Willow scab (*Fusoidium saliciperdum*) occurs locally in practically all the New England States, New York, and the eastern Canadian provinces. Clinton and McCormick (*Conn. Agric. Exp. Station Bull.* 302: 443-469) emphasize the fact that this disease may become of increasing importance in the United States, for while the willow is of less value than some others as an ornamental tree, it has various economic uses.

Careful studies extending over a period of three years have been carried on by McMurtrey at the

Maryland Agricultural Experiment Station on the mosaic disease of tobacco. In view of the rapidity with which this disease spreads, infection should be avoided by sterilizing the seed beds, by protecting them against insects and other carriers, and by prompt burning of diseased plants. In this connection, Valleau and Johnson have found that mosaic disease may be readily communicated to tomatoes.

Lee's work on the eye-spot disease (*Helminthosporium sacchari*) of the Philippines indicated that the toxic substance which this fungus develops cannot be held in check by application of organic nitrogen fertilizers, and that the latter should be employed only when climatic conditions enable the plant to react properly to the nitrogenous stimulant.

Many important studies were conducted at the various agricultural experiment stations relating to the effects of certain chemicals on the fungi attacking cultivated crops. Thus, experiments made at the Ohio station showed the increasing effectiveness of oxidizing sulphur and dry lime-sulphur mixtures in the control of apple scab. For potato and celery blights, freshly mixed copper-lime dust, applied when the plants are moist, has been found useful. Further tests by Sayre have confirmed the efficacy of formaldehyde dusts for the control of oat smut. Investigations on the treatment of corn smut have been directed chiefly toward the production of resistant strains. Trelease (*Bull. Torr. Bot. Club*, 50: 65-92) has conducted a number of tests on wheat mildew. A relatively large surplus of carbohydrates is necessary for the abundant development of this fungus. Since carbohydrates are significant not only as materials for leaf assimilation but as sources of energy in protein synthesis, Trelease draws the conclusion that conditions tending to lower the vigor of the host decrease its susceptibility to mildew, and conversely that a more vigorous growth promotes the development of the latter. This is in accord with the results of most experiments conducted by plant pathologists, and apparently contradicts the sweeping statements made by animal pathologists as to the direct relation of lowered vitality to susceptibility.

Of the dust seed disinfectants for treating cereals now found effective in the United States, some, as copper carbonate, have come into general use, but others were just being introduced or were still in the experimental stage. Ethyl mercury chloride, sold in the United States under the trade name of *Ceresan*, gave good results in the treatment of stinking smut of wheat, and of various smuts attacking barley and oats.

See HORTICULTURE

PHYSIOLOGY. Gunnar Nilsson Leissner (*Quart. Rev. Biol.*, 4: 113-117) reviews the present status of our knowledge of plant resistance to cold. The subject is of economic importance on account of its bearing upon the question of the winter hardiness of various cereal grasses, especially wheat. In this plant, the degree of osmotic pressure of the cells in a state of incipient plasmolysis is closely associated with the reducing power of the leaves, their nitrogenous constituents and the quantity of dry matter contained. Reference is made to the long and intensive experimental study of this topic conducted by Akerman (*Studien über den Kältegrad und die Kulturresistenz der Pflanzen nebst Untersuchungen über die Winterfestigkeit des Weizens*). It is, of course, a well-known fact that some plants exhibit a

high degree of cold resistance, while others are quickly affected by any fall in temperature below a certain point. In their studies of methods of influencing the effects of chilling, Sellschop and Salmon found that potassium nitrate in solution afforded considerable protection, while potassium chloride also was efficacious, but to a less degree.

Selertz studied the effects of nitrogen, potash, and phosphorus upon the production of chloroplast pigments and the resulting crop production. He found that nitrogen greatly increases pigmentation in cotton and potato, while phosphorus has a similar, though less marked effect. Potash, on the other hand, suppresses the formation of chloroplast pigments in potatoes and to some extent also in cotton.

There have been extensive investigations by various plant physiologists on the importance of boron in food intake or hindering growth. Johnson and Davis (*Bot. Physiology* 4: 31) state that this element must be regarded as essential to the growth of many of the higher plants. Thus, the melon and certain legumes require it although various cereals apparently reach full development in its absence. On the other hand A. R. C. Haas (*Bot. Gaz.*, 88: 113) finds that boron, even when present in a relatively small degree of concentration, is toxic to fruit trees, causing mottled and chlorotic foliage. This effect may be remedied if the boron is leached out of the soil by copious applications of water. In connection with the same phase of the subject, Kelley and Brown noted that certain irrigation waters in California containing concentrated borates are distinctly toxic to walnut and citrus trees. Further experimentation with various cultivated crops would apparently yield information of economic value.

In their studies on the effects of light, temperature, and amount of carbon dioxide on flower and fruit production, Arthur and Guthrie found that a number of plants, including the sweet pea, petunia, and snapdragon, flowered profusely under a 24-hour illumination. Additional amounts of carbon dioxide in the air increased both the height of the plant and the number of flowers. It was found also that various grains developed well, even at high temperatures, if given increased light and carbon dioxide (*Mem. Hort. Soc.*, N. Y. 3: 73-74).

H. C. Joseph demonstrated that the seeds of various plants germinate more lively after a period of dry storage. Thus, the seeds of black birch (*Betula lenta*), when freshly harvested, did not exceed a germination of 17, and sometimes not over 2 per cent sprouted. After one month, the germination percentage was 11-41 at 32° C, and 39-48 at temperatures between 15 and 32° C. Ernst C. Smith (*Mycologia*, 21: 321), in the course of experiments on the longevity of spores of the slime fungi (*Myxomycetes*) found that they exhibited extraordinary vitality, extending in some cases to nearly thirty-two years. The percentage of viable spores was often as great as in cultures a year or less old.

The interesting investigations conducted by Otto Stocker on the salt plants of Egypt show that in this particular group, at least, the structural type of the plant is of more importance in water regulation than is generally supposed. The fluctuation in surface transpiration of a single type of plant is less than that between different plant types within a single habitat.

The Entomophthoraceae, a family of phycomycetous fungi, is of interest to plant physiologists in that it affords, among its five genera, a complete series from the specialized parasite like *Completozia*, restricted to fern prothalli, to the true saprophytes such as *Conidiobolus*, which grows on decaying wood. Sawyer cultivated *Entomophthora sphaerosperma*, hitherto regarded as an obligate parasite, on artificial media prepared from potatoes, fish, etc., the presence of proteins in the media being apparently essential. The dividing line between parasite and saprophyte is therefore much less definite than was formerly believed.

GENERAL STUDIES. Woodhead (*Journal of Ecology*, February, 1929) gave a valuable account of the evolution of plant societies in the southern Pennines. Until late glacial times, the vegetation was typical tundra, which probably persisted until about 8000 B.C., when trees and shrubs began to appear. Forest development attained its climax about 6000 B.C. in the early boreal period. With the advent of a warmer and moister climate (4000-3000 B.C.), the forest degenerated and was replaced by moors in which cotton grass (*Eriophorum vaginatum*) was the dominant plant. After a partial return to dry conditions in the sub-boreal period (2000-1000 B.C.) the moors were invaded by heaths, while the moist, cool climate of the sub-Atlantic period, extending to recent times, has permitted the differentiation of plant types characteristic of the present flora of the region.

W. D. Francis found that there is not the same regularity in the growth of Australian conifers as in those of Europe and America. Sections of *Araucaria cunninghamii*, for example, show that the rings occur in various numbers, each group of which was apparently produced in a single year. This is of interest in view of the general popular impression that the age of any tree may be determined by counting the annual rings. H. Uittien, in studying the relation between leaf venation and branching, establishes the general principle that palmate leaves are found in connection with cymose inflorescence, while pinnate leaves occur with racemose inflorescence. The leaf shape of lianes is not the result of adaptation but is likewise connected with the type of branching characteristic of the main stem.

F. O. Bower completed his work on the phylogeny of the ferns (*The Ferns, Filicales*, vol. II, Camb. Univ. Press). He considers that comparative morphology and paleontology must still remain the foundation for taxonomic conclusions. Fluctuating variations, he believes, may become permanent and give rise to new forms. Professor G. F. Ferris of Stanford University, in a recent review of the general subject of systematic botany as affected by modern studies in genetics, the mutation theory, etc., noted that it might easily be possible for two organisms to have a close somatic resemblance and yet to be quite widely separated genetically, while the reverse, of course, would be equally possible. Groups may exist side by side, as Morgan had remarked, so closely similar that only an expert can separate them, and yet may be infertile when crossed or may produce only sterile progeny. It is true, as Ferris pointed out, that our whole body of systematic theory is built up on the idea of continuity, and the theory fails if discontinuous variation is accepted as the chief factor in evolution. There is no definite evidence, however, that abrupt

mutations have played such a rôle, and if minute mutational changes are accepted, there is no especial conflict between the mutation theory and the idea of continuity. It may be noted as pertinent to this discussion that Boyer stressed the value of studying wood anatomy in conjunction with morphological differences in botanical classification. He cites examples among the Flacourtiaceae in which the wood structure corroborates the taxonomic arrangement (*Bull. Jard. Bot. Botenborg*, 9 223-248).

F. J. Seaver published a monograph on the hitherto neglected operculate fungi of the order, *Perizales*, which he treats under two families, the *Perizaceae* and *Elvelaceae* (the North American Cup Fungi [Operculates]). A J. Grout had in preparation a comprehensive moss flora of North America, of which the first volume had already appeared. It contains full descriptions of the families and genera, with keys to both genera and species. Many botanists were collaborating on the monumental Flora of North America, which was being issued by the New York Botanical Garden, and several new pairs were published during the year.

Much experimental work in genetics was carried on. It was probable, as Dilliers has pointed out, that future investigations would concentrate more and more upon the relationship of genetics to developmental physiology and morphology. See *EXPLORATION*.

BOTULISM. Various health departments and medical journals continued to warn the public of the dangers of home canning. An outbreak occurred in an Italian settlement in Westfield, N. Y., at Christmas time, from home-canned string beans. But eight cases were reported, yet since four patients succumbed, the episode was serious. Canned string beans have now been responsible for 39 outbreaks of the disease. It is evident that a propaganda of some sort should be directed against the menace and the public instructed as to what must be done and what avoided to secure safety. The information just given is found in an editorial in the *Journal of the American Medical Association* for February 2, and in the February 16 number there is an editorial which points out that the poison of the disease may exceptionally be inoculated from without. Thus far, no case has ever been reported, but the *bacillus botulinus* is regarded as a constituent of the soil and any suspected food should not be thrown out as garbage but destroyed. Even if rendered edible by prolonged and intense heat, it would seem wiser to refrain from eating such food articles. Another hypothesis is that some who partake of the latter are infected because of some weakness of the digestive system. This view is so far without a

duction of the plays of Barrie and Milne. As an actor, he was at his best in rôles such as Sir William Gower in *Trelawny of the Wells* and Carriaway Pim in *Mr. Pim Passes By*. He married the actress, Irene Vanbrugh.

BOULDER CANYON DAM. See *DAMS*.
BOUNDARY DISPUTES. See *ARBITRATION*, *INTERNATIONAL*.

BOURDELE, ÉMILE ANTOINE French sculptor, died in Paris, Oct. 1, 1929. He was born Oct. 30, 1861, in Montauban, of humble parents. His father was a wood carver, who specialized in restoring antique furniture. M. Bourdelle received no formal education, but studied art in Paris under Rodin, whose most highly esteemed follower he became. Archaic Greek and Gothic sculptures were the chief influences on his art, which was architectural in nature. Among his works are monuments to the defenders of Montauban (1902), to the Polish poet Mickiewicz (1917), to General Alvear in Buenos Aires (1915-17), and to the mimes of Monceaux who fell in the War, "The Archer Heracles" (1909, replica in the Metropolitan Museum of New York City), reliefs on the Théâtre des Champs Élysées in Paris, a colossal equestrian statue and four "Victory" figures, of which "Force" and "Victory" have been called the finest pieces of sculpture the World War produced, busts of Beethoven (Luxembourg Museum), Rodin, Ingles, Anatole France (1919), and M. Simu (Boucharat), and Sir James George Frazer (1922).

BOUVET (bôv'vâ) ISLAND. A small island in the South Atlantic (Lat. 54° 20' S., Long. 3° 24' E.) belonging to Norway. It was first sighted by Louis-Bouvet in 1739 but remained unoccupied until a Norwegian expedition in the whaler, *Norvegia*, landed and took possession in December, 1927. British claims to the island, based upon an unauthenticated report of a landing made by Captain Norris in 1825, were waived in favor of Norway in 1928.

BOWDOIN COLLEGE. An institution of higher education for men in Brunswick, Me., founded in 1794. The autumn session of 1929 had an enrollment of 519, distributed as follows: Seniors, 115, juniors, 138, sophomores, 138, freshmen, 154, and specials, 4. There were 55 faculty members. The productive funds of the college amounted to \$5,053,000, and the income for 1928-29 was \$417,710. There were more than 150,000 volumes in the library. President, Kenneth Charles Morton Sills, LL.D.

BOWLING. The twenty-ninth annual tournament of the American Bowling Congress attracted a record entry of over 12,000 bowlers from over 200 cities in the tourney held at Chicago. Adolph Unke of Milwaukee captured the singles title, while the doubles championship went to Butler and Klecz of Chicago. Otto Stein, Jr., of St. Louis won the all-around title, while the five-man team championship was garnered by the Hub Recreation quintet of Joliet, Ill.

BOXING. The continued dullness in heavyweight boxing in 1929 was coincident with the death early in the year of the game's greatest promoter, George Lewis "Tex" Rickard, who had built up the game and had produced the spectacular and lucrative "Battles of the Century" and had developed such national figures as Jack Dempsey, Louis Frio, and Gene Tunney. William F. Carey, millionaire business man, carried on Rickard's Madison Square Garden enterprises and, aided by Dempsey, staged a bout between

BOUCAULT, Dion English actor and producer, died in Huxley, Buckinghamshire, June 25, 1929. He was born in New York City, May 23, 1859, of a family of actors. His father, Dion Boucault, the famous Irish dramatist and actor, was an important figure in the Victorian theatre. Dion, the son, educated in England and Paris, at the age of 20 made his first stage appearance in the Booth Theatre in New York in 1879. The following year, he appeared in London. As a director, he won a name for himself in Melbourne, where he produced the current successes by Jones, Wilde, and Pinero. His chief contribution to the theatre, however, was his pro-

Jack Sharkey and Young Stribling at Miami. This fight in the picturesque setting was another dull affair and did nothing toward settling the possession of the title. The race for the Muldoon-Tunney Trophy, emblematic of the heavyweight championship of the world made little progress and the only contenders of worth at the end of 1929 were Jack Sharkey and Max Schmeling, of Germany. The latter knocked out Johnny Risko at Madison Square Garden in New York in February and battered Paulino Uzcudun, the Basque, in the Milk Fund Show in June. It was generally considered at the end of the year that the winner of a fight between these two would settle the ownership of the trophy and title.

Three world's championships in the lighter division changed hands during the year. Jackie Fields won the welterweight title from Joe Dundee on a foul in the second round at Detroit in July, while Battling Battalino captured the featherweight title by outpointing Andre Routis of France in a 15-round bout at Hartford, Conn., in September. Tod Morgan of Ast Sequim, Wash., lost the junior lightweight title which he had held for four years to Benny Bass, a Philadelphian. Bass stopped Morgan in the second round of a scheduled 15-round fight at Madison Square Garden on December 20.

Sammy Mandell, lightweight king, turned back Tony Canzone in a titular fight at Chicago August 2, while Mickey Walker, ruler of the middleweights, beat Ace Hudkins, the Nebraskan, in a hard fight for the 160-pound supremacy on October 29, at Los Angeles. Tommy Loughran, light heavyweight champion, abdicated his throne but was soundly beaten by Jack Sharkey at the Yankee Stadium in his first important venture into the heavyweight ranks. Al Brown, Panaman Negro, won recognition from the National and New York Commissions as bantamweight champion.

Penn State won the Eastern Intercollegiate team championships. In the amateur classes, the winners of the national crowns were flyweight, James Herr, Grand Rapids, bantamweight, Albion Holden, Providence R. I., featherweight, Martin Zumiga, Los Angeles, lightweight, Steve Halaiko, Buffalo, N. Y., welterweight, Leslie Baker, Watertown, Mass., middleweight, Ray Lopez, Boston, 175 pounds, Martin Levandowski, Grand Rapids, Mich., heavyweight, Ralph Ficuccio, New York.

BOYNE, BATTLE OF SEE CELEBRATIONS

BOY SCOUTS OF AMERICA. An organization incorporated in 1910 and chartered by Congress in 1916 to develop the character of boys and train them for the duties of adult life by influence brought to bear in their work and play. Its national constitution declares the intention to "promote the ability of boys to do things for themselves and others, to train them in scout craft, and to teach them patriotism, courage, self-reliance, and kindred virtues." Each boy, on joining the organization takes the scout oath, admonishing him to keep himself "physically strong, mentally awake, and morally straight." The scout law requires him to exert such qualities as trustworthiness, loyalty, helpfulness, friendliness, courtesy, kindness, obedience, cheerfulness, thrift, bravery, cleanliness, and reverence. The movement is nonsectarian and without military or political connection.

The membership in 1929 included 819,339

boys and 219,146 scout leaders. There were 12 regional scout districts under the direct supervision of the national scout executives and subdivided into 643 local councils. The boys are organized into troops consisting of 32 members, each troop being made up of patrols of eight or less members under a boy leader. A scoutmaster, commissioned by the national council, is provided for each troop; he must be an adult citizen of proved fitness for boy leadership. Troops are commonly formed in connection with schools, churches, or other existing bodies, and each must be sponsored by a troop committee of three or more adults, who select the scoutmaster and supervise the execution of the programme. In small areas, a farm or home scout patrol may be formed with as few as two boys, and a boy who lives in an area so isolated that he cannot join a troop or patrol may become a lone scout.

Among the foremost scout activities are camping and hiking, nature study, sea scouting, and many kinds of athletics and crafts, such as swimming, first aid, signaling, knot-tying, and bridge building. Successive ranks in membership—tenderfoot, scout, and first class—are achieved by passing tests graded in difficulty. Merit badges, 90 in number, may be attained by the scout of first-class rank by meeting requirements for each; they cover proficiency in pursuits both of the useful and the hobby type. By winning a certain number of merit badges, a boy may rise to the higher ranks of star, life, and eagle scout. In 1929 the organization provided opportunity for 300,000 boys to spend a week or more in summer camp. There were 652 camps conducted by local councils and more than 2400 troop camps. In its community service, the boy scout movement cooperates with the U. S. Forestry Department in fighting and preventing forest fires and in conserving wild life and planting trees. It also renders services in local campaigns of various sorts, such as clean-up and safety-first campaigns, and cooperates with many national societies and movements.

The official magazine for boys is *Boys' Life* and for scout leaders, *Scouting*. The organization also publishes merit-badge pamphlets, handbooks, and other material pertaining to the movement. The national officers in 1929 were President, Walter W. Head, treasurer, George D. Pratt, national commissioner, Daniel Carter Beard, international commissioner, Mortimer L. Schiff, chief scout executive, James E. West, deputy chief scout executive, George J. Fisher. Headquarters of the national council, the governing body, are at 2 Park Avenue, New York City.

BRAZIL. The largest of the South American republics, situated in the northern and eastern part of the continent of South America, a federal republic. Capital and largest city, Rio de Janeiro. The site for a new Federal capital was selected in the state of Goyaz.

AREA AND POPULATION. The area of Brazil is given at 3,285,318 square miles, which gives it an area more than 250,000 square miles greater than that of the continental United States. The country is divided into 20 states, one territory and one federal district. According to the census of 1920, the population of the Republic was 30,435,005, which represents a density of 93 inhabitants to the square mile. The principal cities with their populations, according to the same census are Rio de Janeiro, 1,157,873, São Paulo,

579,033 (estimated at 1,000,249 in December, 1928); Bahia, 283,422, Recife, 238,843, Belem, 236,402; Porto Alegre, 179,263. According to statistics furnished by the Statistical Bureau, the population of Brazil on Jan. 1, 1929, totaled 39,103,856, an increase of 27.6 per cent over that of the 1920 census and of 21,785,300, or 126 per cent, over the 1900 census. In 1926 the population was divided among the states, territory, and federal district as follows:

Afagôas, 1,117,045, Amazonas, 409,699, Bahia, 3,859,241, Ceará, 1,520,335, Federal District, 1,360,586, Espírito Santo, 587,451, Goiás, 640,491, Maranhão, 1,047,206, Matto-Grosso, 312,661; Minas Geraes, 6,902,511, Pará, 1,269,344, Parahyba do Norte, 1,193,260, Paraná, 870,255, Pernambuco, 2,617,310, Piauí, 738,740; Rio de Janeiro, 1,844,304, Rio Grande do Norte, 660,903; Rio Grande do Sul, 2,683,683, Santa Catharina, 847,656, São Paulo, 5,751,822, Sergipe, 524,095, Acre Territory, 106,374.

Immigration to Brazil declined from 121,569 in 1926 to 101,568 in 1927 and to 82,061 in 1928. The Portuguese, who form the bulk of the immigrants, numbered 12,882 in 1928, 31,236 in 1927, and 38,791 in 1926. Japanese immigrants in 1928 totaled 11,169 and Italians, 5,493. National and state authorities encourage immigration in every way. The State of Pará granted 2,500,000 acres of land in Acre to the South American Development Company, a Japanese concern, which plans to settle 40,000 Japanese on this area within ten years. A German syndicate received a concession for the development of the cocoa fibre industry on 21,000 acres of land in the state of Maranhão. Another concession made to Henry Ford for a rubber plantation by the State of Pará included about 2500 square miles.

EDUCATION. Education is free but not compulsory, except in seven states where it is both free and compulsory. In 1926 there were in the various states 30,650 primary schools with 1,470,000 pupils, 112 secondary schools, and 367 professional schools with more than 37,000 pupils. There are also 76 schools which train teachers, 97 industrial schools, 41 agricultural, and 48 commercial schools, besides one official university, the University of Rio de Janeiro, and two private universities.

PRODUCTION, ETC. Brazil is primarily an agricultural country with coffee the dominant factor upon which the whole economic well-being of the nation depends. The total cultivated area covers 14,880,000 acres, of which 5,145,554 are in São Paulo, 2,805,139 in Rio Grande do Sul, 2,641,156 in Minas, and 4,288,800 in other states. Every year, coffee accounts for between 60 and 75 per cent of Brazil's total exports, the remaining 25 to 40 per cent being divided among a number of minor products. Of these, rubber is notable because although it is indigenous to the Amazon Valley, competition from eastern plantation rubber which is produced more efficiently and economically in the East Indies has deprived Brazil of first place in world production since 1912, and only recently have serious attempts been made to systematize and increase production. Cacao is also of superior importance because Brazil produces about 13 per cent of the world supply of this product, being surpassed only by British West Africa. Brazil has great potentialities as a producer of vegetable oil, but this industry is not yet well developed. Brazil nuts constitute more than half of the values of exports of

oilseeds and kernels, the remainder being made up largely of palm nuts, cottonseed, and castor seed.

Owing to the vast extent of its agricultural area, the average holding is of large size. Only a small portion is cultivated, but statistics indicate a rapid increase in recent years. Public lands in Brazil are the property of the several states of the republic, except in such cases where titles have been transferred to the Federal government for special purposes.

Farm land in Brazil in 1929 was valued at a total of \$1,351,945,311 (10,556,031,291 milreis) and was divided among different nationalities as follows: Brazilians, 8,263,478,386 milreis, Italians, 466,083,388 milreis, Portuguese, 259,147,761 milreis, Spaniards, 77,525,560 milreis, Uruguayans, 72,865,069 milreis, Germans, 60,187,127 milreis, Austrians, 30,526,300 milreis, Russians, 20,266,337 milreis.

In 1927-28 Brazil produced 28,334,000 bags of coffee (1 bag equals 132 pounds), while the total production of all other countries was 8,003,000 bags. São Paulo, Rio de Janeiro, Espírito Santo, and Minas Geraes are the principal coffee-growing districts, the production of São Paulo in 1928 amounting to 19,381,010 bags. Production of other chief crops in 1927-28 (in metric tons) was: maize, 4,066,136, rice, 890,023, tapioca, 193,023, sugar, 777,715, potatoes, 193,023, yerba maté, 187,048, wheat, 114,398, tobacco, 67,811, cacao, 51,770, rubber, 27,476. The area under cotton was 1,177,862 and the output, 106,660 metric tons of raw cotton, equivalent to 473,370 bales when ginned. The total value of all crops in 1927-28 was estimated at \$972,000,000.

Livestock in the country at the census of 1920 included 34,271,321 oxen, 16,168,549 swine, 7,933,447 sheep, 5,086,655 goats, 5,253,699 horses, and 1,865,259 asses and mules.

Brazil's forests and mines are important, the former providing exports valued at \$2,680,107 in 1928, mostly in the form of Paraná pine. Coal of an inferior quality is found in the states of Rio Grande do Sul, Santa Catharina, Paraná, and São Paulo and is usually pulverized for market. The annual output is about 37,000 tons. An iron ore deposit, believed to be one of the richest in the world, was being developed at Itabira. Gold, diamonds, manganese ores, and monazite also are mined. Exports of manganese in 1927, chiefly to the United States, totaled 241,823 metric tons.

Cotton weaving is the most important manufacturing industry in Brazil, 357 factories with 2,584,050 spindles, 78,383 looms, and 128,613 operatives being active in 1927. The total value of all cotton products in that year was 974,555,000 milreis (1 paper milreis equals \$0.1196 par). There are also 13 silk, 35 woolen, and 16 jute mills, 23 paper mills, over 2000 tobacco factories, about 216 sugar factories (production in 1927, 850,565 tons), and 13 packing houses.

COMMERCE. Constant fluctuations in foreign exchange and the price of coffee since the beginning of the World War have caused much uncertainty in Brazilian business. The signing of the stabilization bill on Dec. 18, 1928, removed, however, some of this difficulty. Aside from the exchange, the coffee movement is the most important single factor in Brazilian trade activities inasmuch as it approximates three-quarters of Brazil's entire export trade. In order to minimize violent price fluctuations and to combat a tend-

ency to decline during recent years, the São Paulo Coffee Defense Institute resorted to a policy of restricting shipments of stocks from the interior to Santos, the world's principal coffee export port, thus curtailing sales and maintaining price levels even in the face of record-breaking crops. Although the coffee crop for 1928-29 was considerably smaller than for the previous year, it was estimated early in 1929 that an amount almost equivalent to a full year's normal exports was being withheld from the market. Doubt as to the ability of the Institute to maintain the price of coffee in the face of increasing production elsewhere and what promised to be another bumper crop in 1929-30, led to a feeling of uncertainty in all lines and business remained dull throughout 1929.

The United States is by far the best customer Brazil has, and it likewise furnishes a larger percentage of Brazil's imports than does any other country. In 1927 the United States took 45 per cent of Brazil's exports, and sold to Brazil 29 per cent of its total imports. While the

In 1928 Brazilian imports amounted to 5,694,980,000 milreis paper (\$442,290,000), an increase of 2,421,827,000 milreis paper (\$54,748,000), or 14.1 per cent, as compared with imports for 1927. Exports in 1928 were valued at 3,970,273,000 milreis paper (\$475,242,000), as compared with 3,644,118,000 milreis paper (\$431,464,000) in 1927, an increase of 10.1 per cent. While there was a favorable balance of trade for the year, the difference between exports and imports showed a steady diminution during the year and in November and December there was an unfavorable balance. The effect of restrictive measures taken by the Coffee Defense Institute was indicated by the fact that exports of coffee increased in value from \$304,000,000 in 1927 to \$339,097,075 in 1928, while the quantity from 15,115,000 bags to 13,881,000 bags. Coffee comprised 71.5 per cent of all exports in 1928 and about 77 per cent in 1927.

The leading exports in 1928, with comparative figures for 1927, are shown in the accompanying table.

BRAZILIAN EXPORTS, BY PRINCIPAL ARTICLES

	Quantity		Value *	
	1927 Tons	1928 Tons	1927 Milreis paper	1928 Milreis paper
Class I Animals and animal products				
Lard	79	21	290,000	53,000
Preserved meat	3,081	3,070	7,861,000	8,149,000
Frozen and chilled meat	32,604	65,103	40,407,000	81,601,000
Hides	58,069	67,068	130,767,000	221,071,000
Wool	5,014	4,609	29,190,000	26,884,000
Skins	5,065	5,400	49,540,000	53,773,000
Tallow	1,596	7,322	2,090,000	9,381,000
Jerked beef	3,162	1,788	4,949,000	2,616,000
All other	13,857	17,961	16,856,000	21,676,000
Class II Minerals and mineral products				
Manganese	241,823	361,829	21,225,000	37,014,000
Precious stones			13,916,000	15,638,000
All other	17,442	17,986	5,257,000	6,040,000
Class III Vegetable products				
Raw cotton	11,917	10,000	41,936,000	36,392,000
Rice	10,670	739	11,842,000	803,000
Sugar	48,461	30,037	26,088,000	20,811,000
Rubber	26,162	18,688	115,008,000	58,222,000
Cacao	75,549	72,395	187,418,000	148,965,000
Coffee ^b	15,115,000 ^b	13,881,000 ^b	2,575,825,000	2,810,415,000
Caranuba wax	7,074	6,981	31,657,000	28,625,000
Renn	49,098	59,682	10,837,000	14,924,000
Mariño flour	4,817	4,857	2,187,000	2,083,000
Fruits and nuts	76,629	96,364	19,388,000	27,134,000
Oil-producing seeds	81,673	69,680	70,062,000	71,838,000
Tobacco	71,885	29,608	70,636,000	69,660,000
Yerba maté	91,092	81,927	109,921,000	105,723,000
Timber	119,611	112,441	24,216,000	22,489,000
Maize	300	1,575	91,000	446,000
Vegetable oil	252	216	1,107,000	733,000
All other	85,964	95,662	27,802,000	37,104,000
Total value (milreis paper)			3,644,118,000	3,970,273,000

* Average exchange rate of milreis paper in United States gold 1927, \$0.1182, 1928, \$0.1195

^b 1 bag equals 60 kilos (132 pounds)

value of imports from the United States increased by 5 per cent in 1928 over 1927, imports from Germany showed a 25 per cent increase, from the United Kingdom, an increase of 13 per cent, from Italy, an increase of 18 per cent, and from Belgium, an increase of 9 per cent. The United States supplied 27 per cent of all imports in 1928, and purchased 46 per cent of all exports. Of Brazil's exports to the United States, over 62 per cent consisted of coffee shipments. In Brazil's import trade, the United States figures conspicuously as a supplier of automobiles, petroleum products, motion pictures, wheat flour, agricultural and industrial implements and machinery, barbed wire, hardware, paints and varnishes, coal, electrical goods, hides and skins, leather, and other manufactures.

Manufactures constituted by far the largest part of Brazilian imports in 1928 totaling \$256,030,132, as compared with \$216,974,813 in 1927. The value of imports of live animals and of primary materials used in the arts and industries was \$91,473,394 (\$86,053,565 in 1927); the value of imports of foodstuffs and fodder, \$441,825,809 (\$387,035,946 in 1927). Leading articles of import were iron and steel manufactures, cotton piece goods, machinery, apparatus, utensils, and tools, wheat, fuel, automobiles, gasoline, flour, and chemicals.

Export statistics for 1928 show that all commodities which increased in value also increased in volume, except coffee and preserved meats, which both showed increases in value and decreases in volume. In every case where the value

decreased the quantity did likewise. The drop in the value of rubber and of cacao exports was out of normal proportion to the decrease in volume, however. Rubber decreased in quantity by 28.6 per cent and in value by 48.9 per cent, while cacao decreased in volume by 4.2 per cent and in value by 19.8 per cent. In general, prices for exports were higher, the volume of all exports increasing by only 2.86 per cent, while the value increased by 9.85 per cent. More than half of the cacao exports went to the United States. Imports from the United States were slightly higher in 1929 than in 1928, but exports to that country declined largely due to low coffee prices.

FINANCE Brazilian revenues exceeded expenditures by 198,354 paper contos (the paper conto equals approximately \$120) in 1928, as compared with a surplus of only 30,851 contos in 1927.

As originally enacted by Congress, the 1928 budget law showed a deficit of 151,990 contos, but the President exercised his veto privilege and, as finally signed, the budget provided for a surplus of 116 contos. Actual receipts amounted to 2,216,512 contos, or 127,579 contos more than the budget estimate. To the expenditures of 1,922,161 authorized by the budget were added extraordinary expenditures of 95,997 contos, making a total expenditure for the year of 2,018,158 contos. In 1927 the revenue totaled 2,039,505 contos, the budgeted expenditures, 1,631,847 contos, and extraordinary expenditures, 376,807 contos.

The increase of 8.7 per cent in revenue in 1928 over the previous year was due almost entirely to the increased volume of business, no new taxes having been imposed or changes made in existing rates. Customhouse collections at both Rio de Janeiro and Santos showed a 15 per cent increase for the year. The principal sources of revenue in 1928 were imports and shipping, 122,559 contos; consumption taxes, 440,308 contos; stamp duties, 251,783 contos; industrial revenue, 287,785 contos; income tax, 68,238 contos.

Total expenditures for 1928 were 170,675 contos less than the budget estimate, the principal savings being effected by the departments of public works and communications, of finance, and of agriculture. Actual budgetary expenditures by the various departments are shown in the accompanying table.

BRAZILIAN BUDGETARY EXPENDITURES, 1928

Department	Gold contos	Paper* contos
Justice	218	144,777
Foreign affairs	6,014	3,635
Navy	1,045	129,499
War	200	241,797
Agriculture	671	61,908
Public works and communications	11,230	415,767
Finance	104,023	352,470
Total	125,401	1,349,453
Conversion of gold items at 4 5/67		572,708
Total in paper currency		1,922,161

* Paper conto equals about \$120

The budget for 1929 estimated revenues at 2,210,770 paper contos, or an increase of 121,837 contos over the 1928 estimate. Authorized expenditures amounted to 2,117,367 contos, which is 93,403 contos less than the estimated revenues but 28,551 contos more than those authorized

in the 1928 budget. The itemized revenue estimates for 1928 and 1929 are shown in the accompanying table.

BRAZILIAN ITEMIZED REVENUE ESTIMATES

Item	1928 Paper contos*	1929 Paper contos
Imports and shipping	911,937	925,595
Consumption taxes	377,845	449,466
Stamp taxes	237,026	250,097
Income tax	87,466	72,871
Lottery tax	2,472	2,240
Sundry revenues	18,580	20,172
Patrimonial revenues	14,488	15,749
Industrial revenues	287,797	326,358
Extraordinary revenues	68,143	88,085
Remarkable revenues	124,151	97,814
Total	2,125,545	2,248,447
Deduct revenues set aside for paper money guarantee fund	86,612	37,677
Total	2,088,933	2,210,770

* Gold items in 1928 budget converted at a rate of 4 5/675 paper contos to 1 gold conto

Departmental expenditures (in paper contos) authorized in the 1929 budget follow: Justice and Interior, 144,320; Foreign Affairs, 31,482; Marine, 155,642; War, 276,140; Agriculture, 76,900; Public Works and Communications, 552,085; Finance, 880,798. The last item included 103,277 gold contos (1 gold conto equals 4 5/675 paper contos) for the service of foreign obligations and the sum of 136,395 paper contos for the service of the internal debt. Provision was also made to carry into effect the law of Dec. 28, 1928, effective Jan. 1, 1929, providing for a 100 per cent increase in the salaries of all public functionaries over the salaries received in 1914, 80,000 paper contos being set aside for this purpose.

Reductions in the external debt of Brazil during 1928 totaling 131,586 contos were distributed as follows: £2,315,885, \$4,089,840, francs, 1,976,744. On Jan. 1, 1929, the foreign debt stood as follows: \$106,968,592, \$152,800,427, francs, 333,577,086. On the same date the internal debt amounted to 2,392,746 contos, having been reduced during the year by 78,333 contos.

According to the President's message, the note circulation on Jan. 1, 1929, amounted to 3,379,025 contos, including treasury notes (inconvertible), 1,951,724 contos; Bank of Brazil notes (secured by £10,000,000 gold reserve), 592,000 contos; Caixa de Estabilizacao notes (convertible), 835,301 contos.

The proposed budget for the fiscal year 1930, as presented to the Brazilian Congress, calculated revenues at 199,111,700 milreis gold and 1,365,295,700 milreis paper (1 milreis paper equals \$0.1196 par); and expenditures at 134,829,782 milreis gold and 1,609,061,299 milreis paper. The gold surplus is equivalent to 293,575,517 paper milreis, giving a projected surplus for the year of 48,809,907 paper milreis.

Stating that the stabilization plan had achieved success, the President in his message, pointed out that during the two years it had been in operation, milreis exchange had been kept between the low rate of 5 pence and high rate of 5 1/2 pence, or below the gold point. During 1928 two methods were employed to carry out the Government's policy of monetary reform, the principal object of which was to secure convertibility of the currency—increasing the gold deposits and the destruction of inconvertible paper currency. The

President also announced that steps had been taken, in accordance with the stabilization act of Dec. 18, 1926, toward the reorganization of the Bank of Brazil as a central bank of issue and discount.

COMMUNICATIONS On Jan. 1, 1928, the total length of railway lines in Brazil was 19,544 miles, of which 14,615 miles were owned by the Federal government and 4,928 miles by the states. The principal railway, the Central Brazil Railway (1799 miles), is government owned. The railways are linked with those of Argentina, Uruguay, and Paraguay. In 1929 there was much railway building in São Paulo, and other states. The length of highways was placed at 33,452 miles in October, 1928, 5161 miles being first-class roads. A Department of Roads was established in 1928 to further national highways. The Second Pan-America Congress met in Rio de Janeiro Aug. 15-17, 1929, with official delegates from nineteen countries in attendance. Of the 61,000 miles of telegraph line, 32,672 miles are Federal property. Forty wireless stations, including one very powerful one, have been established.

Air-mail and express service between Rio de Janeiro and São Paulo was begun on July 28, 1929.

GOVERNMENT The executive power is vested in the President, who with the Vice President is elected directly by the people for four years and is ineligible for reelection, and the legislative power in the National Congress which consists of the Chamber of Deputies and the Senate, the former having 212 members elected for three years by popular vote on the basis of minority representation, and the latter, 63 members elected for nine years by direct vote, one-third being retired every three years. The Vice President presides over the Senate. President in 1929, Dr. Washington Luis Pereira de Souza (assumed office Nov. 15, 1926), Vice President, Mello Vianna.

HISTORY Except for the excitement incident to a presidential campaign and the continued increase in the cost of living, the year 1929 was a comparatively uneventful one for Brazil. Treaties for the peaceful delimitation of sections of Brazil's boundaries heretofore undefined were concluded during the year with Paraguay, Colombia, Bolivia, and British Guiana. The treaty with Colombia, ratified by the Brazilian Congress in November, 1928, and by Colombia, on Nov. 15, 1929, provided for reciprocal perpetual free trade in the Amazon and its tributaries. The treaty with Paraguay fixed the boundary line between the mouth of the Apa River and Bahia Negra, which was left unsettled by the treaty of 1872. Ratifications of the Brazil-British Guiana Treaty were exchanged April 16.

The leading candidates for the presidency were Julio Prestes, Governor of the State of São Paulo, Antonio Carlos, Governor of the State of Minas Geraes, and Getulio Vargas, Governor of the State of Rio Grande. Indications were that the President would support the candidacy of Governor Prestes. On December 20, during the heat of the campaign, Deputy Simoes Lopes of Bahia shot and seriously wounded Deputy Souza Filho of Rio Grande on the floor of the Federal Chamber of Deputies. President Pereira de Souza denied rumors that the Government was concentrating troops in Rio Grande in anticipation of disorders during the election in 1930.

The cost of living in Brazil had continued to rise steadily since the beginning of the World War and particularly since 1919, despite various steps by the Federal and state governments to relieve the situation, such as the purchase and distribution of supplies by the Federal Food Administration, temporary exemption of certain foods from import duties, and the operation of street markets. The index figures for staple foodstuffs in Rio de Janeiro, with 1914 prices taken as representing 100, are as follows: 1926, 275; 1927, 283; 1928, 284; January, 1929, 289. No decrease in the cost of living is expected for some time and the problem has become one of serious concern to a large part of the population and to the Federal, state, and municipal governments.

Overproduction of coffee led to requests for a moratorium or the issuance of paper money, which were refused by the President at a conference with coffee growers and business men from São Paulo and Santos on October 29. The coffee valorization plan adopted by the Coffee Institute in an attempt to regulate the production, sale, and price of coffee was widely debated, there being considerable agitation for its abandonment.

The traditionally friendly relations between the United States and Brazil continued. That President Hoover's good-will visit to Latin America would result in a new Monroe Doctrine based upon the more friendly relations between the Pan-American nations growing out of new and powerful economic interests, was predicted by some observers in Brazil. The proposed American tariff, which aroused violent resentment in Argentina and other South American countries, was favorably treated in the Brazilian press for what was considered its fairness toward Brazilian products. T. Cox, formerly connected with the U. S. Forest Service, accepted an appointment to organize a national forest service for Brazil.

The worst epidemic of yellow fever since 1903 visited the country during the first half of 1929, one of the victims being Dr. Paul A. Lewis of the Rockefeller Institute, who died at Bahia June 30, while studying the disease.

BEECK, EDWARD, American naturalist and author, died in Milford, N. S., May 15, 1929. Born at San Francisco July 31, 1861, he attended Oberlin College, Amherst, and the universities of Cambridge, Munich, and Leipzig, receiving the M. A. and Ph. D. degrees from the latter institution in 1887. After being an editor, and literary adviser of the Estes & Lauriat publishing house, Boston, he became editor-in-chief of *Life*, London, 1900-02, later serving as Berlin correspondent for the New York *Herald* and the New York *Times*. Breck was vice consul-general in Berlin, 1895-96, and during the Spanish-American War, 1898-99, he remained in Berlin as assistant to the United States Naval Attaché, until made secret agent in Spain. From 1914 until 1916, Breck lectured on naval subjects, and he was commissioned lieutenant commander in the U. S. Naval Reserve, Feb. 13, 1917, serving in the secret service until March, 1918. He was then made military attaché in Portugal, and his next position was that of executive of the historical section of the Navy Department, 1919-22. Breck was retired from the Naval Reserve on account of age, July 31, 1925. He was awarded the Navy Cross, the French Legion of Honor, the Portuguese Order of Avis, Order of Christ, the

Distinguished Service Medal, and the Italian War Cross. Besides contributing to periodicals articles on the navy, nature, and sports, Breck edited the *Living Age* in 1923, and was naval contributor to the *Dictionary of American Biography* from 1926 until his death. He wrote *De Consuetudine Monachorum* (1887), *Art of Penning* (1894), *Way of the Woods* (1908); *Sporting Guide* (1909), *Wilderness Pets* (1910), *The American Naval Railway Batteries in France* (1920); *Armed Guards on American Merchant Ships* (1921), *The Steel-Trap* (1925); and *The Lady and the Trapper* (1927).

BRENT, CHARLES HENRY Protestant Episcopal Bishop of Western New York, died in Lausanne, Switzerland, Mar. 27, 1929. He was born in Newcastle, Ont., Apr. 9, 1862, was graduated from the University of Trinity College, Toronto, in 1884, and became a priest of the Protestant Episcopal Church in 1887. He was curate of St. Paul's Cathedral, Buffalo, N. Y., in 1887, and in 1901 was elected Bishop of the Philippine Islands, where he served until 1918, establishing the church, building missions, and organizing schools. Here, he first identified himself with the war against the opium trade in which war he was for the remainder of his life actively engaged. He was a member of the committee appointed by the Philippine Government to investigate the opium question in the Orient, 1903-04, was president of the International Opium Commission at Shanghai in 1909, chairman of the American delegation and president of the Opium Conference at The Hague, 1911, and United States representative to the advisory committee on narcotics of the League of Nations and to the Assembly of the League in 1923. During his years in the Philippines, he refused two bishoprics offered him in the United States at Washington, D. C., in 1908, and in New Jersey in 1914.

In 1918 he was appointed to the bishopric of Western New York, and in the same year also was made chief chaplain of the A. E. F. in France. From 1926 to 1928, he was the bishop in charge of American Protestant Episcopal churches in Europe, during which time, in 1927, he was president of the World Conference on Faith and Order, which met in Lausanne and was concerned with Christian unity. Because of ill health, Bishop Brent resigned his position in Europe and at the time of his death, he was at Lausanne on a leave of absence from his bishopric of Western New York. In accordance with an expressed wish that he be buried in whatever place he might die, Bishop Brent was buried at Lausanne, with the honors due one internationally known and respected. On December 4, a tablet in memory of Bishop Brent was unveiled in the English Church of Lausanne. England made him a Companion of the Bath, and the United States awarded him the Distinguished Service Medal. He also was a Commander of Leopold from Belgium. He lectured at the General Theological Seminary in New York in 1904, at Harvard in 1907, and at Edinburgh, Glasgow, and Aberdeen in 1921. He was the author of *With God in the World* (1899), *The Consolations of the Cross* (1902), *The Splendor of the Human Body* (1904), *Liberty and Other Sermons* (1906), *Adventure for God* (1904), *With God in Prayer* (1907), *The Revelation of Discovery* (1908); *The Swift Sense* (1911), *Presence* (1914), *Prisoners of Hope* (1915); *A Master Builder*, life and letters of Henry Yates Satterlee, (1916).

BRETHREN, CHURCH OF THE A church established in the United States in 1719 in Germantown, Pa. It originated in Schwarzenau, Germany, in 1708 and is the largest of the five branches of the denomination formerly known as the German Baptist Brethren or Dunkers. Other churches of this group are The Church of God (New Dunkards), Brethren Church (Progressive Dunkers), German Seventh-day Baptists, and Old Order German Baptists Brethren. The policy of the Church of the Brethren corresponds more nearly to the Presbyterian than to any other specific ecclesiastical form. It comprises 49 district conferences and holds a general conference annually. In 1929 there were 1026 churches with a membership of 134,620 and 1180 Sunday schools with an enrollment of 126,729 pupils. Foreign missionary work was carried on in India, China, and Africa, the total membership in the mission field being 5290. Expenditures for the year ending Feb. 28, 1929, totaled \$300,989. The denomination maintained 8 colleges, 1 academy, and 1 theological seminary and training school with an enrollment of 4324 students.

Officers of the general conference in 1929 were Moderator, the Rev. H. K. Oler of Elizabethtown, Pa., reading clerk, the Rev. James M. Moore of Waynesboro, Pa., and writing clerk, I. B. Book of North Manchester, Ind. The Rev. J. W. Lear of Elgin, Ill., was executive secretary of the council of boards and the Rev. Otho Winger of North Manchester, Ind., president of the general mission board. The *Gospel Messenger* is the official organ of the denomination, while the *Missionary Visitor* is the promotional periodical of the general mission board. Headquarters of the council of boards, general mission board, board of religious education, and general ministerial board are in Elgin, Ill., headquarters of the general education board are at 3535 Ordway Street N. W., Washington, D. C.

BREUER, HANS A German dramatic tenor, died in Vienna, in October, 1929. He was born in Cologne, Apr. 27, 1869. After studying at the Cologne Conservatory under Ifert and Stolzenberg, he completed his training under Knese at the Conservatory in Bayreuth, where he also made his debut as Mime, in *Siegfried*, in the summer of 1896. Such was his success, that he sang that rôle at all the subsequent festivals until their interruption in 1914. After filling an engagement for festival performances at Breslau, he came to the United States and in 1897-98 was a member of the Damrosch Opera Company. He then appeared as guest in England, Holland, Germany, and Switzerland until, in 1900, Mahler secured him permanently for the Hofoper in Vienna, where he was a prime favorite. Throughout his career, he was a regular guest at the annual Munich and Salzburg festivals. After the War, he was a stage manager at the Staatsooper and professor of singing at the Staatsakademie für Musik in Vienna. He excelled as an interpreter of Wagner and Mozart.

BRIAND PEACE ACT. See KELLOGG-BRIAND TREATIES.

BRIDGEMAN, ADMIRAL SIR FRANCIS (CHARLES BRIDGEMAN-). English naval officer, died in Nassau, Bahamas, Feb. 17, 1929. Born in Bathworth, Notts, England, Dec. 7, 1848, he entered the navy in 1862. Rising through the successive grades, he was commissioned rear admiral in

1903 Having been closely associated with Lord Fisher in the organization of the Grand Fleet, Sir Francis was appointed first commander-in-chief of one of its original units, the home fleet, in the North Sea in 1907. Made a Lord of the Admiralty, 1910, he again commanded the home fleet in 1911, and from 1911 until his resignation in 1912, he served as First Sea Lord of the Admiralty. He was at one time an aide-de-camp to the King. At the time of his death, Sir Francis held the title of Vice Admiral of the United Kingdom. He was created a Knight Commander of the Bath in 1908, a Knight of the Grand Cross of the Royal Victorian Order in 1911, and a Knight of the Grand Cross of the Bath in 1912.

BRIDGES. The prediction of a new and great era of bridge building to follow the good-roads movement which in turn came upon the heels of the automobile, was abundantly confirmed in the astounding wave of bridge construction which marked 1929 as perhaps the greatest bridge year in history. This year certainly led the world's record for highway bridge construction and had no parallel except in the great era of railroad construction which reached a peak in the eighties of the last century. No single type of structure, from simple truss to cantilever and suspension bridges, was neglected in this advance. Indeed, comparatively new types, such as the continuous truss and the rigid frame also are to be noted. Gustav Lindenthal's great Hell Gate Arch of 1917 has become the parent of a notable family of steel arches, while concrete has, of course, replaced cut-stone in the construction of masonry arches. The year 1929 closed with the greatest suspension bridge, the greatest steel and the greatest concrete arches that the engineer had yet produced, under construction.

The United States, with automobiles more numerous than telephones and with some 3,000,000 miles of highways, four-fifths of which were yet to be improved beyond the earth road stage, naturally was the home of most of these undertakings. Bridges on the long established roads of Europe only require infrequent replacements or renewals. Canada had not been particularly active in this field, but proposals were being considered for a notable, 960 foot span over the Narrows of Halifax Harbor between Halifax and Dartmouth, and a double-deck structure with draw span in connection with the development of St. John Harbor, New Brunswick, as a great railroad terminal and port.

LEASING AND OWNERSHIP. Permission to construct had been refused by the Chief of Engineers of the United States War Department in the case of a number of proposed bridges over the navigable waters of the United States. Construction in these rivers and harbors, many of which may not now be navigable but may ultimately be made so, is controlled by the War Department. Previously, permission has been granted provided obstructions in the form of piers were reduced to a minimum and did not unduly impede channel navigation, and provided that a draw span was installed, or, in waters subject to continual navigation, provided the bridge was high enough to permit a clearance usually set at 135 feet. Apparently, the War Department was raising this requirement and had increased the minimum height from 160 to 200 feet.

The *Engineering News-Record* took issue with what it characterized as "the exorbitant demands

of the War Department for great clearance heights which threaten to place a prohibitive check on the construction of long-span bridges." The proposed New Orleans Bridge was one of several bridges that had been held up due to this desire on the part of the Army engineers to protect fully the interests of navigation.

Another, and even more important, general development was that leading toward public rather than private ownership of highway bridges. The new era of highway toll-bridge construction, which began three or four years previously, was marked by a return to the privately owned toll-bridge plan of earlier road days in America. This type of bridge had almost become a thing of the past but suddenly blossomed into new life. During the year 1929, the movement was subject to bitter attack and legislation. California definitely decided to finance and build her highway bridges as a State matter. Kentucky sold over \$10,000,000 in bonds for State-owned toll bridges. In West Virginia, a commission of three men was appointed to free all bridges both intrastate and interstate. With a change of administration in Louisiana, free State-owned ferries were put in operation on Lake Pontchartrain and the privately owned toll bridge recently completed was forced into the hands of receivers. The Louisiana State Highway Department were planning and expected to build important new bridges, including a \$17,000,000 structure over the Mississippi at Twelve-Mile Point, above New Orleans. It obviously was a bad year for private owners, and one great objection to State construction—the possibility that bridges might be built where and when politics, rather than economics, dictated—at least was partly removed by the spread of the income bond method of financing. Such bonds depend for interest on income from toll operation.

TRUSS BRIDGES. The simple truss continued to hold its own as a bridge type and several notable bridges of this form, including two important railroad bridges, were finished or were under way during the year.

SUSAN BAY BRIDGE. Contracts were let during the year for this railroad bridge over Susan Bay between Army Point and Benicia, Calif. The Southern Pacific Railroad will use this \$12,000,000 structure to replace the old car ferry which had been in service for some 50 years. The bridge was to consist of seven broken upper chord, simple truss spans of 531 feet each and a lift span of 328 feet and would require several miles of approach grading to provide easy grades to the new structure. A notable feature of the design was the great height of the piers, some of which would reach a total height of 214 feet. All the piers were to be put down in large open reinforced concrete caissons, 40 by 60 feet in plan, which were to be sunk to rock. The plan was to sink these caissons within a sand-filled circular steel cylinder about 80 feet in diameter which will be gradually built up as it descends until it rests on the gravel or clay stratum overlying the bed rock. The caisson will be excavated through six dredging wells until it rests on rock. After the rock surface has been cleaned, some 35 feet of tremie concrete will then be placed in the bottom leaving some 100 feet of water which will be pumped out so that the piers may be built in the dry. This novel combination of the open dredging process and cofferdam-caisson construction will be watched with interest. Open con-

struction with a depth of 100 feet of water will set a new record for foundation work.

LOUISVILLE, KY. During the year 1929, the Cleveland, Cincinnati, Chicago & St. Louis Railway (Big Four) replaced the old Ohio River Bridge, designed for an E-30 loading and built between 1880-85, by a new work designed for an E-70, or 125 per cent greater, loading. The bridge consists of three simple broken upper chord truss spans of 547 feet each and the new trusses were erected around the old, which served to support the new work during erection and thus eliminated costly falsework.

OHIO RIVER, PADUCAH, KY. This bridge, seven simple truss spans of 306 feet and one of 716 feet, is the first highway bridge across the Ohio River from its mouth to Louisville and carries a concrete roadway 20 feet wide. The truss spans have inclined upper chords (the so-called broken-chord type) and the 716-foot span is probably the longest simple truss span ever built. A record was set in erecting the steel on this bridge and in spite of delays due to foundation difficulties the bridge was opened April 14. Steel erection began Sept. 6, 1928, and was completed Jan. 29, 1929, in two months less than schedule.

FORT BELFONTAINE BRIDGE. This highway toll structure consists of four 444-foot spans, with a 20-foot concrete roadway, supported on concrete piers. The trusses were erected by the modern methods of cantilevering out to intermediate falsework bents.

JONINA RIVER, INDIA. The repair of this bridge on the Bengal Nagpur Railway was an interesting example of the fact that resourcefulness was still a fundamental quality in the engineer. The original spans were carried out by floods in 1927. Communication was continued by patching together some old 60-foot girders and the new truss spans were put in place by utilizing these supports to slide the new trusses out from each end of the bridge to the centre pier. Falsework was thus unnecessary.

CONTINUOUS TRUSSES. This comparatively new form continued to be employed, a movement encouraged by a growing confidence in modern design methods, the substantial and solid character of modern pier construction, and the economies of this type of truss. The record truss spans of all time were held by the continuous truss—the greatest is Lindenthal's Sciotoville Bridge over the Ohio with a truss 1550 feet long covering two spans of 775 feet each. The approach spans of the new Tacony-Palmira Bridge are half-through trusses of the same type and also illustrate the importance of this truss form in modern construction.

OHIO RIVER AT CINCINNATI. This bridge, which replaced an old railroad bridge of the Chesapeake & Ohio Railway to be remodeled into a toll highway bridge, is interesting because it is one of the longest continuous trusses ever built, 1575 feet, because silicon steel was used in its construction, and because it was erected by locomotive cranes. Having two side spans of 450 feet each and a centre span of 675 feet, the bridge was designed for an E-70 loading—that is, a locomotive carrying 70,000 pounds on each pair of driving wheels. The remarkable increase in bridge loadings in recent years is indicated by the fact that the old structure, built in 1880-88, was designed for an E-40 loading. The two side spans were erected on falsework and the centre span by cantilevering out from each side. Some

idea of the sizes involved in these modern continuous trusses is secured by noting that the truss was 105 feet deep over the main piers and that the locomotive cranes, which replaced the usual heavy-erection traveler, had to be rigged with 145-foot booms.

MISSOURI RIVER. Another notable continuous-truss bridge was that over the Missouri River at St. Joseph, Mo. This bridge has two main spans of 450 feet and they are covered with a continuous truss 900 feet long. Silicon steel also was used in this work, and the truss had riveted connections throughout. The bridge was to be a toll-free highway structure built jointly by the city of St. Joseph and the State of Missouri.

CANTILEVER BRIDGES. In long-span bridges, the field has been in general divided between the cantilever and the suspension types. Although suspension bridges have been built in greater numbers and size in recent years and the great Forth Cantilever is no longer the longest span in the world, not a year has passed without witnessing important cantilever projects. The Longview Bridge in the State of Washington over the Columbia River under construction would rank third in the world as to length of span, with 1200 feet between piers. The Montreal-South Shore cantilever would span 1097 feet, while the Cooper River cantilever (See FOUNDATIONS) would be of 1050 feet span. The Vicksburg and the Louisville bridges, although of smaller span, are notable works which show that the cantilever, although eclipsed in span by the suspension bridge, was still an important bridge type.

It is interesting to note that during the year a roadway was built over the famous Quebec cantilever, thus providing the only vehicular passage over the St. Lawrence below Montreal.

MONTRÉAL SOUTH SHORE BRIDGE. This bridge, a 1097-foot cantilever span with two 420-foot anchor arms, is approached from the south by a long series consisting of 21 Warren-deck trusses varying from 90 to 240 feet. The work was completed as the year came to a close, the suspended span of the cantilever having been closed on July 16. This is a notable cantilever bridge, being, at the end of 1929, fifth in the world in length of span. It has a 37½-foot roadway with outside rapid transit tracks and foot walks. The clearance above the main channel, 500 feet wide, is 162 feet.

VICKSBURG, MISS. This bridge, the first to span the Mississippi River between Memphis and the gulf (850 miles) is a private toll structure and was to provide an 18-foot highway and a single-track railway on the same level. The principal approach spans are simple trusses with spans of about 422 feet, but the channel is crossed with a cantilever of 825-foot span, with anchor arms of about 420 feet. Principal interest in the structure attaches to the pier construction. The swift current demanded special anchors for holding the caissons and timber mats to prevent scour, yet the foundations were carried down by pneumatic caissons to the remarkable depth of 110 feet (maximum ever reached by this method is slightly over 120 feet). Several of the caissons required air pressures of 52 pounds per square inch, which is about the maximum which it has been possible for workmen to endure.

LOUISVILLE MUNICIPAL BRIDGE. Another remarkable cantilever steel-truss bridge record was made in the construction of this \$4,750,000 bridge over the Ohio River at Louisville, Ky. The first

contract was awarded in June, 1928, and the bridge was opened Oct 31, 1929. The main structure is 3740.5 feet long and includes two spans of 820 feet and two of 500 feet. It is a highway toll bridge financed by bonds issued by the city to cover the entire cost of the work, and it provides two roadways 38 feet wide and two 6-foot sidewalks.

HABAHAN BRIDGE FIRE In the days of timber bridges, the danger from fire was ever present and probably the majority of these bridges ended their lives in flames. It is unusual for fire to damage modern steel trusses, but a fire in the wood ties and floor of this 790-foot cantilever span in September, 1928, completely wrecked the floor system although the truss members escaped without much damage. Indeed, it was said that the floor system was so warped and twisted as to lose all resemblance to a floor system, while the trusses were not seriously damaged and repairs were completed without dismantling.

STEEL ARCHES It has become clearer, year by year, that Gustav Lindenthal established a new type in building the great Hell Gate Arch in 1917. In 1929 this form was introduced in Great Britain at Newcastle and two huge arches were placed under construction in Sydney, Australia, and in New York. Progress on these two great works was rapid and satisfactory, while several smaller bridges of the same type have been completed.

KILL VAN KULL ARCH The abutments of this 1075-foot highway toll structure, which was under construction by the Port of New York Authority, were rapidly completed, as foundation conditions were comparatively favorable and no pneumatic work of great magnitude was required. Erection of the arch ribs by cantilevering out to intermediate supports was in progress.

SYDNEY ARCH Satisfactory progress also was made in the erection of this great arch of 1650-foot span. The unusual abutment construction described in the 1928 YEAR BOOK was completed, thus permitting the erection of the steel arch to be carried out.

McKEES ROCKS ARCH Allegheny Co., Penn., began construction of a notable highway structure to connect McKees Rocks with the northern districts of Pittsburgh. The long approach on the McKees Rocks or west side of the river includes two tenticular arches of 304½-foot span over the railroad tracks, while the Ohio will be crossed by a single arch of the Hell-Gate type of 800-foot span. The Pittsburgh approach consists of three spandril-braced steel arches of 325 to 357½-foot span.

LAKE CHAMPLAIN BRIDGE The first highway bridge across this lake was opened August 26. It is interesting because it is the only highway structure in the 140-mile length of the lake and because of its foundations. The structure has a main steel-arch span of 434 feet, with deck-approach spans varying from 50 to 290 feet, built as continuous trusses over several spans. A channel clearance of 92 feet is provided. The notable deep-pier construction by open cofferdam was in connection with piers 6 and 7, those supporting the main span. The sites of these piers were dredged to 42.5 feet below water and a single row of spliced steel sheeting 98 feet long was driven inside a timber guide frame to form the cofferdam walls for piers 16 x 48 feet in size. Four sets of horizontal steel bracing were placed on the lake bottom inside the cofferdam and the

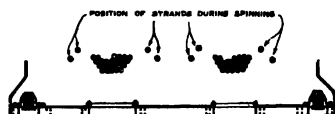
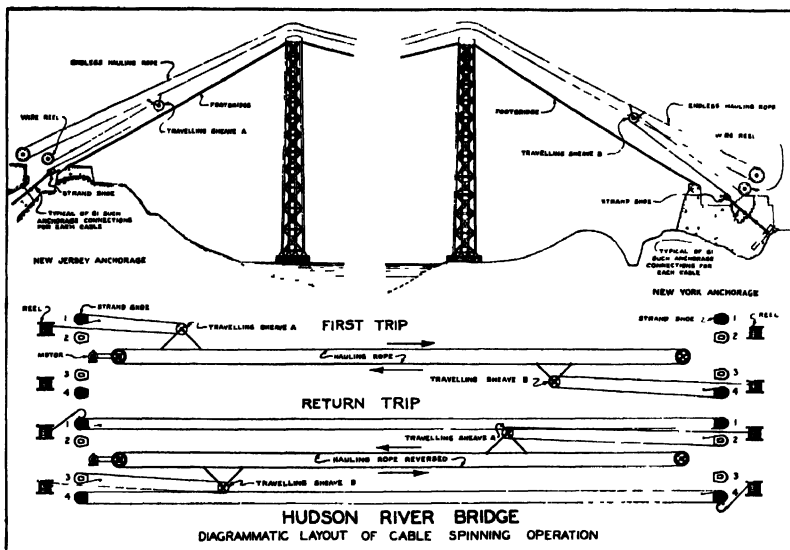
bracing for the upper portion of the cofferdam was hung in position from timbering at the top. As excavation with clamshell buckets proceeded, the lower braces dropped down. When the proper depth was reached, the top set of bracing was placed and hung in position by a diver, and excavation then went forward until the next level was attained, when the second set was set. In this way, the work proceeded until rock was reached at a maximum depth of 97 feet below water. The caissons were then filled to within 32.5 feet of water level by depositing concrete under water by means of a 1-yard bottom dump bucket. After this base had hardened, the upper portion of the cofferdam was pumped out and the pier construction continued in the dry. Apparently, no particular difficulty was experienced in this rather unique form of the well-known open-dredging foundation process.

TACONY-PALMYRA BRIDGE Crossing the Delaware River some 6 miles above the Philadelphia-Camden suspension bridge, completed in 1926, this new privately owned toll structure was opened on August 14—just 18½ months after work began. Three types of construction are comprised in its design. Two continuous half-through trusses of 743 and 748 feet in three spans each lead to the two central openings. One of these openings is crossed by a bowstring arch of 550-foot span and 64-foot clearance and the other by a rolling life bridge of the bascule type, affording a clear opening of 250 feet.

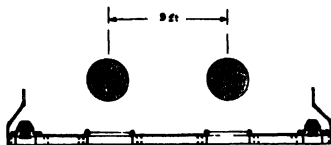
WARRMOUTH BRIDGE, SUNDERLAND, ENGLAND The famous Sunderland Bridge, a cast-iron rib arch with a clear span of 236½ feet at last had to give way to a modern structure on this main east-coast British highway. The original bridge, one of the earliest examples of metal-bridge construction, was opened for traffic in 1796. Strengthened by Robert Stephenson in 1858 by making each pair of ribs into box girders by the addition of wrought-iron cover plates, the structure had a useful life of 134 years. The new bridge is a steel arch of 375-foot span, or 138½ feet clear span, than the old, and will permit a wider channel below, as well as somewhat greater clearance. The new bridge will be 79½ feet wide, as compared with 41 feet in the old structure, and will provide room for two tramway tracks.

SUSPENSION BRIDGES There was remarkable activity during the year in the erection of this type of bridge and an extraordinarily large number of this type were built. Many of these bridges are interesting either for span, novelty of design, or for the ingenious methods of construction which the great activity in this field has brought forward.

HUDSON RIVER BRIDGE During the year, the steel towers of this "greatest bridge in the world" were completed, as was also the huge concrete mass, 106,000 cubic yards, which forms the New York anchorage. The anchorage on the Jersey side is in deep shafts in the bed rock of the Palisades, and with these also completed cable operations were begun with a suitable ceremony on July 9th. At this time, the first cables, which support the footwalk and the apparatus for spinning the final bridge cables, were hoisted into position. Each of these footbridge cables, and there were two footbridges, one under each main cable, was supported by two groups of nine twisted-wire ropes about 3-inch in diameter. Each of these ropes was carried across on the



SECTION SHOWING FOOTBRIDGE
AND PARTLY COMPLETED CABLES



SECTION SHOWING FOOTBRIDGE
AND COMPACTED CABLES

river bottom, and when the ends had been made fast to temporary anchorages, they were then hoisted simultaneously to the tower tops. It is interesting to note that these cables later were to be cut in suitable lengths to form the suspenders by means of which the bridge floor was to be hung from the main cables.

The spinning of the main cables began as soon as the footwalks, which were very rapidly erected, had been placed. As described in previous YEAR BOOKS, these cables were four in number, each consisting of 26,474 galvanized steel wires placed parallel to each other and bound into huge cables 36 inches in diameter. The individual wires are about $\frac{1}{4}$ of an inch in diameter and 107,000 miles of this cold-drawn wire, more than enough to reach four times around the earth, were required for the work.

The operation for spinning these cables was carried out by special hauling ropes and spinning wheels by means of which 16 wires, four for each cable, were carried across the river over the footbridges simultaneously. Due to the open winter, some 12 per cent of the spinning work had been completed by the end of the year and the progress of about 2 per cent per week indicated that the cables would be completed by the autumn of

1930. At the end of 1929, contracts had not been let for the New York approach to the bridge with the arch crossing over Riverside Drive. These were to be awarded early in 1930 and it was hoped that the opening of the structure, set for 1932, would not be held up, due to the delay in connection with this important work.

THE MOUNT HOPE AND THE DETROIT BRIDGES. In the 1928 YEAR BOOK, the use of a new-process steel wire in two suspension bridges then under construction was noted as being of particular interest. Unfortunately, this heat-treated wire proved defective and in both cases had to be removed and replaced by the cold-drawn wire which has been in successful use for so many years. Fortunately, the defects of the new wire, although not discovered until the cables were completed and considerable progress had been made in erecting the steel work, were noted in time to save a collapse and possible loss of life. Very little was published in connection with the subsequent investigations of the cause of this wire failing, but it would appear that the heat-treatment process cannot be made thoroughly uniform in its results and that the wire, while having an exceptionally high tensile strength, is liable to be dangerously brittle.

The first of these two bridges was the Mount Hope suspension, connecting the island on which Newport, R. I., is located with the mainland; it was to have been opened about two months after the defect was discovered. So rapidly was the work of dismantling and reconstruction carried out, however, that the bridge, rebuilt with new cables, was opened on October 24. The other structure, the longest span (1850 feet) in the world until the completion of the Hudson River Bridge, was the Detroit International Bridge. Work on this bridge was not as far advanced as at Mt. Hope, when the cable construction was stopped, although the construction was one year ahead of schedule. Another record for rapid reconstruction was also made in this case and the bridge was opened in November, some nine months ahead of the original date set for completion. The Detroit Bridge at the end of 1929 was the longest span in the world—1850 feet or 50 feet longer than the previous record of the Quebec cantilever.

CANYON CITY, COLORADO. All doubt as to which is the highest bridge in the world was removed by the construction of a toll highway suspension bridge across Royal Gorge, near Canyon City, Colorado, 1050 feet above the bed of the Arkansas River.

GALLIPOLI IS BRIDGE, OHIO. This 700-foot span eyebar suspension bridge over the Ohio between Point Pleasant, West Virginia, and Gallipoli, Ohio, was the first of its type in the United States, although it was built on the same plan as the Florianopolis Bridge in Brazil, also designed by American engineers. As in this earlier bridge, which set the type, the Gallipoli Bridge utilizes the eyebar chain as top chord for part of the stiffening truss—to be exact, the entire half of the main span and the shore halves of the end spans. It should be noted that this truss has a variable depth, as in the earlier bridge, but that, unlike the Florianopolis Bridge, the end or backstay spans are loaded. Another bridge over the Ohio at St. Mary's West Virginia, was built to the same design as the Gallipoli suspension.

GRAND'MERE BRIDGE, QUEBEC. Another suspension bridge, in which wire rope was used for the cables instead of the usual method of spinning in place, is the highway toll span over the St. Maurice River at Grand'Mere, Quebec. This is the longest bridge of this type yet built, the main span being 949 feet. Each of the two main cables is built up of 32 galvanized steel wire ropes of 1½-inch diameter. Each rope contains 35 wires varying in size from 0.148 to 0.197 of an inch in diameter. These ropes were cut to the proper length and each end socketed. The bridge was erected during winter weather, so that the cable ropes could be supported on the ice on each side of the bridge. The socket ends for each rope were fastened to the anchorage connections, and the ropes were then lifted to their position in the cast steel saddles on the towers by sets of falls, hung from small A-frames on the tower tops. The 37 ropes making each cable were assembled in a hexagonal form and redwood strips, impregnated with linseed oil, were used to fill out this form into a circular section before the usual wrapping. The bridge has a half-through-section design, the trusses and the back stays are unloaded.

QUILMAN BRIDGE, ARGENTINA. This structure, while the largest span built in the Argentine, is notable not for its size or carrying capacity, neither of which is extraordinary, but for two

unique features in its design. The suspension system consists of 32 separate spiral galvanized steel ropes, 10 on each side. Each of these ropes contains 169 wires of 0.173-inch diameter and is separately anchored. The ropes are not compacted to form a single round cable but are carried in a square form, 4 high and 4 wide, quite widely spaced by special hanger connections. The other unique feature is the continuous girder which bridges the three spans, 492 feet center and two 196-foot side spans, instead of the usual stiffening truss.

TRI-BOROUGH BRIDGE, NEW YORK. The Board of Estimate and Apportionment of New York City adopted a resolution directing the Department of Plant and Structures and the Board of Transportation to prepare plans for this bridge and for the Narrows Tunnel. The comptroller also was authorized to issue corporation stock and serial bonds to cover the cost of the work which is estimated at \$100,000,000. The plans called for a suspension span over Hell Gate, near the Hell Gate Arch, with a long viaduct over Ward's and Randall's islands. The main span was to be 1380 feet and steel arches were planned for crossing the Little Hell Gate and Bronx Kills. A cross line was planned to connect the center of the viaduct, opposite 125th Street, to Manhattan Island over the Harlem River. The total length of the structure was designed for 17,710 feet, of which 4318 feet was to be bridge construction and remainder viaduct or masonry arches.

TOLEDO, OHIO. Contracts were awarded for a 785-foot wire cable span over the Maumee River at Toledo, Ohio. A 54-foot roadway is provided.

THE SELF-ANCHORED SUSPENSION BRIDGE. One of the earliest examples of this type of suspension is the 605-foot span over the Rhine at Cologne, built during the World War in 1915. The scheme consists in making the stiffening truss continuous and designing it to serve as a compression member. Thus, the ends of the cables are carried out until their slope becomes very small. They are almost horizontal, and are attached to the ends of the stiffening truss and floor system. The cable pull is thus taken by compression in the floor and stiffening truss instead of the usual anchorage. Indeed, it might almost be proper to describe such a bridge as a suspension-cantilever. There are obvious advantages for this type for moderate spans where anchorage construction is difficult. Eyebars are the usual form due to the fact that they permit an economy of material in the suspension system where the stress is not uniform.

There were three bridges of this type over the Allegheny River at Pittsburgh and the last bridge, at Sixth Street, erected in 1928, was recently awarded the prize of the Institute of Steel Construction as the most beautiful bridge of the year.

KYOSHO BRIDGE, JAPAN. While a comparatively small structure—the main span is only 300 feet—this bridge over the Sumida River at Tokyo, Japan, is of special interest because it is a Japanese product and is novel in design. The bridge is of the type known as a self-anchored suspension—the usual stiffening truss being replaced by box girders capable of taking the compression due to the cable pull. Instead of the usual wire or eyebar suspension members, flat Duval steel plates were used, cut in the eyebar form. The special manganese steel for these plate-chains could be made in Japan, whereas suitable fac-

ities were not available for the other types of suspension mentioned.

MOVABLE BRIDGES An important decision was handed down by the U S Circuit Court of Appeals at San Francisco in the series of law suits which had been in progress for some eight years between the City of Seattle, Wash., and the Strauss Bascule Bridge Company. A decision at Chicago was in favor of the bridge company, and the City of Seattle decided to settle its first case out of court as being probably the least expensive procedure. Subsequently, the city engineers developed a non-infringing design. It would now appear that the basic patent of the Strauss Company was invalid. Curiously enough, the principle of the transverse support by means of a transverse cross-girder in the trestle type of bascule lift was found to have been applied as early as 1871 in the construction of two large precision scales which had been in use for over 50 years for weighing bullion in the United States Mint in San Francisco. This discovery probably meant that another of the few existing patents in structural design would be invalidated.

NEWARK BAY BRIDGE A remarkable accident marred the erection of this long trestle and lift bridge being built over Newark Bay for the Pennsylvania and Lehigh Valley railroads. On April 1, during a heavy windstorm, the lift span fell from its falsework supports. The span suffered little damage and was recovered and used with only minor repairs.

BLACKSACK BASCULE BRIDGE COLLAPSE An investigation of the causes of failure on Dec. 15, 1928, of the east half of the two-leaf draw span over the Blacksack River on the Lincoln Highway near Jersey City, N. J., showed that the supports for the concrete counterweight were inadequate. The steel work of the north counterweight tower failed and permitted the counterweight to fall over toward the river and thus wreck the east span of the bridge. The failure attracted considerable attention and the report of the engineers who investigated showed that the designers had failed to provide sufficient strength to meet the loads involved.

THE STONE ARCH STILL SURVIVES There has been a wide gap in connecting lines between the French Midi Railway, crossing from the Atlantic to the Mediterranean just north of the Pyrenees, and the Spanish lines just south of the barrier. Construction of two new transpyrenean links has been under way for some years. The Canfranc line, to be opened in 1930, involves both a remarkable helioidal tunnel and a stone-arch bridge of notable dimension. The bridge with a main span of 137 $\frac{1}{2}$ feet is, of course, not a record structure, but it shows clearly that, whereas cut-stone bridges in many sections of the world, notably America, are apparently things of the past, in certain localities, lower labor costs may make them economic structures and representative of the best engineering practice. In this connection, the Cretula Viaduct on the same line, 1170 feet long and consisting of masonry arches, is reminiscent of railroad and canal work in Great Britain a century ago.

CONCRETE ARCHES Considerable attention was attracted by the results to date in a comprehensive series of measurements of existing concrete-arch bridges and other studies being carried out by a committee of the American Society of Civil Engineers. Temperature stresses, effect of pier deformations and many other important

considerations in the action of these bridges were under investigation. American engineers have been somewhat behind their European competitors in building slender and graceful long-span arches, they had concentrated on the more solid and massive viaduct type of bridge. The results of this new study will undoubtedly have an important effect on the design and future of concrete-arch construction in America.

In the meantime, attention is focused on the remarkable arch bridge under construction at Brest, France—the longest concrete arch in the world.

THE PLOUGASTEL-BREST BRIDGE, FRANCE All concrete-arch spans were to be exceeded by this remarkable bridge, proposals for which have been noted in previous YEAR BOOKS, under construction in 1929 over the Elorn River between Plougastel and Brest, France. It differs in so many ways, both in design and construction, from American work that it is of particular interest from this standpoint, as well as the mere matter of size. Its three arches of 612-foot span are of box or cellular form, the section consisting of an upper and lower slab connected by four vertical walls, the outer of which constitutes the arch faces. This type of construction has been widely used in Europe but has not received attention in America, where concrete is employed in more massive and heavier forms. The arches support a deck of two stories, the lower of which carries a single track railway and the upper a roadway 26 feet wide. The arches have a width of 31 $\frac{1}{2}$ feet, a maximum depth of 16 $\frac{1}{2}$ feet, and the walls reach a maximum thickness of about 3 feet. Over the centre of the span, the extrados, or upper, slab of the arch is omitted in the centre cell, so as to permit the passage of the railway floor between the two side cells. A very rich concrete was used in the arch construction (1 $\frac{1}{2}$ barrels of Portland cement per cubic yard) and it was expected that the concrete would attain a strength of 8500 pounds per square inch by the time the bridge was to be in service—late in 1930. (American practice would consider a 5000-pound concrete about the limit in possible strength.) Reinforcing is used only for secondary stresses.

In construction, this bridge is no less novel and interesting than in these features of design. A concrete caisson was constructed which was used as a diving bell in constructing the first of the two river piers and was then removed and used in the normal manner for the second pier. The first pier was in relatively shallow water and the inside dimensions of the working chamber of the caisson were made to conform to the pier dimensions. When rock had been reached, the caisson was raised simultaneously with the placing of the concrete and was finally lifted off the completed base with compressed air.

The lower sections of the arch ring were built by cantilevering out from the pier. A huge arch centre, an interesting combination of concrete and timber, was used in succession for each of the three arches. This huge centre, itself a great arch, was floated into position by using horizontal ties to take the thrust and supporting each end on a barge. When in place, it was lifted by jacks into final position and concreting operations began. A special and novel cableway was used to convey the concrete from the shore plant to the work and to unload materials.

This work was described as "daring, courageous, and bold," and as offering "a new con-

ception of concrete as a structural material." It is certain that American engineers would never have used concrete for such a bridge, and it remains to be seen whether this work will actually mark a new era in concrete-bridge construction or whether it is merely another *four de force* of the French engineering genius, remarkable, unique, and novel, but not the forerunner of a new bridge development.

COLUMBIA VIADUCT The widespread use in America of concrete in a more substantial and conservative form is well illustrated by this huge bridge viaduct which is to cross the Susquehanna River between Columbia and Wrightville, Pa. Quite an important link on the Lincoln Highway, this four-lane concrete toll bridge will have a total length of 7400 feet. It consists of no less than 28 concrete arches of 185-foot span each and totaling 5532 feet. Work on this bridge was under way in 1929.

MOUNT PLEASANT RIGID-FRAME BRIDGE The very successful and economical reinforced concrete bridges of the Bronx and Westchester County Park Commissions have been noted in earlier YEAR BOOKS. These progressive commissions have now translated this same type of bridge into steel construction. The pioneer of this new type of bridge is a span of 100 feet which carries the Bronx Parkway extension over the Harlem division of the New York Central Railroad about 2 miles north of Valhalla, N. Y. It was claimed by the designing engineer, A. G. Hayden, who applied this type of bridge to the work of the commission, that the transition from reinforced concrete to structural steel presented no difficulties and made it feasible to construct economically, rigid-frame bridges of longer span. The design in this bridge consists of five rigid-frame steel girders of inverted U-form and is complicated by the fact that the bridge is a skew span of 45 degrees skew. See also FOUNDATIONS.

BRIGHAM YOUNG UNIVERSITY A co-educational institution in Provo, Utah, founded in 1875 and maintained under the auspices of the Church of Jesus Christ of Latter-day Saints. It comprises a graduate school, colleges of arts and sciences, education, commerce, applied science, fine arts, and a division of research and extension. In the 1929 summer session, 479 students were enrolled, the autumn-session enrollment was 1278. The faculty numbered 106 members. The library contained 60,000 volumes and 50,000 pamphlets. The budget for the year was \$478,000. President, Franklin Stewart Harris, Ph.D.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. An association founded in 1831 in York, England, incorporated by Royal Charter in 1928, and composed of 13 sections representing all branches of pure and applied science. The annual meeting for 1929, which was held from July 22 to 27 in Cape Town, South Africa, and from July 27 to August 3 in Johannesburg and Pretoria, was one of the most important of scientific meetings ever held south of the Equator. About 1750 delegates were present, 600 of whom were from different parts of the British Empire and from the United States. This was the seventh meeting of the association to be held outside the British Isles, the previous ones having been held in Montreal, Canada, in 1884, in Toronto, Canada, in 1897, in Cape Town, South Africa, in 1905, in Winnipeg,

Canada, in 1909; in Melbourne and Sydney, Australia, in 1914, and in Toronto, Canada, in 1924.

Sir Thomas Holland, British geologist and rector of the Imperial College of Science, was installed as president of the association at the opening session of the meeting on July 22. The precedent whereby the proceedings were opened with the address of the president was waived, however, in order to allow Dr. Jan H. Hofmeyr, president of the South African Association for the Advancement of Science, to welcome the delegates and to review in his address, "Africa and Science," the progress of learning and the benefits of science since the previous meeting of the association in South Africa in 1905. At the conclusion of his address Dr. Hofmeyr presented the South Africa Research Medal (founded in commemoration of the 1905 meeting) to Dr. Robert Broom, the South African paleontologist.

The sessions, while not lacking in specialized discussions of the highest interest, were appropriately predominated by the idea of empire, Sir Thomas Holland setting the example by choosing as the subject of his paper, "The International Relationship of Minerals." The presidential addresses to the sections were as follows: Lord Rutherford, Section A (Mathematics and Physics), "Some Problems of Cosmical Physics, Solved and Unsolved"; Prof. George Barger, Section B (Chemistry), on "The Relation of Organic Chemistry to Biology"; Sir Albert E. Kitson, Section C (Geology), on "The Utility of Geological Surveys to Colonies and Protectorates of the British Empire"; Prof. D. M. S. Watson, Section D (Zoology), on "Adaptation"; Brig. E. M. Jack, Section E (Geography), on "National Surveys"; Prof. Henry Clay, Section F (Economic Science and Statistics), on "Public Regulation of Wages"; Prof. F. C. Lew, Section G (Engineering), on "Science and Engineering"; Prof. Henry Bailour, Section H (Anthropology), on "South Africa's Contribution to Prehistoric Archaeology"; Prof. W. E. Dixon, Section I (Physiology), on "The History of Treatment in Disease since the Mid-nineteenth Century"; Prof. F. C. Bartlett, Section J (Psychology), on "Experimental Method in Psychology"; Prof. Albert C. Seward, Section K (Botany), on "Botanical Records of the Rocks"; Dr. C. W. Kimmins, Section L (Education), on "Modern Movements in Education"; and Sir Robert Greig, Section M (Agriculture), on "Agriculture and the Empire." An important feature of the section meetings was the joint discussion by Sections D, I, and K (Zoology, Physiology, and Botany) on "The Nature of Life." The discussion was opened by the Rt. Hon. Jan C. Smuts, who presented his theory of "Holism," a philosophic conception, based on the observed tendency of the universe to form wholes, which the statesman first made public in a book of that title published in 1927. See ZOOLOGY.

Other important addresses were given by Prof. A. S. Eddington on "The Interior of a Star," by Sir Ernest Rutherford on "The Structure of the Atom," and by Prof. Julian Huxley on "Evolution." At one of the astronomical sessions, Dr. W. J. Luyten of the South African station of the Harvard University Observatory described his researches on the newly-discovered 70-ton meteorite in South Africa.

It was announced that the 1930 meeting would convene in Bristol, England, at which time the

president-elect, Prof. F. O. Bower, Sc.D., LL.D., F.R.S., was to be installed. Other officers elected at the 1929 South African meeting were General secretaries, Dr F. E. Smith, C.B., F.R.S., and Prof. J. L. Myers, O.B.E.; general treasurer, Sir Josiah Stamp, G.B.E., secretary, O. J. R. Howarth, O.B.E., and honorary curator of Down House (the home of Charles Darwin recently acquired by the association and maintained as a national memorial), G. Buckton Browne, F.R.C.S. It also was resolved that the centenary meeting in 1931 should be held in London from September 23 to 30. Headquarters of the association are in Burlington House, London, W. 1, England.

BRITISH COLUMBIA. A Canadian province on the Pacific Ocean, lying between Alaska, the province of Alberta, and the State of Washington. Area, 355,855 square miles. Capital, Victoria.

The population, according to the census of 1921 was 524,582, as compared with 392,480 in 1911. The census bureau estimate in 1928 was 583,000, including 25,000 native Indians. The principal cities, with their populations in 1921 were Victoria, 37,728 (estimated 1929, 67,000), Vancouver, 117,217 (estimated 1929, 300,000), New Westminster, 14,495 (estimated 1929, 18,000). The movement of population in 1927 was Births, 9982, deaths, 5736, marriages, 4781. There is a complete system of free and nonsectarian education, ranging from primary to collegiate instruction. In 1927 there were 1008 elementary schools with 3062 teachers and 91,155 pupils and 78 high schools, with 419 teachers and an enrollment of 13,412 pupils. The Provincial University had 1741 students in 1927-28.

The area of the timber land of British Columbia, estimated at more than 100,000,000 acres, contained roughly 400,000,000 feet of merchantable timber. The value of forest products in 1928 was \$93,787,000, or 13 per cent more than in 1927, when the output was valued at \$83,087,000. Mineral resources are abundant, the value of minerals produced in 1928 totaling \$65,372,582. The estimated production for 1929 was \$70,030,976, a new record for the province. In 1928 copper led all minerals in the value of output, with lead, coal, zinc, silver, gold, and structural materials following in the order named. Coal production totaled 2,526,702 tons and was valued at \$12,633,510. The aggregate forest, mineral, farm, and fisheries production in 1929 was estimated at \$244,000,000, an increase of \$2,000,000 over 1928. Estimated production of the respective industries was Lumbering, \$90,000,000; mining, \$70,000,000; farming, \$63,000,000; and fisheries, \$21,000,000.

The value of field crops produced in 1928 was \$18,465,000 and the value of all agricultural products, \$50,715,000. The fish catch in 1927 amounted to \$23,227,904. For other figures pertaining to agriculture and to manufacturing, see CANADA.

For the fiscal year ending in 1927, the revenues totaled \$20,257,916 and the expenditures \$19,408,881, including sinking funds taken from capital expenditures. The 1929-30 estimates of revenue and expenditure amounted to \$25,000,000. The gross funded debt on Sept. 1, 1928, was \$84,191,130 and the net debt, \$49,543,778. The government is under a lieutenant-governor and a legislative assembly of 48 members elected for five years. The province is represented in the Dominion Parliament by 6 members in the Senate and 14 members in the House of Commons. Lieu-

tenant-Governor in 1929, Robert R. Bruce, Prime Minister and Minister of Railways, S. F. Tolmie, Provincial Secretary and Commissioner of Fisheries, S. L. Howe, Attorney-General, R. H. Pooley, Minister of Lands, F. P. Burden, Minister of Finance and of Industries, W. C. Shelly, Minister of Agriculture, William Atkinson, Minister of Mines and of Labor, W. A. McKenzie, Minister of Public works, N. S. Leung-hood, Minister of Education, J. Hinchliffe, President of the Council, R. W. Bruhn, Minister without Portfolio, R. L. Maitland.

BRITISH EAST AFRICA. A British possession covering a large area of Africa, and comprising KENYA COLONY, UGANDA PROTECTORATE, and ZANZIBAR. See these articles.

BRITISH EMPIRE. An empire consisting of (1) GREAT BRITAIN AND NORTHERN IRELAND, CHANNEL ISLANDS, and ISLE OF MAN, (2) THE IRISH FREE STATE, INDIA, and the various British Dominions, Colonies, Protectorates, and Dependencies. See these articles.

BRITISH GUIANA, gē-a'nā. A British colony on the northeastern coast of South America, including the settlements of Berbice, Demerara, and Essequibo, bounded on the north by the Atlantic Ocean, on the east by Dutch Guiana, on the south by Brazil, and on the west by Venezuela. Area, 89,480 square miles, population, according to the census of 1921, 207,091, excluding about 9700 aborigines in the remoter districts. An official estimate of the population in 1927 placed it at 308,473, including 127,017 East Indians. In the same year, the movement of population was Births, 10,041, deaths, 8024. The capital is Georgetown, with a population of 57,416. The chief pursuit is agriculture and the principal products are sugar (114,030 tons in 1927), rice (35,310 tons in 1927), and coconuts (22-113,000 nuts, 1927). Stock raising is of some importance. The number of live-stock in 1927 was 141,116 cattle, 4055 horses, 24,060 sheep, 19,784 goats, 18,070 swine, 8603 donkeys. The mineral resources are considerable, gold, rough diamonds, and bauxite being found in large quantities. The principal exports are sugar, rough diamonds, balata, charcoal, rice, timber, and rum, and the chief imports are flour, fertilizers, machinery and hardware, tobacco, foodstuffs, and textiles. Statistics on revenue, expenditure, and trade for 1926 and 1927 follow.

	1926 £	1927 £
Revenue	1,054,127	1,068,865
Expenditure	1,175,461	1,148,028
Imports	2,738,746	2,657,265
Exports	2,861,923	2,625,274

In 1927, 2747 vessels with a total tonnage of 1,138,493 entered and cleared the ports of British Guiana. Practically all the vessels were British, Norwegian, and Dutch. There are 97 miles of railroads. The colony is administered by a governor, assisted by a court of policy, consisting of seven official members and eight elected members, and a combined court, containing in addition to the above, six financial members elected by the registered voters. Governor in 1929, Brigadier General Sir Gordon Guggisberg (appointed August 1928).

BRITISH HONDURAS, hōn-dō-wās. A British Crown colony on the Caribbean coast of Central America, east of Guatemala, and 700 miles

west of Jamaica. Area, 8598 square miles; population, according to the census of 1921, 45,317, estimated, Jan 1, 1928, 49,249 Chief town Belize (population, 1921, 12,601).

The movement of population in 1927 was Birth rate, 36.42 per thousand, death rate, 22.02 per thousand, marriages, 414 In 1927 there were 73 primary schools with an enrollment of 7527 The chief pursuits are agriculture and forestry although only a small part of the land is cultivated In the higher lands, good pasturage is to be found

The chief exports are bananas, mahogany, cedar, and other forest products, plantains, coconuts, and cacao The chief imports are clothing, cotton and silk goods, milk, flour, machinery, and hardware The United States leads all other countries in respect both to imports and exports The value of imports in 1927 was \$4,534,804, exports, \$4,547,528 Government revenues in 1927 totaled \$4,534,792, and expenditures, \$4,547,526 The public debt stood at \$1,587,567 in 1927-28 The tonnage entered in 1927 totaled 341,063 tons There are 25 miles of railway Wireless communication is maintained with New Orleans and Jamaica, 6183 radio telegrams being transmitted in 1927 The administration is under a governor assisted by an executive council of six members and a legislative council of six official and seven unofficial members Governor and Commander-in-Chief in 1929, Sir J. A. Burdon

BRITISH INDIA. See INDIA, BRITISH

BRITISH NEW GUINEA. See PAPUA

BRITISH NORTH BORNEO A British colony, comprising the northern part of the island of Borneo Area, about 31,106 square miles, population, at the census of 1921, 257,804, most of whom were Mohammedian settlers in the coast regions and aborigines in the interior, the Europeans numbering only 533 The most numerous tribes were the Dusuns (112,287), Muruts (37,447), and the Bajaus (33,070) The chief towns are Sandakan, with a population of 11,936 on the east coast, and Jesselton, on the west coast Only a small part of the soil is arable The principal products are timber, coconuts, rice, sago, gum, coffee, fruits, spices, gutta-percha, camphor, rattans and other forest products, and tobacco Coal, iron, gold, and mineral oils also are to be found to some extent The trade is chiefly carried on with Great Britain almost entirely through the ports of Hong Kong and Singapore The principal exports in 1927 were leaf tobacco, £180,574, rubber, £1,088,494, timber, £211,782 There is a railway 127 miles long running from Jesselton to Melalap, with a branch to Brunei Bay Statistics of finance and trade for 1926 and 1927 were

	1926 £	1927 £
Revenue	434,396	454,588
Expenditure	273,119	256,440
Imports	970,319	1,224,705
Exports	1,987,233	1,978,596

The tonnage entering in 1927 was 365,733, cleared, 362,364 tons The territory is under the jurisdiction of the British North Borneo Company and the administrative functions are exercised by a governor in Borneo and a board of directors in London Governor in 1929, J. L. Humphreys.

BRITISH SOMALILAND. See SOMALILAND, BRITISH

BRITISH SOUTH AFRICA. See SOUTH AFRICA, BRITISH

BRITISH TRADES-UNION CONGRESS. See TRADE UNIONS

BRITISH WEST AFRICA. The general name given to the following British colonies in West Africa, Nigeria (colony and protectorate), Gold Coast (comprising the Gold Coast colony, Ashanti, and the Northern Territories), Sierra Leone (colony and protectorate) See separate articles

BRITISH WEST INDIES. A number of scattered island possessions of the British Empire in the West Indies, including (1) the Bahamas, (2) Jamaica and small adjacent islands, and (3) the islands along the east of the Caribbean Sea and near the coast of South America, including the Leeward group, the Windward group, Trinidad, Tobago, and Barbados See under separate articles

BROADCASTING. See RADIO COMMUNICATION

BRODSKY, ADOLF A famous British violinist, died in Manchester, Jan 22, 1929 He was born in Taganrog, Russia, Mar 21, 1851 From 1860 to 1866, he studied at the Vienna Conservatory under J. Hellmesberger and for two years (1868-70) was a violinist in the orchestra of the Hofoper After further study with Laub, in Moscow, he succeeded the latter as professor of violin at the conservatory there In 1879 he went to Kiev as conductor of the symphony concerts His career as a virtuoso began in 1881, when he won emphatic success on tours of Austria, France, and England In Vienna, in 1882, he created a sensation at a Philharmonic concert by the first public performance of Tchaikovsky's great violin concerto In the same year, he performed that work, by request, in practically all the important cities of Germany In 1883 he was appointed professor of violin at the Leipzig Conservatory There, he established his own quartet (Brodsky, H. Becker, A. Novacek, J. Klengel), which on its extended tours of Europe soon won international reputation During 1891-94 he was concert master of the New York Symphony Orchestra and toured the United States and Canada as soloist After further tours of Germany and Russia, he settled definitely, in 1895, as concert master of the Hallé Orchestra and professor of violin at the Royal College of Music at Manchester Three months after entering upon these duties, Sir Charles Hallé died and Brodsky succeeded him as director of the Royal College, a position which he filled with distinction until his death In Manchester, he also formed a new string quartet (with Briggs, Speelman, and Fuchs), which was scarcely inferior to his famous Leipzig quartet, but did not become so widely known, because his duties as concert master and director did not permit extended tours Brodsky's playing was noted for power and beauty of tone and unusual grandeur of conception

BROKERS' LOANS. See BANKS AND BANKING

BROOKINGS INSTITUTION An association established in 1927, in Washington, as the outgrowth of experimentation in research and training conducted there for some years by the Institute of Economics, the Institute for Government Research, and the Robert Brookings Grad-

uate School of Economics and Government The institution is an amalgamation of these three agencies and is designed to cover eventually the entire range of social sciences, as well as to provide facilities for advanced research training in such subjects as economics, government administration, political relations, history, law, and social organization It affords an opportunity for young graduate scholars to spend from one to three years in a well-equipped research organization In addition, it provides headquarters for visiting scholars from the United States and foreign countries, who come to the national capital to make use of the great amount of material available there on economic, political, historic, social, administrative, and legal problems, as found in the records of the various departments of the Government

The institution is supported from endowment funds and annual grants By charter provision, the investigations are conducted "without regard to the special interests of any group in the body politic, whether political, social, or economic" The board of trustees, a self-perpetuating body, has general responsibility for determining the institution's policies of work, but does not assume each particular investigation, its position in this respect being defined as follows "The primary function of the trustees is not to express their views upon the scientific investigations conducted by any division of the institution but only to make it possible for such scientific work to be done under the most favorable auspices" The institution publishes the results of its own research work The officers of the board of trustees for 1929-30 were (Chairman, Robert S Brookings, the founder of the institution, vice chairman, Leo S Rowe, treasurer, Frederic A Delano, president, Harold G Moulton Headquarters are at 26 Jackson Place, Washington, D C

BROOKLYN INSTITUTE OF ARTS AND SCIENCES. An institution in Brooklyn, N Y, composed of three divisions—education, museum of arts and sciences, and a botanic garden It was founded in 1824 and incorporated in its present form in 1890 Membership is open to all who are interested in any branch of science or art The educational division is divided into the following departments, composed of members interested in a particular field Agriculture, astronomy, botany, dramatic art, electricity, fine arts, geography, geology, home economics, music, pedagogy, philology, philosophy, photography, physics, political science, psychology, and sociology These departments conduct courses and sponsor addresses, lectures, and concerts A forum conducted by the departments of political science and sociology provides for the discussion of current problems The enrollment in the school of pedagogy in 1929 was 1700, with an attendance at lectures of 283,580 The institute's museum contains collections in the fields of art, ethnology, and natural science, its botanic garden comprises more than 50 acres Attendance at the museum during the year was 500,054 and at the botanic garden, 1,127,475 The library contained more than 26,000 volumes In 1929 the permanent funds of the institute amounted to \$2,693,307, the funds to meet current expenses totaled \$808,000 The president of the board of trustees was Edward C Blum, director of the division of education, Charles D Atkins, of the museum of arts and sciences, Wil-

liam Henry Fox, and of the botanic garden, C Stuart Gager Headquarters are at the Brooklyn Academy of Music, 30 Lafayette Avenue, Brooklyn, N Y

BROOKLYN MUSEUM. See ART MUSEUM
BROWNLOW COLLECTION. See ART SALES

BROWNTAIL MOTH. See ENTOMOLOGY, ECONOMIC

BROWN UNIVERSITY An institution of higher education in Providence, R I, founded in 1764 In the autumn of 1919, the enrollment was 2205, of whom 290 were graduate students, 1358, undergraduate men, including 252 seniors, 339 juniors, 355 sophomores, 380 freshmen, and 23 specials, 499, undergraduate women, and 58, school of education students The faculty of 202 members included 109 professors, 43 instructors, and 50 assistants Among the new appointees were Arthur Mangun Banta, acting professor of biology, on leave of absence from the Carnegie Institution, William Albert Noyes, Jr, associate professor of chemistry, and Willard C Beatty and Chelene C Bosland, assistant professors of economics The permanent productive funds of the university amounted to \$9,717,071, of which \$9,222,519 was an endowment of the men's college and \$494,551, an endowment of the women's college, the total income from these funds was \$495,501 The library contained 350,000 volumes In October, 1928, the university corporation voted that the name of the women's college be changed to that of Pembroke College in Brown University Dr William H P Faunce was elected president emeritus in June, 1929, and Oct 17, 1929, Clarence Augustus Barbour, D D, S T D, LL D, former president of Colgate Rochester Divinity School, was inaugurated as president

BRUNEL, BRŪNŪ A British region on the northwestern coast of the island of Borneo Area, about 2500 square miles, population, according to the census of 1921, 25,444, of whom the Europeans numbered only 35, the bulk of the population being made up of Malays and native Borneans Sultan in 1929, Ahmed Tajudin Akhazul Khan Wadim, a minor, who succeeded his father in September, 1924, and is assisted by a regency Brunel is the chief town, with a population of about 12,000 Among the principal products may be mentioned mangrove extract, rubber, coal, sago, and jelutong Cloth weaving, silverware, brass founding, and boat building are found among the native industries In 1927 the chief exports were rubber, jelutong, and forest products, the chief imports, rice, tobacco, kerosene oil, machinery, piece goods, and sugar The revenue in 1927 was £46,916, expenditures, £49,816, public debt, Jan 1, 1928, £48,883 The administration is in the hands of a British Resident, the sultan retaining the name only and with his two principal ministers receiving a subsidy from the British government British Resident in 1929, P A B McKernon

BRUSH, CHARLES FRANCIS American inventor and pioneer in the electrical industry, died in Cleveland, Ohio, June 15, 1929 He was born in Fuchid, Ohio, Mar 17, 1849, and received scientific degrees from Michigan and Western Reserve universities From 1870 to 1873, he was an analytical chemist in Cleveland Becoming interested in electricity, he designed a dynamo in 1876, and in 1878 he developed his arc lighting system His numerous later inventions were outgrowths of these In 1881 he founded the Brush

Electric Company, which was absorbed by the General Electric Company. He was made a Chevalier of the Legion of Honor by the French government in 1881, he received from the American Academy of Arts and Sciences the Rumford Medal for the practical development of electric arc lighting, he received in 1913 the Edison Medal from the American Institute of Electrical Engineers, and in 1928 he was given the Franklin Medal by the Franklin Institute of Philadelphia. Shortly before Mr. Brush's death, plans were announced for the establishment of the Charles F. Brush Foundation for the Betterment of the Human Race, a memorial to his son, Charles F. Brush, Jr.

BRYN MAWR COLLEGE An institution for the higher education of women in Bryn Mawr, Pa., founded in 1880. The enrollment for the autumn of 1929 totaled 516, distributed as follows: Seniors, 91, juniors, 82, sophomores, 115, freshmen, 123, resident fellows, 20, graduate students 82, heaters, 3. The teaching staff numbered 82. The productive funds of the college amounted to \$6,481,000 in the autumn of 1929, and the income for the year 1928-29 was \$1,062,075. The number of volumes in the library was 127,000. President, Marion Edwards Park, Ph.D., LL.D.

BUCKNELL UNIVERSITY A coeducational Baptist institution of higher learning in Lewisburg, Pa., founded in 1840 under the name of University of Lewisburg but renamed in 1886 in honor of its benefactor, William Bucknell. In the autumn of 1929, the enrollment was 1163, of whom 743 were men and 420 women. Of the 400 students enrolled in the summer session of 1929, 185 were men and 215 were women. The faculty numbered 71. The productive funds amounted to \$1,700,000 and the income for the year was \$675,000. Courses were offered in liberal arts, biology, education, commerce and finance, music, and engineering. The library contained 55,000 bound volumes. President, Emory W. Hunt, D.D., LL.D., D.C.L.

BUCKWHEAT. The buckwheat production of the United States in 1929 was placed by the Department of Agriculture at 11,505,000 bushels as compared with 13,148,000 bushels produced the year before and 13,949,000 bushels, the average production of the preceding five years. The acreage dropped from 749,000 acres in 1928 to 720,000 acres in 1929, this decrease of about 3 per cent being due to smaller acreages in several of the less important buckwheat producing States. The average yield per acre was reported at 15.8 bushels, or about 10 per cent below the 1928 average of 17.6 bushels. Farm prices, as of December 1, averaged 97.7 cents per bushel in 1929 and 87.5 cents in 1928, giving total values of \$11,241,000 the past year and \$11,511,000 for the preceding crop. The yields produced in the leading buckwheat growing States were estimated as follows: Pennsylvania, 3,383,000 bushels, New York, 3,168,000, Minnesota, 812,000, West Virginia, 760,000, Ohio, 673,000, and Michigan, 405,000. Michigan lost its usual rank in 1929 due mainly to a marked reduction in average yield per acre, the result of a drouthy season.

The average yield per acre in the 23 States reporting buckwheat production, extending from Maine to North Carolina and Tennessee, and westward to the Dakotas and Nebraska, ranged from 6 bushels in North Dakota to 28 bushels in

in Maine and the average price paid farmers on December 1, from 73 cents per bushel in North Dakota to \$1.10 per bushel in Vermont, West Virginia, and Tennessee. During the year ended June 30, 1929, the United States exported 229,000 bushels of buckwheat and imported 3,633,000 pounds. As buckwheat is easily thrashed, the crop may be harvested with the combined harvester and thresher with but slight loss. The grain or kernel is easily cracked, however, and proper adjustment of the machine, especially as to cylinder speed, is necessary.

BUFFALO. The University of A coeducational institution of higher learning in Buffalo, N. Y., founded in 1846 under a charter received from the State Legislature. The enrollment for the autumn of 1929 was 3237, distributed as follows: College of arts and sciences, 771, school of law, 205, school of dentistry, 122, school of medicine, 285, school of pharmacy, 182, school of business administration, 142, evening session, 1530. The enrollment for the 1929 summer session was 877. The faculty numbered 420, including 42 new appointees. In 1929 an endowment fund campaign was completed, the contributions received amounting to more than \$5,000,000. The income for the year 1928-29, exclusive of gifts, amounted to \$818,683. The library contained 69,683 volumes and 25,000 pamphlets. President, Samuel P. Capen, Ph.D., LL.D., Sc.D., LL.D.

BUILDING. According to *Bradstreet's* annual summary of building expenditures, as shown in permits issued during the year, the total value of the buildings permitted for 215 cities of the United States for the calendar year 1929 was \$2,913,384,758, a decrease from \$3,304,507,092 in 1928, or 11.8 per cent. At the peak year, 1925, these expenditures were placed at \$4,883,172,225, so that there was a decrease in 1929 of 24.9 per cent. *Bradstreet's* summary of building expenditures of all cities reported since 1918 was as follows:

Year	Total	Change yearly, per cent
1929	\$2,913,384,758	Dec 11.8
1928	3,304,507,092	Dec 3.1
1927	3,319,449,046	Dec 10.9
1926	3,746,162,782	Dec 5.9
1925	4,883,172,225	Inc 17.5
1924	3,282,078,089	Inc 1.5
1923	3,142,234,205	Inc 2.0
1922	2,529,603,981	Inc 52.2
1921	1,651,981,416	Inc 15.6
1920	1,427,059,396	Inc 8.8
1919	1,310,962,144	Inc 202.5
1918	433,000,000	—

The detailed returns by groups of cities for the years 1929 and 1928 compared as follows:

	1929	1928	Change, per cent
New England	\$192,258,903	\$205,179,927	D 6.2
Mid Atlantic	1,229,627,159	1,386,419,881	D 4.1
Central Western	574,083,761	793,229,693	D 27.6
Northwestern	119,669,267	116,560,304	I 3.6
Southeastern	194,700,917	202,234,332	D 3.7
Southern	208,560,005	273,970,968	D 24.6
Far Western	296,485,146	326,911,987	D 9.3
Total U. S.	2,913,384,758	3,304,507,092	D 11.8
New York City	944,366,782	934,806,661	I 1.0
Outside N. Y.	1,969,017,976	2,369,700,431	D 16.8
Canada	176,267,672	154,882,491	I 13.8

This authority states that New York City building permit values in 1929 were \$944,366,782,

as against \$934,800,661 in 1928, or a gain of 1 per cent. The expenditure for building in New York City was 32.4 per cent of the total of 215 of the larger cities of the United States for which statistics were compiled, as against 28.2 per cent in 1928. Building in four of the five boroughs of Greater New York since 1925 (Richmond Borough not included) was as follows:

1925	\$1,012,949,978	1928	\$918,027,238
1926	1,031,441,405	1929	932,879,452
1927	870,108,777		

Outside of New York City, the northwestern group of cities showed an increase of 1.6 per cent over 1928, while the other groups, as indicated in the table, showed decreases varying from 3.7 per cent at the Southwest to 24.6 per cent at the South. The total building value for which permits were issued for 214 cities outside of New York City was \$1,909,017,976, or a decrease of 16.8 per cent from 1928. In the interval from 1920 to 1929, the aggregate expenditures at 120 identical cities compared as follows:

1920	\$1,214,082,696	1925	\$3,398,585,633
1921	1,462,752,811	1926	3,227,185,541
1922	2,288,408,634	1927	2,870,613,674
1923	2,811,366,000	1928	2,794,229,539
1924	2,936,714,639	1929	2,484,225,535

The 1929 construction value in the United States, according to the F. W. Dodge corporation's review of building and engineering activity, showed a decline in the value of contracts awarded in 37 States east of the Rocky Mountains, the figures given being \$5,754,291,000, as compared with \$6,628,286,000 for 1928, \$6,303,055,000 for 1927, \$6,380,915,000 for 1926, and 6,006,426,000 for 1925. These various projects were defined as follows:

BUILDING IN 1929

[Returns from F. W. Dodge Corporation's Review for 37 Eastern States, or About 91 Per Cent of the Total Construction of the United States]

Classification	No of Projects	Valuation	Contracts Awarded*		
			No of Projects	New Floor Space in Sq Ft	Valuation
Commercial Buildings	29,050	\$1,338,670,600	24,137	161,731,100	\$ 912,688,400
Industrial Buildings	7,695	1,137,866,300	6,680	108,761,600	756,512,400
Educational Buildings	5,699	444,261,400	4,531	60,644,000	381,908,000
Hospitals and Institutions	1,530	352,680,300	1,190	19,494,200	152,203,700
Public Buildings	2,552	244,442,700	1,363	12,626,100	120,777,900
Religious and Memorial Buildings	2,774	175,242,100	2,277	12,817,300	106,111,200
Social and Recreational Buildings	1,116	326,184,800	2,484	19,709,300	140,019,400
Residential Buildings	122,148 ^b	2,578,492,800	110,498 ^c	387,671,300	1,915,727,500
Public Works and Public Utilities	25,022	2,188,106,600	19,072	8,092,600	1,248,342,000
	200,029	\$8,886,027,500	172,172	791,569,400	\$5,754,290,500

* Including projects without general contractors, subcontracts being let directly by owners or architect.

^b 194,090 buildings.

^c 150,994 buildings.

These figures, as already stated, are for 37 States east of the Rocky Mountains and include about 91 per cent of the total construction. In New York State and northern New Jersey, the contracts awarded in 1929 amounted to \$1,467,273,000 in value, as against \$1,814,317,000 in 1928. In eastern Pennsylvania, southern New Jersey, Maryland, Delaware, District of Columbia, and Virginia, similar contracts for 1929 amounted to \$671,500,000, as against \$787,673,000 in 1928. In western Pennsylvania, West Virginia, Ohio, and Kentucky, contracts awarded in 1929 totaled \$685,536,000, as against \$723,416,000 in 1928. In the Central West, or Illinois, In-

diana, Iowa, Wisconsin, Michigan, Missouri, Kansas, Nebraska, and Oklahoma, 1929 contracts amounted to \$1,681,836,000, as against \$1,934,775,000 in 1928. In Minnesota, North Dakota, South Dakota, and northern Michigan, contracts awarded in 1929 totaled \$94,505,000, as against \$80,101,000 in 1928. In North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Arkansas, and Louisiana, contracts awarded in 1929 were \$537,439,000 and in 1928, \$560,925,000. In Texas in 1929, building contracts to the amount of \$217,800,000 were awarded, as against \$213,409,000 in 1928. In the New England States, 1929 contracts awarded in 1929 amounted to \$1,111,111 and those awarded in 1928 to \$495,581,000.

The notable decline of construction in 1929 also was indicated in the compilation of Facts and Figures of Construction, made by *Engineering News-Record* (New York), which summarizes and discusses engineering construction and residential building as reported in its columns. The total for 1929 was given as just over \$1,130,000,000, being the first time in nine years that there had been a decline from one year to another in such construction. The cost index, based on 1913 as 100, was given as 207.02 and the comparative volume of construction referred to the same year, as 280 on a similar comparison. The decrease in 1929 was due in large measure to the decline in residential construction which was estimated at 31 per cent. In non-residential construction, there was a total increase of 10 per cent greater than the level reached in 1928.

The matter of construction figured prominently in the Washington conference in November and December, when leaders of various fields of industry and commerce were asked to present reports on their programmes for the succeeding year. These figures indicated that construction

in 1930 would reach \$10,000,000,000, to which utility construction would contribute to a marked degree. The railroad construction budget for 1930 was reported at \$1,050,000,000, or an increase of 10 per cent over 1929, while the central station budget for 1930 was placed at \$913,575,000. Public works were planned to an increased degree totaling about \$3,000,000,000, of which \$1,000,000,000 was for municipal work and \$271,000,000 for Federal work. State construction also figured to an important degree. See ARCHITECTURE.

BUILDING AND LOAN ASSOCIATIONS.
See COOPERATION.

BULGARIA. A constitutional monarchy in the Balkans lying to the south of Rumania and the east of Yugoslavia. Capital, Sofia, reigning King in 1929, Boris III, who succeeded to the throne upon the abdication of his father, Oct. 3, 1918.

AREA AND POPULATION. As a result of the World War, the area of Bulgaria was reduced from 53,305 to 39,814 square miles. The population according to the census of 1926 was 5,483,125, as compared with the actual population according to the census of 1920, of 4,846,971. The estimated population on Jan. 1, 1929, was 5,596,800. The surplus of births over deaths was 109,341 in 1926, and 94,100 in 1925. The chief cities with their populations, according to the 1920 census, are Sofia, 213,162, Plovdiv, 185,188, Varna, 60,787, Ruschuk, 45,672, Slivno, 29,335, Plevena, 29,063, Stara Zagora, 28,939, Choumen, 25,316, Burgas, 31,428.

EDUCATION. Primary instruction is free and compulsory for children between the ages of 7 and 14, and is supported by the state authorities. In 1926-27 there were 4182 national elementary schools, with 12,655 teachers and 402,807 pupils, 1565 private elementary schools, with 2583 teachers and 70,859 pupils, and 1291 national gymnasia, with 293 teachers and 133,705 pupils. Various other national and private schools and colleges brought the total to 7440, with 24,903 teachers and 673,579 pupils. The State University at Sofia had 298 professors and teachers and 3062 students in 1926-27. There is also a free (private) university with 44 teachers and 2029 students.

PRODUCTION. The principal occupation of the people of Bulgaria is agriculture, more than 80 per cent of the people engaging in this pursuit. The land is held in absolute freehold, the greater part of the holdings being under small proprietors (1 to 6 acres). The methods of cultivation are primitive, although in recent years some modern farm machinery has made its appearance. Preliminary results for 1928 showed an improvement over 1927 in the yield of most crops, with the exception of tobacco, corn, and sugar beets. The smaller crop of tobacco was the effect, in part, of a reduction in sown area. The reduction in the size of the crop was offset in part by a rise in the price obtained. The acreage sown to sugar beets declined from 21,000 hectares in 1927 to 18,000 hectares in 1928, chiefly because of foreign competition. The area devoted to rapeseed increased sharply to 45,580 hectares (1 hectare equals 2.47 acres). Although most crops were larger than in the preceding year, the decreases in corn and tobacco are significant because of their importance in the exports of the country, in 1927 these two products represented approximately 30 per cent of the total value of all Bulgarian exports.

Estimates of agricultural production during 1928 (1927 figures in parentheses) are as follows: wheat, 1,380,000 metric tons (1,146,000), corn, 465,000 (532,000), barley, 343,000 (280,000), rye, 234,000 (177,000), oats, 105,000 (94,000), sunflower, 42,280 (34,170), rapeseed, 42,000 (3300), sugar beets, 169,000 (242,000). Tobacco production was estimated at 23,041,000 pounds in 1928, as compared with 34,811,000 in 1927, and the 1928 rose crop, at 250,000 miskals (1 miskal equals 0.16953 ounce avoirdupois), as compared with 504,630 miskals in 1927. The Bulgarian production of silk cocoons for 1928 was

estimated at about 1,900,000 kilos, as against 2,025,000 in 1927, and an average of about 1,520,000 for the previous five years.

The total area sown was slightly larger in 1928 than in 1927, the figures being 6,075,240 acres for 1927 and 6,109,005 in 1928. The wheat acreage rose from 2,704,185 to 2,811,885, the rye acreage, from 409,005 to 484,707, and barley, from 567,110 to 607,775. The oat acreage decreased from 329,745 acres in 1927 to 290,897 in 1928 and the corn acreage, from 1,701,422 to about 1,613,750.

Industrially, Bulgaria recorded considerable expansion in the textile industry during 1928 and slow progress in the manufacture of tobacco, cement, ceramics, and vegetable oils, and in tanning, metallurgy and wine making. Sugar production in 1928 was slightly over 25,000 metric tons, the 1927 output was approximately 36,000 metric tons. Coal production increased to 1,402,000 tons, as against 1,237,650 in 1927 and 1,205,760 in 1926. Most of the increase is due to the larger output of the Pernik State mine, where the production was 1,021,614 tons in 1927 and 1,188,554 tons in 1928. Consumption of coal by both state railways and industrial enterprises increased during the year. Other leading minerals, with the production figures for 1927 in metric tons, were copper, 10,934, lead, 1229, zinc, 1459, zinc-lead, 6727, lead copper, 16,789, aluminum, 2841.

COMMERCE. A large adverse balance marked Bulgaria's foreign trade for 1928, in contrast to the favorable balance occurring for the previous year. The 1928 imports exceeded exports by 808,000,000 leva (one lev equals \$0.0072), in 1927 exports exceeded imports by 498,000,000 leva. Heavy purchases of textile materials and of machinery in 1928 boosted the value of imports while the comparatively poor yields of some of the principal export crops were reflected in decreased exports. The value and amount of the commodities entering into Bulgaria's foreign trade in 1927 and 1928 are shown in the table on page 131.

Germany again ranked first as the country of origin for Bulgarian imports, furnishing 21.2 per cent of the total in 1928. Other countries providing Bulgaria's imports were Italy, 15.2 per cent, Czechoslovakia, 10.7 per cent, England, 10.4 per cent, and Austria, 8.1 per cent. The chief purchasers of Bulgarian exports were Germany, 27.9 per cent, Austria, 15.3 per cent, Italy, 11 per cent, Greece, 8.1 per cent, and France, 5.6 per cent. Imports from the United States mounted from 96,841,100 leva (\$701,000) in 1927 to 168,202,000 leva (\$1,213,000) in 1928. Exports to the United States were 78,115,000 leva (\$563,000) in 1928 and 68,260,600 leva (\$494,000) in 1927.

FINANCE. With the aid of a £5,000,000 foreign loan negotiated late in 1928 under the auspices of the League of Nations, lev exchange was stabilized at \$0.0072, provision was made for wiping out budget arrears and for increasing the credit available for agricultural purposes, and a general reform of the public finances was undertaken to further the economic development of the country. The bulk of the loan was placed at the disposal of the National Bank late in 1928 and the remainder was paid in three installments during 1929. It was to be amortized over a period of forty years and its service was guaranteed by import and export duties. The proceeds of the

FOREIGN TRADE OF BULGARIA FOR 1928

Commodity	1927 Metric tons	1927 Million leva *	1928 Metric tons	1928 Million leva *
IMPORTS				
Textiles and their manufactures .	16,801	2,459	17,979	2,639
Machines and implements .	14,769	748	21,650	1,058
Metals and their manufactures	69,981	763	88,154	898
Skins, hides, furs, and their manufactures	3,637	324	2,793	314
Mineral oils, gums, etc	59,158	220	69,481	238
Wood and its manufactures . . .	48,489	163	58,812	223
Paper and its manufactures .	11,294	167	13,252	204
Tannins, dyes, paints, and varnishes	6,115	180	5,591	179
Chemical products .	11,881	163	11,684	173
Railroad cars, wagons, automobiles, and boats	232 } 632 }	109	270 } 1,426 }	165
Stones, earth, glass products, etc	14,068	128	11,046	186
Colonial goods	8,890	115	3,721	123
India rubber, gutta percha, and manufactures	314	72	421	94
All other	..	518		597
Total	306,756	6,129	354,989	7,041
Equivalent in thousand dollars	.	44,374		50,765
EXPORTS				
Tobacco	26,940	2,101	22,422	2,244
Eggs	12,475	864	10,684	568
Rapeseed	3,780	42	39,413	407
Skins, hides, furs, and manufactures	2,080	332	1,821	332
Cocoons	553	176	856	266
Corn	128,925	541	47,462	263
Attar of roses	2,406	186	3,157	241
Livestock	244,926	291	197,914	207
Barley	77,748	435	86,750	192
Wheat	39,436	288	20,530	147
Rye	19,852	116	24,220	140
Wheat flour	14,717	163	8,363	89
All other		1,102		1,177
Total	466,629	6,627	368,225	6,273
Equivalent in thousand dollars		47,981		44,937

* Exchanging in both years at \$0 0072

* Number

* Grouped slightly different from the previous year

* Head

* Kilos

loan were being utilized as follows £1,500,000 to the National Bank as part payment of the national debt to the bank. £150,000 for the same purpose to the Central Cooperative Bank. £1,100,000 for payment of budgetary arrears, £1,250,000 for railways and roads, and £500,000 for expenses incurred in connection with the earthquakes in the southern part of the country in April, 1928.

Estimates for the fiscal year ending Mar 31, 1929, placed the revenues at 7,568,905,000 leva and expenditures at 7,481,513,000 leva. For 1927-28 the estimates were revenues, 6,993,100,000 leva, expenditures, 6,992,877,000 leva. Principal sources of revenue (in leva) were direct taxes, 918,000,000; indirect taxes, 2,647,000,000, duties, 636,000,000, fines and requisitions, 72,000,000, government-owned utilities, 1,131,700,000 other State property, 396,000,000, miscellaneous, 1,467,705,000. Expenditures (in leva) were distributed in part as follows, service of the public debt, 1,784,749,000, interior, 452,832,000, education, 802,162,000, war, 1,280,753,000, agriculture, 493,537,000, public works, 372,335,000, railways, post, and telegraphs, 1,309,202,000.

Under the League of Nations protocol governing the issuance of the stabilization loan, the budget for 1929-30 is limited to 7,000,000,000 leva, with the exception of special funds and those for the service of the loan. The budget for 1929-30, as submitted to Parliament, estimated receipts at 6,680,000,000 leva and expenditures at 6,274,000,000 leva, exclusive of annexed funds amounting to 478,000,000 leva which bring the total expenditures to 6,752,000,000 leva.

Notes in circulation at the end of 1928 totaled 4,173,017,000 leva, with a metallic cover of

1,489,661,000 leva as compared, with a note circulation at the end of the previous year of 3,726,972,000 leva, with a metallic cover of 1,442,817,000 leva. The stringency in the credit situation eased somewhat during 1929. On Oct 31, 1928, the foreign debt was given as follows: consolidated, 479,280,094 gold francs, non-consolidated, 11,810,634 gold francs, repatriation debt, 664,374,866 gold francs, debt from occupation, 14,263,404 gold francs. The internal debt totaled 5,354,054,615 leva, of which 754,047,580 leva was consolidated and 4,600,007,035 leva non-consolidated.

COMMUNICATIONS All railways in Bulgaria are owned and operated by the state under the title Bulgarian State Railways, with the exception of a few privately owned and operated by timber companies. In 1928 Bulgaria had 1426 miles of railway of standard gauge and 255 miles of narrow gauge. About 321 additional miles were completed during 1929. Total revenues of all railways for 1927-28 were 1,063,221,000 leva and total expenditures, 817,498,000 leva, leaving a surplus of 245,723,000 leva. Freight traffic in 1928 totaled 330,000 carloads, as against 317,000 in 1927.

The number of ships calling at the principal ports of Bulgaria in 1928 showed a decline from 1927. At Varna, 357 ships of 609,656 tons called during 1928, as against 459 ships of 653,106 tons in 1927, the respective figures for the port of Burgas were 440 of 746,687 tons, and 455 of 765,036 tons. The decline in shipping was chiefly due to the decrease in the volume of cereals and other exports.

GOVERNMENT The King is the head of the Government, assisted by a council of ministers non-

inated by him and a single legislative chamber, known as the Sobranje, composed of 273 members. In 1929 the King was Boris III. The parties in the Sobranje, elected in May, 1927, contained the following party groups: Government Coalition, 168, Agrarians, 48, Macedonian Independents, 11, National Liberals, 14, Democrats, 12, Radicals, 2, Social Democrats, 10, others, 8. The ministry as organized Sept. 12, 1928, was as follows: Premier and Minister of Interior, André Laptcheff, Minister of Education, Nicholas Naidenoff, Justice, Dr. Theodore Kuleff, Commerce, M. Trzvetco Bobotchevsky, Finance, Vladimir Molloff, Public Works, Slaveico Vasileff, Posts and Railways, R. Madjaroff, Foreign Affairs, Athanasie Buroff, Agriculture, Dimitri Christoff, War, General Kakardjoff (Jan. 11, 1929).

HISTORIC Bulgaria's relations with Yugoslavia, which had been badly strained as a result of Macedonian comitadj raids across the frontier into Yugoslavia, grew steadily worse following the proclamation of a dictatorship in Yugoslavia on January 6 and then appeared to take a turn for the better in August. As was to be expected, the fluctuating relationships between the two countries were reflected in Bulgaria's policy toward Italy, France, and Great Britain.

A few days after the proclamation of the dictatorship by King Alexander, European observers were startled to learn that the proposed appointment of General Vukoff, the Bulgarian Minister of War, as Minister to Rome had been approved by the Italian government. This was considered evidence of a *volte face* in Bulgarian foreign policy, which under Foreign Minister Buroff had heretofore been conciliatory toward Yugoslavia, and her chief ally, France.

The Bulgarian frontier, closed before the *coup d'état* in Yugoslavia, was reopened under the dictatorship and in an effort to improve relations between the two countries a conference was held at Piroet where a convention was drafted covering the troublesome features of the frontier problem. The difficulties were the result of the Yugoslav attempt to denationalize some 500,000 Bulgarians and Macedonians incorporated in Yugoslavia by the Treaty of Neuilly. Border raids continued throughout June and July, however, and the Piroet convention remained unratified, while charges and counter charges further complicated the situation. The Belgrade Government raised particular objection to the passage of a law granting amnesty to former Premier Vasil Radoslavoff, who brought Bulgaria into the World War on the side of Germany, and to Ministers and other officials of the pre-war régime in Bulgaria, many of whom were in exile. The death of Radoslavoff in Berlin on October 21 prevented his return, with its accompanying complications. He and the other former officials had been sentenced by Bulgarian courts, but in accordance with stipulations of the peace treaties, on charges of war guilt. It was expected, however, that former Czar Ferdinand, who abdicated the throne in 1918, would return to Bulgaria from his place of exile in Coburg for a brief visit with his son and daughter, King Boris and Princess Eudoxie. The measure was bitterly opposed in the Bulgarian Parliament, as well as by the Belgrade government.

Early in July the British Government proposed that a neutral commission, similar to that which had served effectively in reconciling the

Græco-Bulgarian frontier dispute, be placed in charge of the frontier zone. The suggestion was temporarily rejected, however, on the ground that the Piroet convention, then before the respective Parliaments, contained a similar provision. On August 15, it was announced that the ban of excommunication against the Greek Church in Bulgaria, imposed more than half a century ago by Greek Orthodox authorities, would soon be canceled under an agreement reached by the Patriarchs of Constantinople, Alexandria, Antioch, and Jerusalem, the Archbishops of Poland and Cyprus, and the Metropolitan of Sofia. The ban was not due to a doctrinal dispute but to the refusal of the Bulgarian church to accept membership in the See of Constantinople. Italy was understood to have strongly opposed the reconciliation on the ground that it represents another step in the movement toward a Bulgar-Serb entente, which began in 1928 with the collapse of the proposed marriage between King Boris and Princess Giovanna of Italy. The development also frustrated a plan for the reunion of the Greek Orthodox and Roman Catholic churches through the Bulgarian church, which Pope Pius XI was supposed to have cherished.

The action of the Committee on Eastern Reparations, which lived in Paris tentatively at \$2,500,000, a day, in Paris in the autumn, aroused widespread protests in the country. On November 18, there were large demonstrations in Sofia, including riotous gatherings before the French and British legations, a two-hour stoppage of all work, and a 15-minute stoppage of traffic. In December, Foreign Minister Buroff and Finance Minister Moloff visited the British Foreign Office in London in an attempt to obtain a reduction in reparation payments before the second Hague Conference opened on Jan. 3, 1930.

National resentment was further aroused on November 21 by the announcement that Henri Charon, French commissioner appointed by the League of Nations to supervise the handling of the League's loan to Bulgaria, had sequestered \$3,000,000 of the income of the Bulgarian state railways. His action was said to be due to the refusal of the Ministry of Railways to reorganize the railway system in accordance with his requests made for several years past. The government found it necessary to prohibit further demonstrations against the allied reparation requirements and to guard the foreign legations in Sofia.

During the week beginning May 12, the nation celebrated the one thousandth anniversary of the accession of the Bulgarian King, Simeon the Great, the liberation of Bulgaria 51 years before, and the name day of King Boris. On May 24, the Chamber of Deputies ratified the Kellogg Pact and a treaty of arbitration and conciliation with the United States. See YUGOSLAVIA, and RUMANIA, under *History*.

BULLARD, ARTHUR ("ALBERT EDWARDS"). American journalist, died in Geneva, Switzerland, Sept. 10, 1929. He was born in St. Joseph, Mo., Dec. 8, 1879, and was educated at Blair Presbyterian Academy in New Jersey, and at Hamilton College. In 1905 he became a foreign correspondent for *Harper's Weekly*, *Colliers' Weekly*, and *The Outlook*, traveling in Russia, French North Africa, and Central America. He represented the *Outlook* during the Balkan War,

1912-13, and contributed to the *Outlook*, *Century*, and *Atlantic Monthly* during the World War. As a member of the committee on public information, Washington, D. C., from 1917 to 1919, he directed successively the Russian Division at Moscow and the Siberian Division at Vladivostok. In 1919 he was associated with the Department of State in its Russian affairs. In 1921 he became editor of *Our World*, a position which he held until 1924. He was the European representative of the League of Nations Nonpartisan Association in Geneva in 1925, becoming a member of the secretariat of the League, 1926-27. He was also attached to the American delegation to the International Economic Conference in Geneva in 1927. He wrote, sometimes under the pen name, "Albert Edwards" *Panama* (1911), *A Man's World* (1912), *Comrade Yetta* (1913), *The Barbary Coast* (1913); *The Diplomacy of the Great War* (1915), *Mobilizing America* (1917), *The Russian Pendulum* (1919), *The Stranger* (1920), and *A B C's of Disarmament and Pacific Problems* (1921).

BULOW, bú-ló, BERNARD, PRINCE VON A German statesman, died Oct. 28, 1929, in Rome, Italy. He was born May 3, 1849, at Klein-Flottbeck, Holstein. He served in the Franco-Prussian War of 1870, and in 1872 entered the Prussian civil service. He joined the German Foreign office in 1874, serving as secretary of the legation at Rome, St. Petersburg, and Vienna, and chargé d'affaires at Athens during the Russo-Turkish War (1877-78). He was sent as Minister to Rumania in 1888 and as Ambassador to Italy in 1893. In 1897 he was appointed Foreign Secretary and two years later negotiated with Spain the treaty by which Germany acquired possession of the Caroline, Pelew and Ladrones islands. For these services he was made a count. From 1900 to 1909, when he resigned, he was Chancellor of the German Empire and Prime Minister of Prussia. In 1905 he opposed the ambitions of France in Morocco with so much success that he was given the rank of prince. Prince von Bulow fostered in all of his undertakings the imperialistic philosophy which was the German Kaiser's in the years immediately preceding the World War. Prince von Bulow resigned as chancellor in 1909, when by the failure of his budget proposals he lost a majority in the Reichstag. He was given temporary charge of the German Embassy in Rome in December of 1914 with the hope that he might smooth over the differences between Austria-Hungary and Italy, but he was unsuccessful and Italy joined the forces of the Allies in May 1915. Although he lived in retirement after 1915, giving out very few public statements, the policy which Prince von Bulow advocated is generally conceded as largely responsible for the position of Germany at the opening of the World War in 1914. In his *Imperial Germany* (1914) which was translated into English in 1914 and revised in 1916 to omit many controversial statements, he defends his political principles. Consult Martin, *First Bulow and Kaiser Wilhelm* (Leipzig, 1909).

BURLARY INSURANCE. See INSURANCE.

BURMA. The largest and most easterly province of British India, since 1923, a governor's province under the Government of India Act of 1919. Area, 262,732 square miles, population (1921), 1,321,192. Rangoon, with a population of 345,505, is the capital of Lower Burma,

and Mandalay, with a population of 148,917, is the capital of Upper Burma. Politically, Burma is a province of British India, but geographically and socially, it may be regarded as a separate unit having little in common with India proper. In 1926-27 there were 433,302 students in 6885 recognized schools and colleges. Being almost entirely agricultural, it does not share the rest of the country's industrial ideas. Such industries as Burma has are those essential for the preparation of its products for the market—rice mills for husking rice, sawmills for squaring its teak, refineries for oil, and cotton gins. Rice mills alone make up about three-fifths of its total industrial activity. In 1927 there were 940 factories of all kinds with 101,353 employees. The principal crop is rice, two-thirds of Burma's agricultural area being given to its culture. In poor years, most of the crop is consumed locally, leaving but little surplus for export. Tin, tungsten ore, silver, and petroleum are mined. Oil production in 1929 reached 262,000,000 gallons, valued at \$17,850,000. The estimated revenue of the Government in 1927-28 was 1077 lakhs and the expenditure, 1229 lakhs (one lakh equals \$36,500 par). The railways of the province, 1908 miles in length, were taken over by the Government of India in January, 1929. The government is administered by a governor and local advisory council of 103 members. Governor in 1929, Sir Charles A. Innes.

BURROWS, TIF REE, WINFRED ORDEILD, BISHOP OF CHICHESTER. Died at his birthplace, London, Feb. 13, 1929. Born Nov. 9, 1858, he received high scholastic honors from Eton and Corpus Christi and Christ Church, Oxford. He became tutor at Christ Church, 1884, and was ordained two years later. As principal of the Leeds Clergy School, 1891-1900, he showed particular ability for administration and teaching. He was made vicar of Holy Trinity at Leeds in 1900, and transferred to St. Augustine, Edgelyaston, three years later, in order to aid Dr. Gore in organizing the Archdiocese of Birmingham of which Dr. Burrows served as archdeacon, 1904-12. He was consecrated Bishop of Tuoro in 1912. Having become associated with various central organizations, particularly the revision of the prayer book, Dr. Burrows was appointed to Chichester in 1919, where he could be in closer touch with administrative affairs.

BURTON, THEODORE ERIC, American legislator, died Oct. 28, 1929. He was born in Jefferson, Ohio, Dec. 20, 1851, and was graduated from Oberlin College in 1872. In 1875 he was admitted to the bar and began the practice of law in Cleveland, Ohio. Elected as a Republican representative from Ohio to the Fifty-first Congress in 1889, he served again from 1895 to 1899, and from 1921 to 1927. In 1909 he resigned from Congress to become United States Senator from Ohio for one term. He was a member of the executive council of the Interparliamentary Union from 1904 to 1914, and after 1921 he was on the executive committee. By the appointment of President Roosevelt, he was chairman of the Inland Waterways Commission in 1907-09, and in 1909-12 was created by Congress chairman of the National Waterways Commission. President Harding appointed him a member of the World War Debt Funding Commission in 1922, and he served as chairman of the United States delegation to the conference for the control of international traffic in arms at Geneva, Switzerland, in

1925 During 1911-15 he was president of the American Peace Society, and was reelected in 1925 He was the Stafford-Little lecturer at Princeton in 1919 and the Cutler lecturer at Rochester University in 1922 His books include *Financial Crises and Periods of Industrial and Commercial Depression* (1902), *Life of John Sherman* (1906); *Corporations and the State* (1911); *Some Political Tendencies of the Times and the Effect of the War Thereon* (1919); *The Constitution, Its Origins and Distinctive Features* (1923).

BUSINESS REVIEW. The year 1929 may, from a business standpoint, be roughly divided into three periods The first six months, or a little less, represented the closing of the great boom which occupied nearly the whole of 1928 The months from June to October represented a period of preliminary decline, with recession in nearly all staple lines November and December were months of definite depression following the financial panic which had become definitely recognized on October 23

During the first period, employment was full, production active, and exportation and general business at high point Indexes of industrial production, adjusted to allow for seasonal variations and published by the Federal Reserve Board (with the output of the years 1923 to 1925 as a base of 100), reached a climax in June when the index was 126 Thereafter there was a steady decline to 106 in November and in December During the second period, as thus indicated, transition had set in throughout the productive field It had however, not made itself definitely apparent in all lines, for building contracts did not reach their peak of 159, until July, when the recession had already started in productive enterprises Freight-car loadings on the other hand, were at top point in May, with an earlier recession, therefore, than was noted in either of the other lines All forms of activity were at low point in November The third period covering November and December and extending indefinitely into 1930, illustrated the reflex effects upon industry of financial breakdown added to the tendency to natural recession which had already made itself evident following upon the large industrial output of 1928

The accompanying table furnishes a review of the movement of business during the past few years and illustrates more clearly the generalizations which have just been set forth

INDEX OF INDUSTRIAL PRODUCTION
[Index numbers, adjusted for seasonal variations
1923-1925 average=100]

Month	1922	1923	1924	1925	1926	1927	1928	1929
January	73	100	100	105	106	107	106	117
February	76	100	102	105	107	109	109	117
March	80	103	100	104	107	111	109	119
April	77	107	95	103	107	109	109	122
May	81	107	89	103	106	111	109	123
June	86	105	85	102	107	108	106	125
July	86	103	83	103	107	106	109	124
August	84	102	89	103	111	107	112	123
September	88	100	84	102	112	105	114	121
October	94	99	94	105	111	103	114	117
November	97	97	97	106	108	99	112	106
December	100	86	101	108	105	89	113	
Annual index	85	101	95	104	108	106	111	

The changes which had thus shown themselves in production and transportation, as well as in building, were likewise observable in distribution Chain stores and retail enterprises generally be-

gan the year with very good results They, however, began to lose ground after the first few months, and toward the end of the year were suffering considerable depression, while employment, usually taken as an index of "general business" reached the lowest point for the year in November and December, when both the number of men employed and pay rolls were approximately at the same level as at the beginning of 1929 or slightly lower, according to date of composition Relatively speaking, this was a serious recession, and although "Christmas trade," stimulated by large dividend disbursements, bonuses to employees, and the like, showed a recovery so that it was generally spoken of as being as good as that of 1928, the actual receipts of many classes of stores showed quite decisive decline when analyzed for the whole period of depression

COMMODITY PRICES. At the opening of the year 1929, commodity prices had for some time past been regarded as distinctly stable They had not varied much from the level established by taking the year 1926 as a base or 100, over a period of about three years, for the average index at the beginning of 1929 was 97.2, indicating therefore a recession of less than three points in three years During the active business period to which reference has already been made, prices were fairly well maintained, and in July the index stood at 98 Recession to about the level of the beginning of the year occurred during August and September, and then followed the drop caused by the reflex effect of the panic with a reduction to 94.1 in November The actual index numbers for all commodities with comparative figures for 1927 and 1928 were as follows:

MOVEMENT OF WHOLESALE PRICES

	1926	1927	1928	1929
January		97.0	96.3	97.2
February	102	96.0	96.4	96.7
March	100	95.0	96.0	92.5
April	100	94.0	97.4	96.8
May	101	94.0	98.6	95.8
June	101	94.0	97.6	86.4
July	100	94.0	98.7	98.0
August	99	95.0	99.8	97.7
September	100	97.0	100.1	97.5
October	99	97.2	98.8	96.3
November	98	96.0	96.7	94.4
December	98	96.0	96.7	94.2

%

Further analysis of the wholesale price figures by groups shows that, taking the year as a whole, the commodities which yielded least to downward pressure were housefurnishings, building materials, finished foods, and fuels, while those which suffered most were farm products, hides and leather, textiles, and some of the metals Great price stability was shown by various groups of commodities which had fallen under the control of price-fixing organizations or groups Examples of this sort are conspicuously furnished by copper, which remained stable with a base price of 18 cents (though with fluctuations above that figure for a short time but none below it) Similar price-fixing had made itself apparent in certain parts of the steel trade in alcohol and in paint materials, in tobacco (manufactured), and in a variety of other articles On the other hand, agricultural products which, at about the beginning of the year, appeared to have an excellent prospect of stability or even of gain in prices, particularly in view of the activity of the so-called Farm Relief Board with its stabil-

izing programme, and which had reached an average of 107 or better in July and August under the influence of the Board, suffered severely from the panic and dropped to 101.

Toward the close of the year, the success of price-fixing began to be doubted in a good many branches of business, due to the belief that the maintenance of high prices was "holding up," or reducing, consumption. Relaxation was thus unavoidable here and there, and secret price cutting began to manifest itself. The inevitable result was a reflex effect upon the general average, so that, although the general average as just seen reveals only a very moderate fluctuation, the truth is that when individual commodities are considered, the year 1929 was really a period of considerable disturbance in prices. This disturbance was aggravated by the fact that some commodities, such as rubber, which had previously been price fixed, now for the first time succeeded in regaining a free market.

MANUFACTURING. Manufacturing establishments began the year with a very high percentage of activity and maintained it during the early months of the year. The general average for 1928 had been 110, but January, 1929, showed a continuation of the sharp increase that had begun in the last third of 1928, the index for that month being 117. A steady climb to the figure of 126 in June, already cited, made the first six months of the year a memorable period with an output fully as great, if not greater, than that which had been attained during the World War by the exercise of utmost social pressure. This increase was rendered possible by the fact that, during the intervening years, so much progress had been made in developing new methods of labor organization, factory adjustment, and, to some extent, industrial discovery or method. Manufactures as such (apart from general industrial production) showed an especially great gain with an increase of 28 per cent in June over the 1924-25 base. Business was conspicuously good in iron and steel which established a remarkably high record for the year, with an index of 155 in June. High records were also made in textiles, paper and printing, automobiles, cement, petroleum, and rubber. Industries which lagged behind were foods and a few others. Coal showed lack of demand and inability to gain ground, and the same was true of silver and several other mineral products. Remarkable expansion occurred in the automobile industry which was estimated to have produced 5,500,000 units for the year (including both commercial and passenger types). See AUTOMOBILES. Retail trade showed very high figures of gain, and as already noted lost ground only relatively little at the end of the year, being held to a high average by large "holiday" buying. Factory employment and pay rolls held their own relatively better than output.

AGRICULTURE. Agriculture on the average succeeded in turning out a crop of practically normal proportions. The usual variations in anticipated output were announced during the year, but on the whole, the general condition was not far from normal. During the forepart of the year, weather conditions were pretty generally favorable, but the intense heat and dry weather of the summer impaired the output of some of the Northern crops and fruit and produce generally suffered shrinkage. The total value of 50 principal crops, as estimated by the Department of Agriculture, was \$8,580,000,000 against a figure for the

preceding year of \$8,456,000,000. See AGRICULTURE.

The situation as to the values of principal crops may be reviewed as follows:

Crop	Production	Value
Corn	2,622,189,000 bus	\$2,048,134,000
Oats	138,654,000 "	518,445,000
Cotton	14,919,000 bales	1,225,082,000
Cottonseed	6,840,000 tons	201,096,000
Barley	307,105,000 bus	168,807,000
Apples	139,754,000 bla	184,107,000
Oranges	31,100,000 bxs	469,201,000
White potatoes	757,451,000 bus	120,525,000
Wheat	806,508,000 "	840,921,000
Hay	114,639,000 tons	1,349,000,000
Tobacco	1,500,891,000 lbs	285,583,000

The one-crop system which had been so injurious in the Northwest showed signs of change through the introduction of diversification, dairying, and the like. The result was to continue the improvement of business in the agricultural regions, and to strengthen the general position of the farmer, particularly in his financing. A decline of indebtedness and a larger settlement of mortgage obligations was the result. Although bank failures were numerous during the year, the number of them in the country districts was considerably reduced, as compared with the preceding year.

GENERAL BUSINESS. General business was distinctly more profitable during 1929 than during the year 1928. Corporate earnings for the first six months of the year showed great increase. For the last two months of the year, decided recession occurred, but it was not sufficient to offset the gains which had already taken place, so that a great many corporations reported marked gains in their earnings for the year, as compared with 1928. These earnings were naturally very irregularly distributed, but it may fairly be said that there was a fairly general advance in some proportion over the entire field. The railroads, for example, reported an increase of earnings which amounted to about 71 per cent, while industrial earnings in some cases doubled those of 1928 and in other cases showed more moderate, but still great, advance. Complications made by certain bank statisticians of the earnings of business corporations showed a gain, as compared with 1928 amounting to approximately 16.8 per cent. High prices and a greater degree of price stability helped a good many enterprises during the forepart of the year, while recessions which occurred in November and December tended to cut away some portion of these gains but still left marked advances for the 12 months as a whole.

BUSINESS FAILURES. During the past few years, business failures have been a serious feature of the industrial situation, and it was an especially favorable factor in the operations of 1929 that a very distinct decline made itself apparent during the first, second, and third quarters. In the fourth quarter, the reflex effect of the panic began to bring into difficulty enterprises which had been on the verge of collapse or failure but had previously kept clear of it, and there was a marked increase during December both in the number and amount of liabilities involved. It was also to be noted that, in spite of the decrease in number of failures, liabilities involved for the year as a whole were larger in the second and fourth quarters, so that an analysis of the year presents a fairly "spotty" situation. Bank failures also

TOTAL NUMBER OF COMMERCIAL FAILURES IN THE UNITED STATES AND DOMINION OF CANADA, WITH ASSETS AND LIABILITIES, FOR FOUR YEARS.
AS REPORTED TO BRADSTREET'S

	Number of Failures					Assets					Liabilities				
	1929	1928	1927	1926	1925	1929	1928	1927	1926	1925	1929	1928	1927	1926	1925
New England states	2,462	2,383	2,275	2,279	2,279	\$ 13,892,401	\$ 14,184,826	\$ 16,981,066	\$ 17,746,591	\$ 42,350,255	\$ 39,065,612	\$ 45,590,488	\$ 40,832,503	\$ 40,832,503	
Middle states	5,348	5,570	4,435	4,452	4,452	76,858,133	46,521,157	69,235,118	47,165,494	187,591,819	128,861,382	139,244,748	109,980,954	109,980,954	
Western states	4,229	4,537	4,478	4,166	4,166	57,986,230	82,150,869	75,146,693	61,728,112	98,726,626	108,583,119	124,134,134	109,643,990	109,643,990	
Northern states	1,457	1,454	1,911	2,111	2,111	23,395,619	32,073,770	47,391,395	89,885,489	40,365,597	50,260,249	79,936,205	149,363,312	149,363,312	
Southern states	4,208	4,295	5,178	4,937	4,937	148,531,008	108,078,300	151,833,474	146,212,071	202,908,452	162,928,502	218,613,158	224,920,630	224,920,630	
Far western states ..	1,999	2,131	1,990	2,079	2,079	30,546,259	15,373,230	24,491,115	16,992,131	57,047,984	30,904,065	47,606,197	32,583,931	32,583,931	
Totals, United States	19,203	20,370	20,267	20,024	20,024	351,149,650	278,382,152	385,048,801	379,709,818	628,990,633	517,603,929	653,180,925	655,223,320	655,223,320	
Y C, Man &	1,936	1,459	1,096	1,141	1,141	32,011,127	9,873,925	9,943,705	9,763,306	69,940,504	32,400,623	27,170,685	32,433,462	32,433,462	
Canada and Newfoundland	1,131	1,874	2,016	2,106	2,106	29,211,174	14,219,852	10,668,801	11,868,750	59,833,295	36,565,384	26,288,262	26,422,743	26,422,743	

took an upward trend although the distribution was different from that of 1925 and the small banks were less seriously affected than before
See also FINANCIAL REVIEW

BUSSES See AUTOMOBILES

BUTTER See DAIRYING

BYRD, RICHARD EVELYN, EXPLORATION OF
See POLAR RESEARCH, GEOGRAPHICAL SOCIETY, NATIONAL

CADMIUM See CHEMISTRY, INDUSTRIAL

CAISSONS See FOUNDATIONS

CALENDAR REFORMS. See RUSSIA, under

History

CALIFORNIA Population According to the Fourteenth Census, the population of the State on Jan 1, 1920, was 3,420,801. The estimated population on July 1, 1928, was 4,556,000. The capital is Sacramento

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929

Crop	Year	Acreage	Prod Bu	Value
Oranges	1929	23,600,000		\$94,400,000
	1928	38,705,000		79,345,000
Grapes	1929	1,751,000		46,445,000
	1928	2,366,000		55,738,000
Hay	1929	1,973,000		86,657,000
	1928	1,804,000	5,284,000	75,528,000
Barley	1929	992,000	29,364,000	20,554,000
	1928	1,044,000	31,812,000	22,926,000
Dry beans	1929	334,000	5,075,000	25,121,000
	1928	307,000	5,325,000	21,430,000
Wheat	1929	680,000	12,240,000	14,688,000
	1928	780,000	16,380,000	19,328,000
Peaches	1929	17,547,000		18,283,000
	1928	25,752,000		12,559,000
Cotton	1929	309,000	242,000	21,780,000
	1928	218,000	172,000	16,770,000
Rice	1929	95,000	6,222,000	6,573,000
	1928	132,000	8,171,000	7,190,000
Potatoes	1929	75,000	5,250,000	7,750,000
	1928	56,000	7,728,000	5,021,000
Corn	1929	82,000	2,542,000	2,847,000
	1928	75,000	3,400,000	2,520,000
Sweet potatoes	1929	10,000	990,000	1,436,000
	1928	12,000	1,152,000	1,267,000

* Boxes * Tons * Bales

MINERAL PRODUCTION The total value of the mineral product of the State for 1927 was \$459,470,570, for 1926, \$524,282,257. The production of petroleum, in which the State held second rank, and which contributed more than half of the above totals was well maintained in 1928, but because of a lower estimated value at the wells, it contributed less to the value aggregate of the State's mineral industries. There were produced in California in 1928 231,982,000 barrels of petroleum, in 1927 231,196,000, but the value of the product for 1927 was \$260,735,000 while for 1928 it was estimated at but \$241,500,000. With a view to preventing the wasteful exploitation of petroleum and the depression of its price below reasonable levels, important public action was taken in 1929 to limit production. Important in the production of the allied metals gold, silver and copper, the State mined these in 1928 on a somewhat decreasing scale. The combined value of gold, silver, copper, and lead produced in California in 1928 was \$15,381,783, or 9 per cent less than the value of 1927. The decrease was chiefly in gold the most important component of the totals. The value of gold mined in 1928 was \$10,785,315; in 1927, \$11,071,018. The quantities were 1928, 521,739 fine ounces, 1927, 564,585. The decline took place entirely in the placer mines, of which the production fell to 234,649

fine ounces for 1928, from 282,380 for 1927. The lode mines made a slight increase of production to 287,090 fine ounces for 1928, and the tonnage of ores rose, although the number of operating lode mines, as well as of placers decreased. The silver production of 1928 was 1,478,771 fine ounces, in value, \$865,081, that of 1927, 1,020,242 ounces, \$918,677. Copper was produced to the amount of 25,150,743 pounds, in value, \$3,621,707 in 1928, of 27,133,008 and \$3,554,424 in 1927. Lead, to the quantity of 1,981,037 pounds, value \$109,680 in 1928, and of 2,718,014 pounds, \$171,235 in 1927. The cement industry was less active in 1928, producing 13,452,221 barrels, as against 14,580,654 for 1927, cement shipments attained the value of \$25,552,069 for 1928, for 1927, of \$26,623,396. The stone production of 1927 was 9,764,740 short tons, valued at \$9,963,051. That of sand and gravel attained the value of \$8,045,257, clay products, \$20,907,988. Natural gas production was 212,264,000 M cubic feet, valued at \$50,946,000, as against 204,015,000 M, in value \$36,425,000 for 1926. Despite the abundance of petroleum, the production of natural-gas gasoline rose in 1928 to 545,200,000 gallons, from 498,020,000 for 1927 its value total fell to \$50,866,000 (estimated) from \$52,436,000.

The total value of gold, silver, copper, lead, and zinc produced from ore mined and treated in California decreased from \$15,381,783 in 1928 to about \$14,998,700 in 1929 according to preliminary figures of the U. S. Bureau of Mines. No zinc ore was mined in the State in 1929 though a small quantity of zinc was recovered from treating lead-silver ores mined in Inyo County. Copper was the only metal to make an outstanding increase in its yield compared with 1928 and its gain in value practically offset the loss in the gold yield recorded in 1929. The value of the gold recovered from lode and placer mining in 1929 was estimated at about \$8,392,800, compared with a value of \$10,785,315 in 1928. It is probable that this decrease occurred in both lode gold and the gold won by the dredges, as most of the companies usually considered in the class of the largest ten gold producers of the State decreased their output. In Trinity County, three dredges were working, as compared with two in 1928. Water conditions were unfavorable for hydraulic mining and though some public interest in drift mining was evidenced, the gold by this method of mining again remained small. The quantity of silver mined and treated in California decreased from 1,478,771 ounces in 1928 to about 1,066,100 ounces and the value from \$865,081 to \$569,300. The production of copper in California increased from 25,150,743 pounds in 1928 to about 33,255,500 pounds in 1929 and the value from \$3,621,707 to \$5,952,700. Copper ore in the State is mined chiefly in Plumas, Shasta, Calaveras, and Trinity counties and, with the exception of Trinity, these counties all increased their output in 1929. The output of lead in California decreased from 1,981,037 pounds in 1928 to about 1,274,000 pounds in 1929 and the value from \$109,680 to \$80,900. Mining of lead and lead-silver ores was not so active in 1929 as in 1928 and the number of miscellaneous shippers from Inyo and San Bernardino counties decreased. The small quantity of by-product zinc reported in 1929 came from the milling of lead-silver ore and probably did not exceed 50,000 pounds.

FINANCE State expenditures in the year ended June 30, 1928, as reported by the United States Department of Commerce, were for maintenance and operation of governmental departments, \$64,404,531 (of which \$24,100,162 was for local education) for conducting public-service enterprises \$2,558,923, for interest on debt \$4,851,646, for permanent improvements \$17,216,047, total, \$81,031,147 (of which \$15,796,198 was for highways \$1,976,297 being for maintenance and \$10,819,901 for construction). Revenues were \$102,729,699. Of these, although no general property tax was levied in 1928, the category of property and special taxes furnished 19.3 per cent, departmental earnings and remuneration for officials' services, 6.5 per cent, license sales, 60 per cent (including gasoline taxation of \$15,447,544). The State debt, total \$116,159,817, net \$115,614,867, included \$64,725,000 for highways, but was exclusive of the State's contingent obligation for local drainage indebtedness assessable against benefited areas.

TRANSPORTATION The total number of miles of railroad line in operation on Jan. 1, 1929, was 8230.61. There were built in 1929, 113.69 miles of first, 11.90 of second, 1.62 of third, and 1.63 of fourth or other track.

MANUFACTURES According to the Federal biennial Census of Manufactures published by the U. S. Department of Commerce in 1929 and dealing with operations of 1927, there were in 1927, in the State 10,066 manufacturing establishments. These employed 262,816 wage earners, whose wages for the year totaled \$378,321,461. Materials and supplies used in production cost \$1,504,655,953. Manufactured products attained the combined value of \$2,593,947,224.

EDUCATION An important step toward the fuller organization of public education in the State was the action taken by the Legislature in codifying the school laws. The policy of the central educational authority was largely bent on organizing means to meet specific needs of individuals in the diverse stages of education.

The enrollment of pupils in the public schools of the State as of June 30, 1928 was Kindergarten, 77,139, elementary schools, 677,701, junior high schools, 97,886, high schools, 435,401, junior-college districts, 10,787. Current expenditures for public school education in 1927-28 were \$109,997,878 while capital outlay expenditures amounted to \$33,897,032. Salaries of teachers averaged Kindergarten, \$1745, elementary schools, \$1754, junior high schools, \$2302, high schools, \$2421, junior-college districts, \$2729.

CHARITIES AND CORRECTIONS Created in 1927, a State Department of Social Welfare cooperating with other institutional bodies, performed duties of inspection with regard to two State prisons, the county jails, six State hospitals, county hospitals, three training schools and numerous homes for children, the aged, and the disabled. Among the chief State institutions were Agnew State Hospital at Agnew, Industrial Home for the Adult Blind, Oakland, Mendocino State Hospital, Talmage, Napa State Hospital, Imola, Norwalk State Hospital, Norwalk, Patton State Hospital, Patton, Pacific Colony, Padra, Nonoma State Hospital, Eldridge; Stockton State Hospital, Stockton, Ventura School for Girls, Ventura; Whittier State School, Whittier, Preston School of Industry, Tione, State prisons at Folsom and San Quentin.

LEGISLATION The Forty-eighth State Legislature met in regular biennial session on January 7 and adjourned on May 15. Important fiscal measures were passed, including the tax difficulties that had arisen in the biennium. One of these was a bank and corporation income tax of 4 per cent, and another was a measure providing for the taxation of intangible securities and solvent credits. This enactment placed a tax of two mills to the dollar on the actual value of such intangible securities as notes, debentures, shares, bonds, trust deeds, and mortgages and a tax of one mill on solvent credits. As to the estimate of Senator Nelson, the bill, more than \$7,000,000,000 of intangible securities that had escaped taxation under earlier law would become available for taxation under the statute. It went into effect on the first Monday in March. The receipts from this tax were to go to the benefit of the counties. By enactment, the State inheritance tax was reduced, through the increase of exemptions and the diminution of rates. It was enacted, for the more general collection of the personal property tax, that those registering automobiles must present proof that they had paid taxes on their cars. A constitutional amendment proposition to the same purpose, provided for the collection of the county personal-property taxes on automobiles by the State.

Legislation was provided to commit the State to the obligations of the six-State compact for a Colorado River dam. In order to render the development of the State road system subject "to traffic pressure, not political pressure," a resolution provided for the States' abstention from any additions to its highway system until the Legislature of 1931 and for the survey of the road needs. In the meantime by the State Department of Public Works. A budget bill carrying \$244,968,253 of appropriations for the ensuing two years was enacted. In a new motor-vehicle code, a State police force was created for the specific purpose of enforcing the law as to automobile traffic, and this body became the effective arm for the maintenance of "uniform traffic" throughout the State, save for the where the local police forces maintained control. A series of measures provided for the construction of a bridge between San Francisco and Alameda counties and for the creation of a California Toll Bridge Authority to acquire and construct toll bridges. By statute, the permission was given to San Francisco and San Mateo counties to unite through annexation by San Francisco, if both should so agree. A so-called 24-hour school law, which was enacted, authorized school districts to establish 24-hour schools where misbehaving children might be kept all the time, either upon the request of parents or by court order. An unusual law reaching the statute books was that requiring firms that collected percentages of their employees' tips to post public notice of the fact. A measure authorizing a \$10,000,000 bond issue for the improvement of San Francisco Harbor was passed. Legislation was passed to promote more orderly development of oil fields by co-operation among operators.

The State Attorney General reached and tried Superior Judge Charles H. ... of Los Angeles on a charge of misconduct in office. The charge dealt with his alleged receipt of a gift of \$2500 from the evangelist, Aimee Semple McPherson, at a time when she was herself facing legal proceedings with

regard to a sensational matter. The Judge was impeached by a vote of 57 to 18 in the Assembly. After a trial that aroused much popular excitement, the Senate acquitted him.

POLITICAL AND OTHER EVENTS A new law for the curtailment of waste of natural gas at wells within the State went into effect in June, but its full enforcement was expected to become possible only after a lapse of time, to allow producers to set up the means of re-pressuring and storing escaping gas. Suit was brought to trial in October to invalidate the law on behalf of operators who were bound, it was alleged, by their leases to continue drilling, a proceeding incompatible with observing the law. The overproduction of petroleum and likewise of natural gas prompted the movement in the State to limit the output of both commodities. With regard to petroleum, the so-called Kettleman Hills agreement of 1928, limiting and prorating the output of the Kettleman Hills field, continued in force, with the support of favorable legislation of the session of 1929. Restrictions, however, did not prevent the rise of the State's petroleum production to a new daily average of nearly 880,000 barrels in July. The State government made unavailing efforts to reach an agreement with Arizona such as would permit of the construction of the Federal dam on the Colorado River, much desired by Los Angeles and the southern California interests. The construction of State buildings for a new Teachers' College at San Diego, to cost \$640,000, was begun in October.

Although the State's Wright Act, provided for the automatic acceptance into the State's prohibition law of any subsequent amendments of the Federal Prohibition Enforcement Law, the Federal Jones Law was declared inapplicable in California, by decision of a Superior Court judge in Orange County. He held that, as the State constitution vested the lawmaking power in the Legislature, it could not divest itself by delegating to the Federal Legislature the power to make laws that would automatically apply in the State. By decision of the State Supreme Court, the execution of five convicts held responsible for the murder of 18 persons in the outbreak at the Folsom State prison on Thanksgiving Day, 1927, was ordered, after protracted legal process.

Desire to tap the State's traffic prompted endeavors of certain railroads to extend their lines into its territory, but such efforts were opposed in the courts and before the Interstate Commerce Commission, notably in the case of the Great Northern system's project to build into northern California and in track construction of the Southern Pacific near San Mateo, threatening to parallel the Western Pacific. The year was an unusually dry one, and this condition had the effect of intensifying the barrier across the upper part of the bay to shut out the salt water which, owing to the lack of fresh water discharge from the Sacramento River, invaded the irrigation ditches of the Sacramento Delta. Grape shippers were affected by a District Court of Appeals decision overthrowing a law of 1927 to regulate the size of containers for their product. An active State campaign against the entrance of the Mediterranean fruit fly into California was maintained.

A leading interest of San Francisco, that of connecting the city with the mainland by a series of bridges, made progress by the completion on March 2 of the San Francisco Bay Bridge. This

structure crosses the Bay between a point east of San Mateo and the mainland shore near Mount Eden. It is 7.1 miles long, cost approximately \$7,500,000, and was constructed by a private company as a highway toll bridge. With regard to two bridges between the mainland and San Francisco proper, the projected Golden Gate Bridge and Alameda Bridge, conferences were held with Federal authorities, but the objections of the latter on the score of difficulty to navigation that might ensue were maintained. President Hoover and Governor Young jointly selected a San Francisco Bay Bridge Commission to conduct a survey of the subject. The Pacific Gas and Electric Company started in February the construction of a 250-mile pipe line to convey natural gas to the bay region from Kern County.

The transit problem of Los Angeles dealt with by the State Railroad Commission, which ordered a prolongation of the temporary system of experimental fares on the Pacific Electric Railway lines, but allowed increases in some of the fares previously applied. The commission moved to appeal to the United States Supreme Court against the decision rendered by a Federal District Court in October, 1928, allowing the Los Angeles Railway to collect a seven-cent fare. The Los Angeles Board of Education voted to build a junior college. A factory of the Fokker Airplane Company and a \$1,500,000 automobile assembly plant were opened within the Los Angeles industrial district.

OFFICERS. Governor C. C. Young, Lieutenant-Governor, H. L. Carnahan, Secretary of State, Frank C. Jordan, Treasurer, Charles G. Johnson, Comptroller, Ray L. Riley, Attorney-General, U. C. Webb, Adjutant-General, Richard R. Mittelstaedt, Surveyor-General, W. S. Kingsbury, Superintendent of Public Instruction, William J. Cooper, Director of the Department of Education, G. H. Hecker.

JUDICIAL. Chief Justice William H. Waste, Associate Justices, William H. Langdon, John W. Preston, Jesse W. Curtis, Emmet Sewell, John E. Richards, John W. Sheek.

CALIFORNIA. UNIVERSITY OF. A educational institution of higher learning in Berkeley, Calif., with branches in various parts of the State. University of California at Los Angeles, with the colleges of letters and science and education, branch of the college of agriculture at Davis, citrus experiment station and graduate school of subtropical horticulture at Riverside, Scripps Institution of Oceanography at La Jolla, Lick Observatory at Mount Hamilton, and agricultural stations near San José and Cotona and in the Imperial Valley. The number of full-time resident students in courses leading to degrees on Nov. 1, 1929, was 16,827, of whom 8339 were men and 8488 were women. The enrollment in the university extension division in 1928-29 was 38,583 in classes and 5805 in correspondence courses. At the beginning of the autumn term, there were approximately 2000 members on the regular teaching staff and 700 on the extension staffs. The endowment funds for 1928-29 amounted to \$14,312,551, while the income from them was \$601,926. The total income for the year was \$14,906,799, gifts totaled \$2,128,310. The library contained approximately 1,100,000 volumes.

During the summer of 1929, the colleges in Los Angeles moved to the new site of the university,

consisting of 365 acres on which had been erected five buildings at a cost of \$3,250,000. On the Berkeley campus, the Life Science Building was completed at a cost of approximately \$2,000,000. Buildings under construction, to be completed in 1930, included Kerekhoff Hall, a student union at Los Angeles, estimated to cost \$500,000, Gamm Hall for the college of agriculture, \$500,000, a student infirmary, above \$500,000, a civil engineering building, \$400,000, and the International House, \$1,500,000. William Wallace Campbell, Sc.D., LL.D., president of the university, announced at commencement, 1929, his retirement to take effect July 1, 1930. He was to be succeeded at that time by Robert Gordon Sproul, B.S., LL.D., vice president of the university.

CAMBODIA. A French protectorate of Indo-China lying to the north of Cochin-China, west of Annam, and south of Laos and Siam. Area, 67,550 square miles, population at the census of 1926, 2,535,178, of whom 1901 were Europeans (excluding the military forces). Phnom-Penh, with a population of 81,712, is the capital and chief town. There are 171 French schools, including one college and one professional school, with a total of 12,000 pupils. In 1927 there were 1209 miles of good metalled roads and 1160 miles in course of construction. The soil is very fertile, but only a comparatively small area is under cultivation. The chief product is rice, its annual export amounting to about 250,000 tons. The other products include cotton, pepper, kapok, salt fish, hides, cattle, coffee, sugar, and iron. The imports of 1926 were valued at 68,009,173 francs and the exports, at 26,233,000 francs. The budget for 1928 balanced at 11,839,969 piastres. Nominal King, Monivang, who succeeded his father Aug. 9, 1927. Cambodia is one of the five component states of French Indo-China. It is famous for its ruins of ancient civilizations, particularly those of Angkor. See FRENCH INDO-CHINA.

CAMEROON or **CAMEROONS** See KAMFRUN.

CAMP FIRE GIRLS. An organization primarily for the adolescent girl. Its purpose is "to seek beauty, give service, pursue knowledge, be trustworthy, hold on to health, glorify work, and be happy." The programme evolved to carry out these aims has been planned to take care of the out-of-school time of girls. It makes use of symbolism, ceremony and ritual and includes practically every wholesome activity which would naturally engage the interest of the young girl. Each girl, upon joining, selects a name for herself which expresses some ambition or ideal. The activities of Camp Fire are grouped under the seven crafts, which form the basis of the system of honors and awards: Home, health, hand, camp, nature lore, business, and patriotism and citizenship. Distributed among these crafts are about 700 honors which the girl may earn as steps toward the winning of the three progressive ranks. The rank of wood gatherer typifies loyalty to organization and group, of fire maker, the ideal of wider loyalty to mankind and God, and of torch bearer, the highest rank, the desire to pass on undimmed to others that light which has been given to her. All symbolize the taking on of certain responsibilities and the carrying out of certain desires.

As a special project for 1929, Camp Fire girls planted gardens and flowers to grow in their homes. Interest in garden making led to many related activities, such as beautifying unsightly

spots in the community; planting, caring for, and cultivating service gardens for hospitals, schools, and playgrounds, making wild-flower gardens at camp, holding flower shows and exhibits of wild flowers; advocating the conservation of wild flowers, and growing flowers for shut-ins and for sale. The interest aroused in such a special yearly project carries over into the general programme of the following year. The 1927 project, for instance, which resulted in the planting of more than 200 000 trees by Camp Fire girls, led to the adoption of a permanent national honor for planting trees

3,542,049 square miles, of which 560,000 square miles is suitable for agricultural or pastoral purposes. The water area is 142,674 square miles. Canada consists of nine provinces, each with its own parliament and administration, and two territories, viz., the Northwest Territories and Yukon Territory, each under a commissioner, assisted by a council. According to the census of 1921, the total population was 8,788,483, as compared with 7,206,643 in 1911.

The accompanying table shows the areas of the provinces, etc., and the population at recent censuses.

AREA AND CENSUS POPULATIONS

Province	Land area sq miles	Water area sq miles	Total area sq miles	Population, 1901	Population, 1911	Population, 1921
Prince Edward Island	2,184		2,184	109,259	98,728	88,615
Nova Scotia	21,068	360	21,128	459,574	492,718	521,877
New Brunswick	27,911	71	27,985	371,120	551,889	587,876
Quebec	690,865	15,060	706,834	1,648,898	2,005,776	2,361,190
Ontario	365,880	41,982	407,262	2,182,947	2,527,292	2,933,662
Manitoba	231,926	19,906	251,832	255,211	461,394	610,118
British Columbia	243,381	8,319	251,700	178,657	392,480	524,582
Alberta	252,925	2,360	255,285	77,022	374,295	588,454
Saskatchewan	353,416	2,439	355,855	91,279	492,432	757,510
Yukon	206,427	649	207,076	27,219	8,512	4,157
Northwest Territories	754,522	7,500	762,022			
	218,460	9,700	228,160	20,129	6,507	7,988
Royal Canadian Navy	493,225	74,265	527,490			485
Total	3,654,200	142,923	3,797,123	5,771,115	7,206,643	8,788,483

In 1928 Camp Fire girls made and donated thousands of garments to the American Red Cross and the Needlework Guild to replenish their emergency supplies which had been depleted by the catastrophes of the year. The Needlework Guild reported that continued interest was aroused during 1929 in making garments for that organization.

The membership of the organization in 1928 was approximately 208,078, including 157,982 Camp Fire girls and guardians and 32,284 Blue Birds, the youngest members. During the school year of 1927-28 and the summer of 1928, 103 Camp Fire training courses were given in colleges, universities, and normal schools or conducted independently. There was a registered enrollment of 2847, with 2054 graduates. During the summer of 1929, 16,000 Camp Fire girls attended more than 100 classes in camps (camps having an attendance of 25 or more), while thousands of others went camping in small groups with their leaders.

At the National Council of Camp Fire Girls which met Sept. 5-7, 1929, at Omaha, Neb., Miss Florence Hughes was elected president, Jay B. Nash of New York, first vice president, Dr. Joseph Ravicoff of Princeton, N. J., second vice president, Dr. Myron T. Scudder of New York, treasurer, and Lester F. Scott, secretary and national executive. The organization publishes *Everygirl's*, a monthly magazine for girls, and *The Guardian*, a resource for guardians, which is published monthly except during July and August. The national headquarters are at 41 Union Square, New York City.

CANADA. A dominion of the British Empire in North America bounded on the north by the Arctic Ocean, on the south by the United States, and on the east and west by the Atlantic and the Pacific oceans, respectively. Capital, Ottawa.

AREA AND POPULATION. The total land area of Canada, revised according to the Labrador Boundary Award of 1927, was estimated at

The population of Canada as estimated by the Dominion Bureau of Statistics was 9,796,800 on June 1, 1929. By provinces and territories, the population was estimated as follows: Prince Edward Island, 86,100; Nova Scotia, 550,400; New Brunswick, 419,300; Quebec, 2,690,400; Ontario, 3,271,300; Manitoba, 663,200; Saskatchewan, 866,700; Alberta, 646,000; British Columbia, 591,000; Yukon Territory, 3000; and Northwest Territories, 9400. The figures include about 105,000 Indians and about 6000 Eskimos widely scattered throughout northern Canada. More than 55 per cent of the population is of British origin, 28 per cent is of French origin and other European stocks constitute slightly over 14 per cent. The proportion of British stock is highest in Ontario and the Maritime Provinces, of French stock, in Quebec and New Brunswick, and of other European stock, in the prairie provinces.

The principal cities with populations in 1921 and in 1927 (in parentheses) were Montreal, 618,506 (989,835); Toronto, 521,893 (556,691 in 1926); Winnipeg, 179,087 (198,932); Vancouver, 117,217 (128,350); Hamilton, 114,151 (123,359 in 1926); Ottawa, 107,843 (125,496 in 1929); Quebec, 95,193 (131,071); Calgary, 63,305 (72,500); London, 60,559 (64,293 in 1926); Edmonton, 58,821 (67,083); Halifax, 58,372; St. John, N. B., 47,166 (60,000); Victoria, 38,727 (38,750); Windsor, 38,601 (61,095 in 1926).

The accompanying table from the *Canada Year Book* for 1929 shows the vital statistics of the population for recent years.

Immigrants entering Canada during the year ending Mar. 31, 1929, numbered 167,722, of which 58,880 came from the United Kingdom, 30,560 from the United States, and 78,282 from other countries. Canadians returning from the United States during the same year numbered 33,798. The U. S. State Department announced in February, 1929, that of the 392,668 Americans resident abroad, two-thirds were in Canada. Immi-

SUMMARY OF BIRTHS, MARRIAGES, AND DEATHS

	Years	Births	Birth rate per 1000	Marriages	Rate per 1000	Deaths	Rate per 1000	Excess of births over deaths	Rate natural increase per 1000
Canada (registration area)	1922	164,194	25.1	47,811	7.3	69,028	10.5	95,166	14.5
	1923	156,897	23.7	49,102	7.4	70,182	10.6	86,834	13.1
	1924	157,595	23.4	47,516	7.1	66,197	9.8	91,398	13.6
	1925	154,509	22.6	47,151	6.9	66,419	9.7	88,090	12.9
	1926	150,040	24.8	48,743	7.1	70,067	9.0	79,973	13.0
	1927	150,541	22.1	50,914	7.4	68,970	10.0	81,571	11.8
Quebec *	1921	88,749	37.6	18,659	7.9	33,443	14.1	55,316	23.4
	1922	88,377	35.1	16,609	6.5	33,469	13.3	54,918	21.8
	1923	83,579	32.2	17,861	6.3	35,148	13.6	48,431	18.6
	1924	86,930	35.1	17,591	7.1	32,356	13.0	54,574	22.0
	1926	82,165	32.1	17,827	7.0	37,251	14.5	44,914	17.9
	1927	83,064	31.9	18,551	7.1	36,166	13.9	46,898	18.0
Canada (exclusive of the Territories) .	1921	257,728	29.3	69,732	8.0	101,155	11.6	156,573	17.8
	1922	252,571	27.5	64,420	7.1	102,487	11.3	150,084	16.5
	1923	240,476	26.1	66,463	7.2	105,330	11.4	135,265	14.7
	1924	244,525	26.5	65,129	7.1	98,553	10.7	145,972	15.8
	1926	232,205	24.8	66,570	7.1	107,318	11.4	124,887	14.9
	1927	233,605	24.6	69,456	7.3	105,136	11.1	128,469	13.5

* Rates for Quebec have been calculated on provincial estimates of population

grants to Canada during 1927-28 were divided as to nationality as follows

British-English	33,282
United States of America	21,066
Scottish	17,197
German	15,222
Ruthenian	10,189
Irish	11,722
Polish	6,987
Hungarian	5,421
Finnish	4,577
Jewish	4,766
Slovak	3,734
Norwegian	5,677
Italian	3,783
Swedish	3,891
Yugoslav	1,469
Belgian	2,249
Dutch	2,466
Scandinavian Danish	4,119
Welsh	2,073
Croatian	907
Russian	1,132

Up to the end of 1928, 2669 families, comprising 14,916 persons, had been settled in Canada under the Empire Settlement Act.

with the provinces contain the latest available statistics on education for those provinces. Statistics for Canada as a whole are given in the accompanying table. In the academic year ending in 1927, there were 2,291,763 pupils in attendance at Canadian educational institutions, or 24.1 per cent of the estimated population of the Dominion in 1927.

Higher education in Canada is carried on in 23 universities and 85 colleges, including 22 classical colleges in Quebec. Of the universities, six are state controlled (New Brunswick, Toronto, Manitoba, Saskatchewan, Alberta, and British Columbia), four are undenominational (Dalhousie, McGill, Queen's, and Western), while the remainder are denominational. The 23 universities had 4126 professors, etc., and 42,546 students in 1926-27 and the 85 colleges had 19,678 students enrolled in the same year. Some of the better known denominational colleges include Kings, Acadia, and St. Francis Xavier in Nova Scotia, Mt. Allison in New Brunswick, Laval and Bishop's College in Quebec, and McMaster and Ottawa in Ontario.

DOMINION OF CANADA EDUCATIONAL STATISTICS—1927

Provinces	Year Ended	Schools *	Teachers	Pupils	Expenditure Dollars
Ontario	Dec 31, 1926	Elem {			
	June 30, 1927	Sec {	7,555	18,842	686,285
Quebec	June 30, 1926		7,892	19,558	502,365
Nova Scotia	July 31, 1927		1,769	3,305	112,556
New Brunswick	June 30, 1927		1,485	2,533	80,690
Manitoba	June 30, 1927		2,000	4,096	118,763
British Columbia	June 30, 1927		1,074	3,511	105,008
P. E. Island	June 30, 1927		474	615	17,310
Alberta	June 30, 1927		3,124	5,360	151,292
Saskatchewan	June 30, 1926		4,686	7,779	213,404
Total			30,008	65,669	2,017,573
					125,876,375

* Where possible the number of schoolhouses is given, and elsewhere the number of school districts with schools in operation

The religious denominations in the order of their numerical importance in 1921 were Roman Catholics, Presbyterians, Anglicans, Methodists, Baptists, Lutherans, the Greek Church, Jews, Mennonites, and Cong. Of these, 3,389,636 were Roman (9,407 Presbyterians, 1,407,994 Anglicans, and 1,159,458 Methodists. See CANADA, UNITED CHURCH OF.

EDUCATION The control of education in the Dominion of Canada is directly in the hands of the provinces. The individual articles dealing

AGRICULTURE In 1927, 58,586,425 acres were devoted to all field crops, the area being about 3 per cent of Canada's land surface, and about 9,308,000 acres to pasture. The value of all agricultural crops in 1928 was \$1,730,304,000, or 2.8 per cent less than in 1927. The principal reductions were due to declines in the value of field crops (principally grains) and in tobacco. Agricultural revenue by provinces, in the order of their importance, was as follows: Ontario, \$500,821,000, Saskatchewan, \$392,603,000, Quebec,

\$277,050,000, Alberta, \$264,028,000, Manitoba, \$148,807,000, British Columbia, \$50,715,000, Nova Scotia, \$40,162,000, New Brunswick, \$34,307,000, and Prince Edward Island, \$21,750,000. Increased revenue was reported for Nova Scotia, New Brunswick, Manitoba, and British Columbia. The gross agricultural wealth of Canada for 1928 was estimated at about \$6,027,801,000, an increase of \$19,353,000 over the previous year. The area, production, and yield per acre for the principal crops in 1928 is shown in the accompanying table.

CROPS AREA, PRODUCTION, AND YIELD PER ACRE

Crop	Area (thousands of acres)				Production (thousands of units—bushels, except as indicated)				Yield per acre (bushels)	
	1900—13	1923—27	1927	1928	1900—13	1923—27	1927	1928	1923—27	1928
	13	27			13	27			27	
Wheat	9,945	22,017	22,460	24,119	197,119	403,714	440,025	533,572	18.3	22.1
Rye	117	895	743	839	14,554	14,951	14,618	16.4	17.4	
Barley	1,573	3,373	3,506	4,881	45,275	89,970	96,938	136,391	26.7	27.9
Oats	9,597	13,488	13,240	13,136	375,666	439,080	467,195	452,153	32.6	34.4
Corn	309	238	132	139	17,297	9,649	4,263	5,241	40.4	37.7
Mixed grain	502	902	1,005	1,107	16,254	33,270	37,622	39,130	36.9	35.3
Flaxseed	1,035	793	476	378	12,040	6,790	4,885	3,614	8.0	9.6
Potatoes	483	548	572	599	77,873	49,151 ^c	77,410	50,195 ^c	89.7 ^c	83.8 ^c
Hay, alfalfa, and clover	8,423 ^a	10,431	11,136	11,175	12,284 ^b	16,855 ^b	19,527 ^b	18,524 ^b	2.0 ^b	2.0 ^b
Fodder corn	292	576	471	441	2,762 ^b	4,756 ^b	3,548 ^b	3,666	8.2	8.3

^a 1910-1913

^b Unit, short ton

^c Unit, hundredweight

The Dominion Bureau of Statistics estimated (July, 1929) that the total area sown to field crops, exclusive of grain hay, for 1929, was 58,223,400 acres, as compared with 57,796,226 acres in the previous year. Wheat acreage increased by 1 per cent over 1928, barley by 6 per cent, oats showed little change, and the rye, flaxseed, and potato acreage declined.

The 1929 crop, however, was much less satisfactory than in 1928. A drought throughout a large part of the prairie provinces materially decreased the yield of wheat, oats, barley, and other grain crops, as well as the root and fodder crops. The value of field crops was placed at \$986,986,000 by a government estimate dated December 13. This total is more than 12 per cent below that recorded for the previous year. The principal crops, with their estimated values in 1929 and in 1928, were, wheat, \$345,840,000 (\$451,235,000), oats, \$169,951,000 (\$210,956,000), barley, \$62,448,000 (\$76,112,000), and potatoes, \$69,963,000 (\$40,874,000). The significant feature of the government report is the higher average price of wheat, given as \$1.18 per bushel for 1929 against 80 cents for 1928. An official estimate placed the total area sown to the principal field crops in 1929 at 59,607,034 acres, against 57,796,226 acres in 1928. The 1929 wheat acreage was calculated at 25,255,002, as compared with 24,119,140 in 1928, oats, 12,479,477 (13,136,516), barley, 5,925,542 (4,880,740), rye, 991,944 (839,365), and flaxseed, 382,359 (378,081). The potato acreage was only 543,727, against 599,063 for 1928, sugar beets, 43,464 (51,294). The good quality of the grain and higher prices were expected to counterbalance, to some extent, the lowest yield since 1924. The estimated yield of wheat in 1929 was 290,520,000 bushels, as against 506,726,000 in 1928, of potatoes, 44,888,000 hundredweight, or 11 per cent less than in 1928.

The total value of products of dairy factories in 1928 was \$144,543,740, an increase of 6 per cent over the output for the previous year. The industry is concentrated to a considerable extent

in Ontario and Quebec. Dairy factory products in 1928 were creamery butter, 170,355,975 pounds, valued at \$65,540,177, factory cheese, 143,089,794 pounds, \$30,313,879, condensed, evaporated, and powdered milk, \$10,266,415, miscellaneous products, \$38,463,269. In 1927 there were 2899 dairy factories in Canada.

FRUIT FARMING. Many portions of Canada are well adapted for this industry, the best known being located in Nova Scotia, New Brunswick, Ontario, and British Columbia. Of orchard fruits, apples are most important, and in number of trees

and quantity of production greatly exceed all others combined, although peaches, pears, plums, cherries, and small fruits are grown in abundance. Extensive vineyards also exist. According to the *Canada Year Book* for 1929, the production of the more important fruit in 1927 was as follows: apples, 2,810,600 barrels, valued at \$10,411,035, pears, 332,200 barrels, \$663,730, peaches, 347,580 barrels, \$1,051,767, strawberries, 10,946,200 quarts, \$1,516,145, grapes, 34,560,000 pounds, \$1,382,400. The 1929 commercial apple crop was estimated at 3,702,370 barrels, or 11 per cent more than in 1928. Estimates placed the 1929 grape crop at 59,000,000 pounds, or about 28 per cent less than in 1928.

The livestock census for June, 1927, showed 9,172,000 cattle, 3,421,857 horses, 3,262,706 sheep, 4,094,789 swine, and 50,178,485 poultry. Eggs produced in 1927 were valued at \$80,110,010. The wool clip in the same year totaled 18,672,766 pounds valued at \$4,108,000, and in 1928 approximately 19,611,430 pounds, valued at \$6,099,000. In 1929 wool production was estimated at 21,234,000 pounds, valued at about \$4,247,000.

The maple sugar and sirup production in 1928 was valued at \$5,584,588 and in 1927, at \$4,934,811, beet sugar (1927), \$3,694,303, tobacco (1927), \$9,112,278. The value of the production for 1928 was, field crops, \$986,986,000, farm animals, \$183,927,000, dairy products, \$245,494,000, poultry and eggs, \$97,937,000, fruits and vegetables, \$46,025,000, miscellaneous, \$28,863,000, total, \$1,736,439,000. This was about \$500,000,000 less than in 1927.

FISHERIES. In addition to an immense salt-water fishing area Canada has approximately 220,000 square miles of fresh water abundantly stocked with many species of excellent food fish. The Dominion Bureau of Statistics stated the value of production of the fisheries of Canada for the year 1927 as \$49,497,038. Preliminary estimates placed the 1928 production at \$54,000,000. The value of fishery products, including seal skins and fish oils, exported in 1928, was \$33,660,287, as compared with \$36,355,464 in 1927.

FORESTS It has been officially estimated that the total area of land covered by forests is 1,151,454 square miles. Less than 40 per cent of this area, however, is covered with commercial timber. The most important timber areas are in Northern Ontario, Quebec, and British Columbia. In 1928 29 the value of wood, wood products, and paper exported was \$288,621,745, most of which went to the United States.

FUR INDUSTRY Canada ranks third as a raw-fur-producing country, being exceeded only by the United States and Russia. The more important animals raised on fur farms are foxes, muskrat, beaver, mink, marten, coyotes, karakul sheep, and skunks. In 1926 there were 2523 fox farms and 185 other fur farms in Canada. During the fiscal year ending March, 1928, furs exported to the United States were valued at \$14,335,751 (\$12,943,010 in 1927), and to Great Britain, \$9,185,200 (\$7,275,071 in 1927). The total fur exports were valued at \$24,315,244 in 1928 and \$20,608,087 in 1927.

MINERAL PRODUCTION New mineral production records, established in 1926 and 1927, were surpassed in 1928 when the value of the output of all Canadian mines reached \$273,446,864, a gain of \$26,090,169, or nearly 10 1/2 per cent more than the output for the previous year. Increased production was recorded in all mining fields—metals, non-metals, fuels, and structural materials, according to the Dominion Bureau of Statistics. New output records were established for cadmium, copper, gold, lead, nickel, metals of the platinum group, zinc, cement, coal, gypsum, lime, salt, and stone. The value of natural gas and petroleum produced was also higher than for any previous year. The value of Canada's mineral production by classes is shown in the accompanying table.

VALUES OF MINERAL PRODUCTION OF CANADA BY CLASSES, 1907, 1912, 1917, AND 1922-1928

Year	Nonmetallic			Total
	Metallic	Fuels and other non-metallics	Structural materials and clay products	
1907	\$ 42,426,607	\$31,275,546	\$12,861,049	\$ 86,563,202 *
1912	61,172,753	45,080,674	28,794,869	135,048,296
1917	106,455,147	63,354,363	19,837,311	189,646,821
1922	61,765,707	82,976,794	39,534,741	184,297,242
1923	84,391,218	91,936,742	17,751,381	214,079,341
1924	102,406,528	71,796,009	15,380,869	209,583,406
1925	117,082,298	71,851,801	37,649,234	226,583,333
1926	115,237,581	85,240,114	39,959,198	240,437,121
1927	113,135,582	88,498,021	12,886,492	244,520,098
1928	131,904,603	91,660,026	49,882,235	273,446,864

* Total includes \$300,000 allowed for products not reported.

In 1929 mineral production broke all previous records with an estimated aggregate value of \$303,876,000, or 10 1/2 per cent larger than in 1928. The output of copper was 242,401,609 pounds, valued at \$43,362,000, nickel, 109,200,000 and \$25,700,000, crude petroleum, 1,132,800 barrels, \$3,945,000. The petroleum production in 1928 was 624,184 barrels.

Mineral production by provinces in 1928 was as follows: Nova Scotia, \$29,757,010 (10 88 per cent of total), New Brunswick, \$2,257,653 (0 83 per cent), Quebec, \$37,182,864 (13 60 per cent), Ontario, \$99,028,506 (36 43 per cent), Manitoba, \$4,119,656 (1 51 per cent), Saskatchewan, \$1,536,965 (0 56 per cent), Alberta, \$32,367,781 (11 81 per cent), British Columbia, \$63,913,159 (23 37 per cent), Yukon, \$2,683,270 (0 98 per cent). Canada's mining industry had a capital

investment of more than \$700,000,000 and employed about 85,000 workers in 1929. The airplane was coming into extensive use in connection with prospecting and mining activities in northern Canada. The opening of new mines and extension of existing properties was expected to result in an increase of approximately \$100,000,000 in the aggregate mineral production in 1930, as compared with 1929.

MANUFACTURES The value of Canadian manufactures increased markedly since 1921, as is shown in the accompanying summary of manufacturing statistics. The ten leading manufacturing industries are pulp and paper, flour and grain-mill products, slaughtering and meat packing, sawmills, butter and cheese, automobiles, electric light and power, rubber goods, cotton yarn and cloth, and sugar refineries.

The capital investment in manufacturing in 1927 amounted to \$4,337,631,558, an increase of 8 9/4 per cent over that for 1926, and the total cost of materials used was \$1,789,574,604, an increase of 3 5/2 per cent for the year. Gross production by provinces in the same year was Ontario, \$1,758,004,575, Quebec, \$990,582,965, British Columbia and Yukon, \$246,034,704, Manitoba, \$132,089,678, Alberta, \$84,987,317, Nova Scotia, \$74,458,297, New Brunswick, \$72,666,665, Saskatchewan, \$52,180,681, Prince Edward Island, \$4,493,628.

Exports of fully or chiefly manufactured products in the fiscal year ending Mar. 31, 1928, amounted to \$458,796,551 and exports of partly manufactured products, to \$189,381,449. The pig-iron and primary steel output of Canada in 1928 was the highest in 10 years.

The Canadian iron and steel industry in 1928 included 1159 plants, representing a capital investment of \$702,931,188, employed an average of

119,200 persons and had a total output valued at \$609,632,999. The foregoing figures cover not only primary products but all products in which iron and steel are employed. Five industries had a production value of more than \$60,000,000, automobiles, \$162,067,495, castings and forgings, \$81,904,852, railway rolling stock, \$73,422,057, primary iron and steel, \$62,071,674, and machinery, \$51,046,140. Pig-iron production was 1,037,555 long tons, 46 per cent more than in 1927, and the output of steel ingots and direct steel castings was 1,240,211 tons, a 37 per cent increase over 1927. Coke production in 1928 was 2,308,127 tons, or 14 per cent more than in the previous record year of 1926. Production in these lines was stimulated by an increased demand for rails and other track equipment and greater requirements for construction, mining, power develop-

SUMMARY OF STATISTICS OF MANUFACTURES

Year	Estab- lish- ments	All em- ployers	Wage- earners	Value of products thousands of Canadian dollars	Value added by manufac- ture, thou- sands of Canadian dollars	Primary horse power, thousands
1910*	19,218	515,203		1,185,976	564,467	
1917	22,838	621,694	552,968	2,873,298	1,312,181	2,889
1920	21,351	609,586	526,571	1,772,250	1,686,978	3,576
1922	22,541	474,410	398,390	2,482,209	1,198,444	3,612
1923	22,642	525,367	446,994	2,781,166	1,311,025	3,762
1924	22,178	508,503	432,273	2,695,054	1,236,644	4,300
1925	22,411	541,225	466,602	2,948,545	1,380,880	5,083
1926	22,708	581,597	499,703	3,217,801	1,492,615	5,310
1927	22,936	618,933		3,425,498	1,635,921	5,328

* Establishments with 5 hands and over, all establishments for other years shown

ment, and the manufacture of automobiles and agricultural implements. Newsprint production in 1928 was 2,380,000 tons, nearly 300,000 tons more than in 1927. Despite a marked decline in the last quarter, the volume of Canadian production reached a new high level in 1929. Pignion production reached 1,090,244 tons, or 5 per cent more than in 1928, and the output of steel ingots and direct steel castings 1,379,688 tons, an 11 per cent increase. Newsprint production increased by 15 per cent to 2,728,827 tons, and total shipments rose by 14 per cent to 2,722,381 tons.

About 550,000 additional horse power was added to the total available for Canadian industry in 1928 as a result of new works or additions to existing power plants. Other power developments projected or under construction will add 1,200,000 horse power in the next few years. Among all countries Canada ranked next to the United States in the amount of developed water power, and the hydroelectric current generated was greater per capita than in the United States. On Jan. 1, 1929, the potential capacity of water powers at ordinary minimum flow was estimated at 20,197,000 horse power. The capacity of installed water turbines was 5,349,232 horse power, as compared with 975,000 in 1910 and 2,508,000 in 1920. Considerable quantities of electric current were exported from Canada to the United States, the amount in 1928 being 1,674,856,007 kilowatt-hours. A large proportion of factory machinery is operated by electricity.

Prices of commodities in Canada were lower in 1928 than in either 1926 or 1927. According to the new index of the Bureau of Statistics with 1926 as the base equaling 100, the price level in 1928 was 12 per cent lower than in 1927 and 3.5 per cent lower than in 1926.

The glass, clay, stone, structural iron and steel, and other industries manufacturing construction materials were stimulated by active urban building during 1928. Building permits issued in 63 cities during the year involved the expenditure of \$219,000,000 as compared with \$184,000,000 in 1927.

COMMERCE. During the fiscal year ending Mar. 31, 1929, imports and exports totaled \$2,654,452,166. The preliminary statement of National Revenue was an increase of 12.6 per cent over the preceding year and was greater than in any similar period in the history of the Dominion. Wheat exports increased in quantity by 103,600,000 bushels, or 39 per cent, and in value by \$76,400,000, or 21.6 per cent. Exports of wheat flour were in excess of the 1927 total by \$5,200,000 and exports of newsprint by \$13,800,000. Exports

of wood pulp, planks and boards showed a decline, while those of automobiles and parts increased nearly 66 per cent, the total value being \$45,400,000. The gain in imports was considerably greater than the gain in exports, reducing the favorable balance of trade from \$141,500,000 in 1927-28 to \$124,500,000 in 1928-29. Imports and exports, by industrial groups, for 1928-29 are shown in the table on page 145.

For the calendar year 1928, imports into Canada totaled \$1,222,317,916, a 12.5 per cent increase over 1927 imports, and exports totaled \$1,349,751,103, an increase of 10.8 per cent. Domestic exports, however, were \$23,950,000 less than in 1927. Imports of iron and steel manufactures for the year were valued at \$71,800,000, or 30 per cent more than in 1927. Canadian purchases of nonferrous metal and animal products increased by 15 per cent and wood and paper imports were 13.7 per cent greater than in 1927. In the calendar year 1929, imports totaled \$1,298,893,000, an increase of 6.2 per cent over 1928, and exports, \$1,182,412,313, a decline of 12 per cent.

TRADE WITH THE UNITED STATES. The United States took 38.9 per cent of Canada's exports and supplied 64.9 per cent of her imports in 1928, as compared with 37.2 per cent of the exports and 66.7 per cent of the imports in the previous year. The value of Canadian exports to the United States was \$478,006,000 in 1928, an increase of \$11,583,000 over 1927, and the value of Canada's imports from the United States in the same year was \$719,444,000, an increase of \$32,421,000 over 1927. In 1929 imports from the United States increased by 8.2 per cent to \$893,606,685 and exports to that country increased by 6.2 per cent to \$522,585,357.

Expenditures by American tourists in Canada, estimated at over \$250,000,000 in 1928, comprised an important "invisible" item in the Dominion's balance of trade. The estimated expenditures of American motorists alone in 1928 in the several provinces were: Maritime provinces, \$6,089,000, Quebec, \$43,915,000, Ontario, \$95,680,000, Prairie Provinces, \$4,169,000, British Columbia, \$17,531,000. In 1927 expenditures by tourists in the United States and other countries were estimated at \$103,782,000. A total of 4,508,808 foreign automobiles, mostly American, entered Canada on tour in 1929, an increase of 863,353 cars over 1928. All tourist expenditures in Canada in 1929 were estimated at about \$300,000,000.

OTHER FOREIGN TRADE. The United Kingdom ranks next to the United States as Canada's principal customer, the value of Canadian products to the value of \$1,000,000,000 in 1928. This was

IMPORTS AND EXPORTS OF THE DOMINION OF CANADA BY INDUSTRIAL GROUPS, FOR FISCAL YEAR ENDED MARCH 31, 1929

[From The Canada Year Book, 1929]

Dominion Bureau of Statistics

<i>Industrial Groups</i>	
IMPORTS	
Agricultural and vegetable products	\$ 213,130,244
Animals and animal products	71,661,754
Fibres, textiles and textile products	206,444,011
Wood, wood products and paper	59,214,818
Iron and its products	316,610,939
Non ferrous metals and their products	75,418,431
Nonmetallic minerals and products	160,964,271
Chemicals and allied products	37,721,046
Miscellaneous commodities	68,491,581
Total imports	\$1,265,679,091
Total dutiable imports	\$821,075,430
Total free imports	444,603,661
Duty Collected	\$200,479,264
<i>Industrial Groups</i>	
EXPORTS	
Agricultural and vegetable products	\$ 616,514,058
Animals and animal products	158,757,272
Fibres, textiles and textile products	9,674,019
Wood, wood products and paper	288,621,715
Iron and its products	82,256,717
Non ferrous metals and their products	112,655,194
Nonmetallic minerals and products	27,401,790
Chemicals and allied products	19,418,064
Miscellaneous commodities	18,267,811
Total domestic exports	\$1,161,586,872
Total foreign exports	25,186,401
Total exports	\$1,388,773,075
Grand total external trade	\$2,651,452,166

\$36 169 000 less than in 1927. Imports from the United Kingdom in 1928 totaled \$185,889,000, a gain of \$21,950 000 over the previous year. Other leading purchasers of Canadian exports in 1928 were Germany, the Netherlands, Japan, Belgium, Italy, and Australia, in the order named. After the United States and the United Kingdom, the ranking countries supplying Canada's imports in the same year were France, Germany, Japan, Belgium, Argentina, and British India. Canada sold 40.7 per cent of her exports to other members of the British Empire in 1928 and purchased but 22.5 per cent of her imports from them. The United States and the United Kingdom together took 72.1 per cent of the Dominion's exports. The declared value of Canadian exports increased by 284.5 per cent between 1914 and 1928 while the volume of exports increased by 201.5 per cent. On the other hand, while the declared value of 1928 imports was 180 per cent greater than in 1914, the actual volume of 1928 imports was only 151.7 per cent greater.

FINANCE For the fiscal year ending Mar 31, 1929, the Minister of Finance estimated that revenues would total \$454,942,000 and expenditures, \$385,160,000, leaving an apparent surplus

of \$69,782 000. The decrease in revenue from tax and tariff reductions authorized in 1928 was calculated at about \$25 000 000. The budget estimate for expenditures was \$373 796 856. Budget estimates for 1929-30 amounted to \$391 507,840. Despite the tax reduction, income tax payments for the year 1928-29 were \$59 422,297, a 5 per cent increase over those for the preceding year. Tax districts where the receipts increased were Halifax, Nova Scotia, Montreal, Quebec, Toronto, Ontario, Winnipeg, Manitoba, Saskatoon, Saskatchewan, Edmonton, Alberta. Decreases were recorded for Saint John, New Brunswick, Regina, Saskatchewan, Calgary, Alberta, and Vancouver, British Columbia. Some of the western declines were attributed to the creation of two additional tax districts at Saskatoon and Edmonton.

Customs and excise collections at Montreal during 1928-29 were \$105,462,183, an increase of \$5,707,061 over the previous year. For Toronto, they were \$67,050,172, as compared with \$63,795,970 for the previous year. Total import duties for 1928-29 amounted to \$200,479,264. On Mar 31, 1929, the net public debt stood at \$2,215,504,705, representing a reduction of \$81,345,528 dur-

GOVERNMENT RECEIPTS AND EXPENDITURES *(Thousands of Canadian dollars)*

	1925-26, actual	1926-27, actual	1927-28, actual
Ordinary receipts	380,746	398,696	422,718
Customs	127,355	141,969	156,086
Excise	42,924	48,513	57,401
War tax revenue			
Income tax	55,572	47,386	56,571
Sales, checks, transportation, etc.	98,067	105,613	90,223
Miscellaneous taxes	4,627	3,167	1,523
Canada	921	(*)	1,356
Post office	30,314	29,069	31,563
Interest on investments	8,335	8,559	10,938
All other	13,381	14,420	14,156
Special receipts	2,148	1,757	6,925
Ordinary expenditures	320,660	319,548	316,168
Debt charges	131,576	120,675	129,830
National defense	10,717	13,086	18,355
Pensions	37,199	37,903	39,778
Public works, chargeable to income	13,416	11,178	14,037
Railways and canals, chargeable to income	3,618	(*)	5,838
Post office	30,500	31,007	31,783
Soldiers' civil re-establishment	7,706	6,977	6,959
Subsidies to provinces	12,375	12,517	12,517
All other	74,113	77,205	77,071
Special expenditures	6,521	4,958	1,161
Capital expenditures	16,798	19,559	20,616
Loans and advances, non-active	11,206	11,569	18,503

* Included under "All other."

ing the fiscal year. On Dec. 31, 1929, the net debt was \$2,159,214,730, as compared with 2,218,603,434 on the same date in 1928.

In 1927 the national wealth of Canada was \$27,687,000,000 and the per-capita wealth was \$2909, according to estimates of the Dominion Bureau of Statistics. The distribution of the national wealth by provinces and population is given in the accompanying table. Figures for the Yukon and the Northwest Territories have been purposely omitted. For finances of provinces, see articles on each.

NATIONAL WEALTH OF CANADA, BY PROVINCES AND POPULATION—1927

Province	Estimated wealth	Estimated population June 1, 1927	Percentage distribution of population	Percentage distribution of wealth
Prince Edward Island	\$148,493,000	86,700	0.91	0.53
Nova Scotia	857,129,000	543,000	5.70	3.10
New Brunswick	751,818,000	411,000	4.32	2.71
Quebec	6,852,379,000	2,604,000	27.36	21.75
Ontario	9,560,775,000	3,187,000	33.48	31.53
Manitoba	1,925,156,000	647,000	6.80	6.95
Saskatchewan	2,998,055,000	816,000	8.78	10.81
Alberta	2,238,210,000	617,000	6.48	8.16
British Columbia	2,118,651,000	575,000	6.04	8.18

SHIPPING On Jan. 1, 1928, ships on the registry of Canada numbered 8454, with a tonnage of 1,368,000. For the fiscal year ending Mar. 31, 1928, 20,903 seagoing vessels of 21,240,847 tons entered and 20,700 vessels of 23,973,787 tons cleared. Vessels in coastwise service and operating on rivers and lakes brought the total tonnage entered to 86,368,065, as compared to 81,211,296 in 1927, and the total tonnage cleared to 86,063,348, as compared with 81,862,749 in 1927.

RAILWAYS About one-half of the railway mileage of Canada is operated by the Government as the Canadian National Railways System. On Jan. 1, 1928 this system had 22,190 miles of line, not including the Central Vermont Railway (433 miles) and the Thousand Island Railway (4.6 miles). In 1927 it carried 18,843,962 passengers and 60,531,058 tons of revenue freight

Gross earnings from operation were \$227,500,927 and the operating expenses were \$198,646,706. In 1928 operating revenue totaled \$276,631,921 and operating expenses, \$218,248,343, the net earnings from operation being about \$13,000,000 more than in 1927. The principal private railway is the Canadian Pacific, which in 1927 had a single track mileage within Canada of 14,170 miles. Its gross earnings from operation in 1929 were \$209,730,955 and in 1928, \$229,039,297. The operating expenses, were \$166,586,411 in 1929 and \$177,344,345 in 1928. Net earnings in 1928 were \$51,694,452, in 1929 they were \$43,144,543. Gross revenues of all Canadian railways in 1928 were \$557,793,118, or 11.6 per cent higher than in 1927.

Statistics of the railways in 1913, 1923, and 1927 are shown in the accompanying table.

STATISTICS OF RAILWAYS

		1913 *	1923 *	1927 *
Length of line	miles	29,301	39,665	40,573
Length of all tracks	do	38,223	51,936	60,387
Locomotives	number	5,119	5,897	5,670
Passenger cars	do	5,696	6,785	6,922
Freight cars	do	182,221	229,614	220,781
Average capacity	short tons	32.1	36.4	
Passengers carried	thousands	46,146	44,811	41,840
Passenger miles	millions	1,266	1,076	1,051
Freight carried	100 short tons	106,993	118,290	125,967
Ton miles	millions	21,033	31,008	34,901
Train miles	thousands	67,320	61,116	
Car miles	millions	1,581	2,195	
Gross receipts	\$1000 Canadian	256,701	478,138	199,061
Passenger service	do	71,412	119,627	
Freight service	do	174,686	339,984	

* Year ended June 30. * Including miscellaneous receipts not shown separately.

According to the *Railway Age*, New York, the mileage of new railway lines constructed in Canada in 1929 totaled 841 miles, as compared

with 722 miles in 1928, an increase of approximately 17 per cent. The mileage was greater than for any year since 1914. Most of it consisted of branches or extensions of branches in the Prairie Provinces, only a small amount of construction taking place in Ontario and Quebec. Of the year's total, 295 miles were constructed by the Canadian National and 546 miles, by the Canadian Pacific.

Transfer from the Province of Alberta to the Canadian Pacific Railway and the Canadian National Railways of several lines in northern Alberta took place during 1929 and the railways were merged under one system to be known as the Northern Alberta Railways. During the session of Parliament concluded June 14, 1929, a five-year branch line programme of the Canadian Pacific Railway and a three-year branch programme of the Canadian National Railways to

cost \$50,000,000 and \$29,000,000, respectively, were approved. The Canadian National Railways planned to spend about \$50,000,000 on its Montreal terminals during 1930-35. The laying of steel on the new Hudson Bay Railroad was completed in the spring of 1929 and the ballasting in September. The work was marking the official completion of the line, which was to be driven in the spring of 1930, but it was estimated that it will be two or three years before docks for the accommodation of the vessels, grain elevators, and other " " the handling of grain and cargoes would be in operation. The railway connects The Pas, northern Manitoba, with Fort Churchill on Hudson Bay, 400 miles away. It has already made possible the development of a number of large mineral properties in northern Manitoba.

At the end of 1928, there were 64,121 miles of surfaced highway in Canada, as compared with 47,411 in 1915. In 1928, 8610 miles of highway were constructed, of which 2454 miles were earth and the remainder surfaced. Expenditure on new roads during the year was \$38,912,029. The total extent of earth and surfaced roads was 381,977 miles, of which 40 per cent were in Saskatchewan. An experimental fast air-mail service between central Canada and the Atlantic coast was established Dec. 9, 1929. The new route links Montreal, Quebec, Moncton, and Saint John. In 1928 there were 53,777 miles of telegraph and cable line; the gross revenues for the year totaling \$14,740,741 and the operating expenses \$11,647,063. All figures represented substantial increases over 1927 totals. On July 1, 1929, the Canadian National Telegraphs acquired and commenced operation of the complete land mileage of Western Union Telegraphs in the Maritime Provinces. Wireless and radio stations in 1928 numbered 269,581, including 268,420 private receiving stations. There were 1,259,987 telephones in use in 1927. In 1928 there were 12,478 post offices.

GOVERNMENT Executive power is exercised in the King's name by the Governor-General of Canada, acting through a responsible ministry or cabinet. Legislative power is in a Parliament of two Houses—a Senate and a House of Commons, the former consisting of 96 members appointed for life and the latter of 245 members in accordance with the distribution act of 1921, elected for five years (unless sooner dissolved) by popular vote, including woman suffrage. Women are eligible for election to Parliament. The Governor-General in 1929 was Viscount Willingdon. As a result of the election of Sept. 14, 1926, the House of Commons was composed of the following parties: Liberals, 118; Conservatives, 91; Liberal Progressives, 11; United Farmers of Alberta, 11; Progressives, 9; Labor, 3; and Independent, 2. The cabinet as formed on Sept. 25, 1926, is as follows: Prime Minister, Secretary of State for External Affairs, William Lyon Mackenzie King; Finance and Receiver General, James A. Robb; National Defense, Col. J. L. Ralston; Postmaster General, Peter J. Vennart; Soldiers' Civil Reestablishment and Public Health, James H. King; Justice and Attorney-General, Ernest Lapointe; National Revenue, W. D. Fisher; Marine and Fisheries, Pierre J. A. Caron; Secretary of State, Fernand Lafont; Railways and Canals, Charles A. Dunning; Interior, Indian Affairs, and Mines, Charles Stewart; Agriculture, William R. Motherwell; Public Works, John C. Elliott,

Trade and Commerce, James Malcolm; Solicitor General, Lucien Cannon; Immigration and Colonization, Robert Forke; Labor, Peter Heenan; Minister without Portfolio, Senator Raoul Dandurand.

HISTORY

Widespread optimism as to the Dominion's future, resulting from a year of unexampled prosperity, was reflected by the actions of Parliament, which remained in session from Feb. 7 to June 14, 1929. Substantial reductions in taxation were provided for and ambitious programmes of railway and harbor development were approved. See *Railways*, above. Tariff reductions and decreases in sales and "nuisance" taxes were expected to reduce the revenue from those sources by \$25,000,000 during the fiscal year 1929-30. Parliament also handed over to the Prairie Provinces the management of their water powers.

The Liberal government of Premier Mackenzie King, firmly seated in power, enacted legislation for the reorganization of the fisheries services, the establishment of national research laboratories, and the extension of air-mail and steamship services. It was confronted with various internal and external problems. The most pressing of the latter involved Canada's relations with the United States, the normal cordiality of which was impaired by the threat of adverse tariff legislation by Congress and irritations incident to Prohibition enforcement and the Anglo-American naval controversy. R. B. Bennett, leader of the Conservative Opposition, in a debate on the Kellogg-Brandt Pact, took strong exception to "jingoistic" statements of certain American papers, declaring that when "our great neighbors talk of war against Great Britain, they should understand that they are talking also of war against Canada." He was severely rebuked by Premier King, who affirmed his belief that the United States had signed the Kellogg treaty in good faith. The statements referred to, the Premier said, did not warrant "the leader of the Opposition making a jingoistic speech in this Parliament calculated to throw doubt upon the good faith of the neighboring Republic."

An official protest against the sinking of the Canadian ship *Im Thore* in the Gulf of Mexico by a United States Coast Guard prohibition patrol boat was made by the Canadian Minister at Washington on April 9. On April 25, it was announced that the case, which had aroused considerable resentment in Canada, would be settled by arbitration. The tariff controversy was accompanied by plain indications that the virtual exclusion of Canadian agricultural products from American markets sought by certain tariff revision advocates would be followed by retaliatory tariff measures against American manufactures in the Canadian market. The policy of the Government, as stated by James A. Robb, the Minister of Finance, was one "of favoring those countries which favor our products." The Government's cooperation with the United States in the proposed St. Lawrence Waterway project would depend to a considerable extent upon the American tariff policy; it was indicated.

The House of Commons on May 20 approved the convention for the preservation of Niagara Falls, which was signed by representatives of the United States and Canada on January 2 A

sign of Canada's growing political independence from the mother country was seen in the proposal by government officials, in connection with negotiations for a new Anglo-American arbitration treaty, that Canada substitute her own arbitration machinery with the United States for that proposed in the draft of the treaty.

Toward the end of 1929, the good-will visit of Premier Ramsay MacDonald to the United States and Canada and the failure of Congress to enact tariff legislation during the special session called by President Hoover removed the principal sources of friction between the Dominion and the United States. A reciprocal treaty governing the admission of civil aircraft, the issuance of pilot licenses, and acceptance of certificates of airworthiness for aircraft imported as merchandise was concluded between the two governments in November.

J. H. Thomas, member of the Labor cabinet charged with the solution of Britain's unemployment problem, visited Canada in the fall and in conference with government officials sought to arrange for immigration to Canada from the United Kingdom on a greater scale, and the greater use of British coal and manufactured steel. Later, a delegation representing the Canadian Wheat Pool visited England to discuss a more extensive exchange of Canadian wheat for British coal.

Negotiations by the western provinces for the acquisition of lands and natural resources within their respective boundaries held by the Federal Government led to a revival during the year of the religious controversy between the Protestant provinces and Catholic Quebec. The specific issue was the insistence by French-Canadian Catholic Liberals that the terms of transfer of school lands involved should include a clause safeguarding the rights now exercised by the Catholic schools in Alberta. The Dominion Government finally reached an agreement with the provincial governments of Alberta and Manitoba which was signed at Ottawa, December 15, subject to ratification by the Dominion Parliament and the provincial legislatures. Besides returning to the provinces their natural resources, the agreement stipulated that the annual subsidies formerly received by the provinces from the Dominion were to continue. The national parks in Alberta remain the property of the Dominion. The influx of Roman Catholic immigrants into Saskatchewan and a dispute involving parochial education there also gave rise to a strong anti-Catholic sentiment which found expression in criticism of the King government as being dominated by Catholic Quebec. Sectarianism in the schools was a dominant issue in the Saskatchewan election during the year, which resulted in a sweeping Conservative victory.

The seven provinces which have adopted plans for the sale of liquor through official channels were joined in October by Nova Scotia, where the prohibition laws were repealed in September by a considerable majority. Prince Edward Island, which decisively endorsed its prohibition act by plebiscite on July 18, remained the sole province where prohibition remained in favor. An old-age pension system, under which the provincial and Federal governments assume equal shares of the burden, went into effect in Ontario, British Columbia, Alberta, Manitoba, Saskatchewan, and the Yukon during the year.

Quebec and the Maritime Provinces refused to accede and protested the principle upon which payments are being shared as distinctly unfair to them.

CANADA, THE UNITED CHURCH OF Under this designation a single body was formed in 1925 by the union of the United Methodist, and Presbyterian churches in Canada; the Methodist churches of Newfoundland and Bermuda also were included in the union. Following upon the formal consummation of the union June 10, 1925, a total of 500 congregations, mostly in smaller towns and rural districts, amalgamated into approximately one-half that number of self-supporting charges. The board of home missions also established 285 new fields of home-mission status, each of these fields including between three and four places at which public worship was inaugurated and regularly conducted. In 1929 nearly 1000 communities, in areas previously unoccupied by any church, were served. During the same period, 375 fields which formerly received aid became self-supporting and passed off the home-mission list. At the end of 1929, there were 1509 fields under the auspices of the board of home missions, and 4368 preaching places in these pastoral charges.

Three general councils were held in 1925, 1926, and 1928 to forward the permanent organization of the church. At the third council, held in Winnipeg in September, 1928, action was taken toward a strong evangelistic movement preparatory to the nineteenth centenary of Pentecost in 1930. The fourth general council was to be held in London, Ont., September, 1930. On Dec. 31, 1928, there were 11 conferences, 115 presbyteries, 647,154 communicants, an increase of 46,632 since June, 1927, 405,425 families under pastoral care, 1,485,381 persons under pastoral care, and 634,432 Sunday school members, an increase of 54,940 since the union. The moderator of the general council for 1928-30 was the Rt. Rev. William T. Gunn, M.A., D.D. The secretary was the Rev. T. Albert Moore, D.D. Headquarters are 421 Wesley Buildings, Toronto, Ont.

CANADIAN WHEAT POOL See COOPERATION.

CANALS The outstanding event of the year in the United States was the formal opening by President Hoover of the Ohio River canalization, a work which had been under way for fifty years and had cost some \$125,000,000. With the completion of Dam No. 53, near Grand Cham, Illinois, a channel of 9 feet depth became available from Pittsburgh down. This last structure cost \$5,000,000 and is equipped with a lock 110 feet wide with a lift of 9 feet.

A final decision on the Chicago Drainage Canal question was also one of the important events of the year. This decision emphasized one of the greatest sanitation problems in the world at a time when the city government of this great centre was in a demoralized condition. The results cannot fail to be of vital interest to the public, as well as to engineers.

In general, the inland waterway situation underwent little change. Ambitious schemes were being discussed in Belgium but, apparently, economic justification was lacking or uncertain. Transportation is a vital factor in modern life. Theoretically, at least, water transportation should be economical. Practically, inland canals do not attract traffic. What is to be the future of inland transportation? Perhaps the great Ohio

experiment will throw some light on the economic limits and the limitations of canal development. At present, the future is uncertain and prospects of a canal revival far from bright except in the minds of those enthusiasts who refuse to consider economic limitations.

OHIO RIVER CANALIZATION The canalization of the Ohio River from Pittsburgh to its junction with the Mississippi at Cairo, 968 miles, was completed during the year and formally inaugurated by President Hoover. The river is now open to boats of 9-foot draft for its entire length. This great work is not only of great magnitude as an accomplishment, but also of great importance in the problem of inland transportation in the United States. Millions of public funds have been wasted in America due to the activities of canal enthusiasts who have managed to secure the construction of inland waterways in locations where even the most casual economic studies would have shown that these projects were doomed to failure. The great Ohio experiment will be watched with interest. If any inland waterway can be successful, this great traffic artery in the heart of the nation should certainly prove a success. The *Engineering News-Record* (New York) observed:

Where the points of origin and distribution of freight are both on the same waterway, as in the case of much of the coal and coke movement on the Ohio, water is ideal for the shipment of bulk commodities, especially where the time factor is not important. And where the point of origin of the bulk commodity like steel is on a waterway which provides a long haul to a point of transshipment, as with steel coming down the Ohio to points on the lower Mississippi, a waterway also presents a distinct advantage. Nowadav, however, the elements of time and certainly of movement as well as the cost of transshipping from water to rail are factors working against the use of inland waterways. If a general freight business does not develop on the Ohio with all the advantages which it possesses, any scheme to construct other waterways primarily for that purpose may as well be abandoned."

In 1924 the Inland Waterways Corporation was created by an act of Congress. Its object was to demonstrate the value of transportation on the navigable rivers of the Mississippi Valley. The entire stock of the corporation is owned by the Government and it is headed by Maj. Gen. A. Q. Ashburn, who states, "Our problem was to show once and for all that inland transportation was economically sound and could be used to bring about cheaper transportation without hurting the rail lines." As President Coolidge said at the time, "Our whole 100-year-old policy of developing navigable streams at tremendous cost was either a piece of inconceivable and colossal folly, or else we as a people had been inexcusably remiss in taking advantage of our opportunities."

Thus, the great Ohio construction experiment has been made into a complete operating experiment by the organization of this corporation and the future of inland transportation in the United States will depend in large measure on the success of this magnificent venture.

THE CHICAGO DRAINAGE CANAL A most important decision in the long-disputed problem of the diversion of water by Chicago from Lake Michigan for drainage purposes, was handed down by the Supreme Court in January, 1929. The court held that the War Department could grant to Chicago diversion rights only sufficient to provide sufficient water for navigation in the Chicago canal and appointed Judge Charles E. Hughes as special master to make recommenda-

tions as to the conditions which Chicago must follow in carrying out this decision. The *Engineering News-Record* observed that "save for the final action of the court in confirming or modifying his recommendations, the litigation is over. The case had been in the courts for some twenty-five years and was outlined in the 1928 YEAR BOOK.

Judge Hughes limited the ultimate diversion by Chicago to 1500 cubic feet of water per second and allowed 9 years as the time within which this limit must be reached. In 1929 the Sanitary District of Chicago was diverting some 10,000 second-feet of water by means of which the sewage of Chicago was carried through the drainage canal into the upper Mississippi. With this diversion reduced to 1500 second-feet, Chicago will now have to build sewage-treatment works which will far exceed any such construction the world has yet known.

"Physically and technically," the *Engineering News-Record* states, "this is readily possible. Financially, it is well within the capacity of a city of several millions. The real task—and it is one of tremendous importance—is governmental reform and better administration." There is a complete lack of confidence on the part of the citizens of Chicago in the present government, alleged to be "deeply intrenched in corruption and inefficiency." Voters have refused to authorize new bond issues, taxation is in a muddle, the "situation is without parallel in the history of cities." Obviously, Chicago faces a tremendous problem, but one which she has brought on herself through unreasonable delay and persistent attempts to evade her responsibilities.

WELLAND CANAL A very complete series of articles dealing with this great Canadian undertaking was published in the periodical, *Geographical* (London) during the year. The importance and economic possibilities of the work were discussed in the 1928 YEAR BOOK. See WELLAND CANAL.

NICARAGUA CANAL Agitation for a ship canal on the old Nicaragua route reached a point where an appropriation had been made for preliminary surveys for this canal. While traffic through the Panama Canal continued to grow, its capacity had not been reached and may be considerably increased by additional reservoir and lock construction. The Nicaragua project was, therefore, a development for the future with no immediate prospects of active construction being undertaken. See PANAMA CANAL, SAINT STE MARIE, CANALS OF, SUEZ CANAL.

CANARY ISLANDS A group of small islands off the northwest coast of Africa, belonging to Spain. Area, 2810 square miles; population, Jan. 1, 1928, estimated at 531,533. The capital is Santa Cruz de Tenerife, with an estimated population in 1928 of 54,504. The next largest city is Las Palmas, with a population of 69,086 in 1928. The University of Seville maintains an educational establishment in the Canaries and is in charge of higher education. There is regular steamship communication with Spain. The islands are under the administration of continental Spain through a local governor.

CANBERRA The new Federal capital of Australia. See AUSTRALIA.

CANCER Irradiation treatment is considered at great length by Prof. H. Holthausen in the *Deutsche medizinische Wochenschrift* for September 6. There has been an ebb and flow in medical

attitude toward this subject, the optimism of early years having given way to disappointment, while numerous improvements in technique have produced a more favorable outlook. A plethora of detail has been built up in which the location of the mass, dosage, cooperation with other measures, etc. play a major rôle. At present, we seek to know the status of particular types of cancer under irradiation treatment. The best results are obtained in cancer of the cervix uteri, for they have been at least equal to those of the knife and not a few inoperable cases also are curable. In cancer of the breast, irradiation cannot supplant the knife and is best used after surgical removal to complete the cure and prevent recurrence. In the great group of cancer of the stomach, œsophagus, etc., it can effect little. Radium is indicated only in certain superficial forms of cancer to which access is readily obtainable and hence no real comparison can be instituted with more general resources like roentgen rays and the knife, to which must be added the great scarcity of the substance. In discussing irradiation as a general measure, we cannot be guided by the results of a few specialists but must follow those of the average radiologist.

PROGNOSIS. Dr. M. J. Sittenfeld, a radiologist of New York, writes a paper with this title for *Radiology* for September. Despite all of the improvements in surgical techniques for the past quarter-century, the mortality of cancer shows no change for the better, and the disease is on the increase. Even the figures in the most favorable types of cancer for early surgery do not show the anticipated improvement. True surgical cures are often only palliative for late recurrence sets in. Advances in surgical technique too often involve wider excisions of a crippling nature. On the other hand, in the irradiation treatment of cancer, we see actual gain from year to year and in the radiosensitive group of cases results are often all that could be asked for. There is likewise progress of a sort in internal treatment, notably in chemotherapy, and when to surgery are conjoined the results of irradiation and other plans of treatment, the figures for certain cancers—namely those of the cervix—show distinct gain. The fact that about three-fourths of all cancer patients present themselves at a period too advanced for radical surgery is alone sufficient to eliminate surgery as a routine remedy. The only solution is cooperation between surgeon, radiologist, and internist, to whom is to be added, of course, the pathologist. Until such coordination is the rule, we need not expect progress in cancer therapy.

THE LEAD TREATMENT. In speaking of the lead treatment, it should always be borne in mind that it is regarded merely as an accessory to the X-ray treatment of cancer. An account of the symposium on this subject before the Congress of Radiology (1928) appears in full in the *Journal of the American Medical Association* for January 5 and 12. In the discussion which followed the reading of a number of papers, the members agreed that lead was too toxic for routine use although there was considerable difference of opinion as to which preparation was the safest. It is desirable and not beyond possibility that an ideal form of lead may be discovered which will confer the benefit inherent in the metal without the risk of lead poisoning. Nearly everyone who has made trial of the treatment has experienced some good results, and not a few

individuals were busy who owed their usefulness to the combined treatment. Several would have it that the lead treatment be tested without irradiation, for with the combined method it is difficult to apportion credit. This step it was difficult to take, lest the patient be deprived of some of the benefit of the rays and not a few cases have been treated by lead alone with results inferior to those of the combined method. Doubtless many cancers remain quite insensitive to the action of lead and in this group it is folly to persevere.

A STABILIZED AND HARMLESS COLLOIDAL LEAD. It has been conceded by many authorities that a harmless form of lead which retains its therapeutic power over cancer holds out greater promise of cure than any drug yet thought of. Professor Lorenzini, a biochemist of the University of Milan, claimed such a discovery for himself (see *Journal of the American Medical Association* for February 2, p. 403). He added to the pseudocolloidal solution which has passed for a genuine colloidal preparation, as prepared electically, traces of sodium thiosulphate in claiming that this substance antagonizes the tendency of the solution to decompose with formation of toxic lead compounds. The result is a perfectly stable colloidal solution free from toxicity. It can be injected in amounts thirty fold greater than the doses used by Blair Bell and without producing any changes in the organism. A number of surgeons tested the preparation in the clinic and found it innocuous. Several cases of cancer had been treated with remarkable benefit, but the author was satisfied to claim that he had made available for all a safe preparation of lead for general testing.

CANDY, FOOD VALUE OF. See **FOOD AND NUTRITION.**

CANE SUGAR. See **SUGAR.**

CAPE COLONY. See **CAPE OF GOOD HOPE PROVINCE.**

CAPE OF GOOD HOPE PROVINCE. One of the four original provinces of the Union of South Africa, the southernmost province of the Union, formerly known as Cape Colony or the Colony of the Cape of Good Hope. Capital, Cape Town. Area, 276,536 square miles; population at the census of 1921, 2,781,542, of whom only 650,327 were Europeans. On June 30, 1928, the total population was officially estimated at 3,035,802, including 728,159 Europeans, 1,782,234 Bantus, 7961 Asiatics, and 517,448 of mixed and other origin. The census of 1926 showed 706,137 Europeans.

The total population at the census of 1911 was 2,564,965. The chief towns with their white population in 1926 were Cape Town, 130,568; Kimberley, 17,268; Port Elizabeth, 33,371; East London, 23,210. The movement of population in 1927, so far as registered was Europeans, births, 44,347; deaths, 16,027; marriages, 15,622. For non-Europeans it was births, 51,077; deaths, 45,219; marriages, 16,972. In 1927 there were 2400 white schools, with 138,463 pupils and 4609 native schools, with 182,937 pupils. The state expenditure for education was £3,240,918. There was a university at Cape Town with 190 teachers and 1770 students in 1927. The trade between the province and the United Kingdom in 1928 was. Imports into the United Kingdom from the province, £15,540,238; exports from the United Kingdom into the province, £13,953,378. The chief exports to the United Kingdom were

wool, mohair, hides and skins, corn, and feathers, the chief imports from the United Kingdom were cotton and woolen goods, machinery, iron and steel goods, and paper. The administrator of the province in 1929 was A. P. J. Fournie. See SOUTH AFRICA, UNION OF.

CAPE VERDE (vürd) ISLANDS. A group of 14 islands off the western coast of Africa belonging to Portugal. Area, 1475 square miles. Population at the census of 1926, 131,147, of whom 59,031 were males. The chief products are sisal, castor oil, coffee, mustard, brandy, oranges, and hides. A small military force is maintained on the islands. The estimated public revenue in 1926-27 was 17,504,815 escudos and the expenditure, 17,111,699 escudos. Imports in 1927 amounted to 60,012,910 escudos and exports to 5,082,420 escudos (the escudo had an exchange value of \$0.0447 in 1928). The chief port is Bissau. The administration of the islands is in the hands of a governor whose seat is at Praia, the capital.

CAPITAN, LOTIS. French archeologist and Americanist, died Sept. 1, 1929, in Paris, where he was born on Apr. 19, 1854. He had a medical diploma and was a member of the Académie de Médecine, but he did not practice this profession. His life work was the investigation of early prehistory, including that of the Americas. He began his career as an archeologist by exhibiting his collections at the Paris Exposition of 1878. He continued collecting in this field throughout his life, and at his death left the greater part of his material as a legacy to the French National Museum at St. Germain. After 1893 he spent much time in the investigation of French cave-dwells and helped to introduce the stratigraphic method of debris excavation and a technique for deciphering and copying engravings and paintings preserved on cave walls. In 1899 he was elected professor of prehistoric anthropology at the École d'Anthropologie, and in 1908 he became Loubat professor of American archeology at the Collège de France. His writings, which are for the most part fragmentary articles and summaries, deal mainly with the Paleolithic arts and industries of the Old World and with both Paleolithic and Neolithic topics in America. He was also a lecturer and one of the last of the distinguished group of scientists who first made the modern world acquainted with Paleolithic man. He was an officer of the Légion of Honor.

CARBOLOY. See CHEMISTRY, INDUSTRIAL, under *Vinyl Alloys*.

CARINTHIA. A province of the Republic of Austria, formerly a crownland of the Austro-Hungarian Empire. Area, 3680 square miles, population at the census of 1923, 370,748, as compared with 396,200 in 1910. Carinthia, in 1923, had 5.07 per cent of the total population of Austria. Capital, Klagenfurt, with a population in 1923 of 27,423.

CARLETON COLLEGE. A coeducational institution of higher learning in Northfield, Minn., founded in 1866 and maintaining relations of cooperation with the Congregational, Baptist, and Protestant Episcopal churches. The enrollment for the autumn of 1929 was 853. There were 66 faculty members. The endowment amounted to \$2,177,897, and the total income for the year was \$743,083. There were 91,300 volumes and 30,000 pamphlets in the library. President, Donald John Cowling, Ph.D., D.D., LL.D.

CARMALT, WILLIAM HENRY. American surgeon and university professor, died in New Haven, Conn., July 17, 1929. Born in Friendsville, Pa., Aug. 3, 1836, he was graduated from the College of Physicians and Surgeons, Columbia University, in 1861. After practicing in New York, 1861-69, he studied surgery in Germany until 1874. He then came to the United States, he joined the faculty of the University of Connecticut as lecturer on ophthalmology and otology, 1876-79, as professor of those subjects, 1879-81, and as professor of the principles and practice of surgery, from 1881 until made professor emeritus in 1907. Until about two years before his death, Dr. Carmalt maintained a private practice in New Haven, being consulting surgeon at the New Haven Hospital. He served as president of the General Hospital Society of Connecticut, the Connecticut State Medical Society, 1904, and the American Surgical Association, 1907.

CARMAN (WILLIAM) BRUSH. Canadian poet, died June 8, 1929, in New Haven, Conn. He was born in Fredericton, N.B., on Apr. 15, 1861, and was graduated from the University of New Brunswick, receiving the A.B. degree there in 1881 and the A.M. in 1884. He also studied at the University of Edinburgh and at Harvard, after which he read law for two years. During 1890-92 Mr. Carman was office editor of *The Independent* in New York City and in 1891 editor of *The Chap Book* in Boston. He also taught and practiced engineering. It is, however, as poet and lecturer that he is best known. His first book of poetry was *Low Tide on Grand Pré* (1893) and his last, *Wild Garden* (1929). Among his other books are *Pipes of Pan* (Numbers 1, 2, 3, 4, 5, 1902-05), *Echoes from Lagabondia* (1912), *April Days* (1916), *Far Horizons* (1925). In 1921 the Canadian Authors Association crowned Mr. Carman Canada's major poet, and in 1928 he was awarded the Lorne Pierce Medal of the Royal Society of Canada, the highest literary distinction in that country. Because of his American descent and long residence there, the United States also claims him.

CARNEGIE CORPORATION OF NEW YORK. Established by Andrew Carnegie in 1911, this corporation was formed for the advancement and diffusion of knowledge and understanding among the people of the United States, Canada, and the British colonies. Its total endowment is approximately \$135,000,000, of which \$10,000,000 is applicable elsewhere than in the United States. The income only is subject to the disposal of the trustees. The programme of the corporation in 1929 was concerned chiefly with library service, the place of the arts in American life, adult education, scientific research, professors' annuities, and educational studies.

While the charter of the corporation affords a liberal choice of methods by which it may proceed, the policy pursued from the outset by its founder, and later adhered to by its trustees, has followed a definite principle. The corporation has conceived its function to be not that of an operating agency in itself but rather that of an agency charged with the duty of studying and estimating those forces and institutions that make for the advancement and diffusion of knowledge and understanding in the areas specified and of endeavoring to secure such measure as may be possible within the income

of the corporation, having care always to the fact that the income of this endowment is to be a liquid asset for each generation.

Should the trustees of today fail to use the funds for fruitful purposes, the trustees of the next generation will have the same power for usefulness that belonged to their predecessors and may be more fortunate in its exercise.

In 1929, as in the previous year, approximately two-thirds of the annual income of the corporation was devoted to a reduction of unpaid obligations, which on Sept. 1, 1929, amounted to \$23,251,454. The annual report of the president, Frederick P. Keppel, showed that during the fiscal year 1928-29 the sum of \$7,729,760 was appropriated toward library service (\$445,500), the encouragement of adult education activities (\$160,250), the support of national organizations in the field of fine arts and of departments of arts in colleges and universities and of projects for the appreciation of arts and music (\$1,000,000), the support of educational and scientific studies, research, publications (\$557,700), general interests including the Carnegie Endowment for International Peace (\$770,300), and annuities for professors (\$5,400,000).

From the income of its \$10,000,000 fund, the corporation continued its five-year programme in British Africa, involving a total of \$500,000. Scientific research, aid to Juvenile Schools, exchange of educational visits, and library service were included in the programme, which was carried on largely through local bodies. It also aided various educational enterprises in Canada, Australia, and New Zealand. The corporation made scholarship grants for graduate study by prospective college teachers of the arts and by qualified students of library science. It continued to support various important projects, such as research in purification of insulin, investigation of high-frequency rays of cosmic origin, cooperative research in pyorrhea and otosclerosis, and study of the susceptibility to infectious diseases. Various studies conducted by the American Historical Association, the Modern Language Association, the Institute of Economics, and the American Law Institute were continued through the year.

The trustees of the corporation in 1929 were James Bertram, Nicholas Murray Butler, Louise M. Carnegie, John J. Carty, Samuel Harden Church, Robert A. Franks, William J. Holland, Henry James, Frederick P. Keppel, Russell C. Leffingwell, John C. Merriam, John A. Poynton, Henry S. Pritchett, and Elihu Root. Officers of administration were Elihu Root, chairman of the board, Robert A. Franks, vice chairman and treasurer, Frederick P. Keppel, president, James Bertram, secretary, and Robert M. Lester, assistant to the president. The headquarters are located at 522 Fifth Avenue, New York City.

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING. The A foundation established by Andrew Carnegie on Apr. 16, 1905, when he placed an endowment of \$10,000,000 in trust with 25 trustees, mostly presidents of universities and colleges, for the purpose of encouraging higher education in the United States, Canada, and Newfoundland, chiefly by providing retiring allowances for teachers in universities and colleges and pensions for their widows. The foundation was incorporated by Act of Congress in 1906. Its resources were increased by a further gift of \$5,000,000 from Mr. Car-

egie in 1908, and by appropriations of \$1,250,000 in 1913 and \$12,000,000 in 1918 from the Carnegie Corporation, which Mr. Carnegie established in 1911. At the completion of its twenty-fourth year in 1929, the foundation had endowments and accumulated reserves amounting to \$32,257,000, and had distributed \$18,817,000 in retiring allowances and pensions to 1100 teachers and 600 widows, chiefly through 72 associated institutions, selected because of their educational excellence. The foundation publishes extensive annual reports, which deal with many educational problems. Its division of educational inquiry, established in 1913, has issued a score of comprehensive bulletins, dealing with medical, legal, engineering, dental, and vocational education, the training of teachers, intercollegiate athletics, and kindred subjects. In 1929 preliminary announcements were issued concerning the initial results of a comprehensive study of the relations between schools and colleges in Pennsylvania. Dr. Henry Smith Pritchett is president and Clyde Furst, secretary. The headquarters are at 522 Fifth Avenue, New York City. See UNIVERSITIES AND COLLEGES.

CARNEGIE INSTITUTE, PITTSBURGH. See ART EXHIBITIONS, ART MUSEUMS.

CARNEGIE INSTITUTION OF TECHNOLOGY. A nonsectarian institution for technical education at Schenley Park, Pittsburgh, Pa., founded in 1900. The enrollment for the autumn of 1929 was 6494, including 2472 registered in the regular day courses and 4022 in the evening courses. For the summer session, 754 students were enrolled. The faculty of 1929 numbered 348, of whom 226 were on full time and 122, on part time. The endowment of the institution was \$15,900,000 and the annual income \$794,000 (not including student fees). The institute has a campus branch of the Carnegie Library of Pittsburgh, which has 450,000 volumes. President, Thomas Stockham Baker, Ph.D., LL.D., Sc.D.

CARNEGIE INSTITUTION OF WASHINGTON. An institution founded in 1902 to "encourage biological investigation, research, and discovery and the application of knowledge to the improvement of mankind." The results of its investigations are made known through the scientific journals, the institution's *Year Book*, a series of monographs which it issues, and other regularly established channels. During 1929 the executive committee authorized the publication of 13 volumes at an aggregate estimated cost of \$85,250. Among these were *European Treaties Bearing on the History of the United States and Its Dependencies, 1650 to 1697* (vol. III), by Frances G. Davenport, *Correspondence of Andrew Jackson* (vol. IV), by John S. Bassett, *Studies in Comparative Sciencology: Earthquake Conditions in Chile*, by Bailey Willis, *Race Crossing in Jamaica*, by Charles B. Davenport and Morris Steggoda, *The Hydrostatic Pneumatic System of Certain Trees*, *Movements of Liquids and Gases*, by D. T. MacDougal, J. B. Overton, and Gilbert M. Smith, and *Plant Competition: Analysis of Community Function*, by Frederic E. Clements, John E. Weaver, and Herbert C. Hanson.

The twenty-fifth anniversary of the founding of the Carnegie Institution was observed in 1929, the initiation of specially organized activities in the biological sciences being celebrated through the department of genetics at Cold Spring Har-

bor on May 31 and investigations in the field of physical sciences being emphasized by utilization of the visit of the ship *Carnegie* to San Francisco Harbor on August 26. During the year, a fundamental study expressing one of the most interesting phases of work of the geophysical laboratory was initiated through the spectroscopic investigation of elements present in flames issuing from a living volcano, the investigation was conducted by Dr. E. G. Zies on Mount Rasing in eastern Java. Another contribution to the geophysical laboratory was through the cruise of the Submarine *N 21* over selected areas in the Gulf of Mexico, the Caribbean Sea, and portions of the South Atlantic, made possible by the cooperation of the U. S. Navy Department, it furnished an important body of data for interpretation of the composition, structure, and incidentally of the history of crustal movements in the outer region of the earth.

Opportunity for expansion of the research programme in the department of embryology was made possible by the generous extension of laboratory facilities placed at the institution's disposal by The Johns Hopkins University. Outstanding in this field was the work of Dr. Lewis and Dr. Gregory in obtaining an excellent record of movement in the developing mammalian egg. In similar manner the cooperative research of Dr. Benedict and Dr. Riddle on the relation of the thyroid to metabolism continued to furnish an exceptional view of the relation between development as initiating through the basic elements of heredity and the influences arising from the glands of internal secretion.

Development of the year's programme of researches centring upon the studies in Middle American archaeology involved cooperation of such agencies as would be required to give not merely the history of culture in the Middle American region but to obtain with such data an understanding of relationship between the sequence of events in the Maya area and the history of cultural development in America. The programme involved intensive studies of Maya

... of the known historical series. The exceptionally interesting work of Earl Morris at Chichen Itza in Yucatan, as illustrated by the study of the Temple of the Warriors, was based upon investigations at the later end of Maya history. At the earlier end of the sequence investigations by Oliver G. Ricketson, Jr., were conducted at the site of Uaxactun in Guatemala, the earliest dated Maya city. The discoveries at the latter place had exceptional interest in the light of significant researches which were carried out in middle Mexico by the Mexican Government and by various institutions from Mexico and other countries. These studies in turn, were considered in the light of the investigations of very early cultural stages of south-western United States, such as were conducted by Mr. Morris and Dr. Kidder in association with other institu-

tions. The plan for investigation of problems in Maya history was not concerned solely with archaeological data. From the beginning it had been formulated as an attempt to see the history of this people in relation to their environment, including natural features of the region and contacts with other cultures, but the area in general presented many obstacles in the way of geographical, geological, and biological investi-

gations, since it was largely uncharted as to details of the various subjects and much of it could be penetrated for scientific study only with difficulty. It was, therefore, extremely important to the institution to have opened an opportunity to view a considerable part of the region by means of an air reconnaissance proposed and carried out by Col. Charles A. Lindbergh through the courtesy and cooperation of the Pan-American Airways, Inc. Although the examination was possible only at a time of the year when the difficulties of seeing were relatively large, the results of the voyage by Colonel Lindbergh, Dr. Kidder, and Mr. Ricketson gave an extremely valuable view of especially important parts of the area. The work served as a guide of large value not only with reference to location of little known or unknown ruins but with relation to opportunity offered for interpretation of the character of the country as illustrated in its topography, distribution of water supply, character of vegetation, and the possibility of contrasting various types of environment.

The institution's non-magnetic ship *Carnegie*, which had been used since 1909 in a world-wide survey of the earth's magnetic field, was destroyed by explosion and fire in Apia Harbor, Samoa, on Nov. 29, 1929. Since its departure from Washington in May, 1928 the vessel had sailed through the northern half of the Atlantic Ocean, the Caribbean Sea, the Panama Canal, the south-eastern central, and northern portions of the Pacific and had touched such points as Easter arriving in San Francisco Harbor in July for thorough reconditioning before entering upon its three-year cruise which had been planned. Exhibits showing how data on the magnetism of the earth were gathered on these cruises and models of the apparatus used formed a special section at the institution's annual exhibition held in Washington Dec. 14-16, 1929.

Total receipts of the institution from interest on endowment, bonds and bank deposits, sales of publications, refunds on grants, and miscellaneous items amounted to \$8,080,716 for the year, while total expenditures including purchase of bonds, large projects, minor grants, publications, and administration amounted to \$8,259,061. The president in 1929 was Dr. John C. Merriam and the administrative secretary was W. M. Gilbert. The executive committee included Elihu Root, chairman, John J. Cary, W. Cameron Forbes, John C. Merriam, William Barclay Parsons, Stewart Paton Henry S. Pritchett, and George W. Wickersham.

CAROLINE ISLANDS See GERMAN NEW GUINEA

CARPENTER, EDWARD. English poet and Socialist, died in Guildford, Surrey, June 28, 1929. Born in Brighton, England, Aug. 29, 1844, he attended Brighton College and Trinity Hall, Cambridge. Elected a fellow of Trinity, he took orders in 1869, and served as curate at St. Edward's and lecturer at the university until 1871. He then resigned from the church to teach science and music in the university extension movement in northern England. This he gave up in 1881 and two years later settled on a farm near Sheffield where he lived the simple life growing fruits and vegetables and selling them in the market place, and making sandals. Having become interested in Socialism, he became at this time an active street-corner speaker on this subject. He also continued the writing

which he had begun at Cambridge Carpenter's style was influenced by Walt Whitman, whom he visited in America in 1884. In his volume of poetry, *Towards Democracy* (1883), and its prose counterpart, *Civilization, Its Cause and Cure* (1889), he set forth his democratic teachings, which for the most part he merely amplified and developed in his numerous later works, which included *The Promised Land* (1910), *The Drama of Love and Death* (1912), *Pagan and Christian Creeds, Their Origin and Meaning* (1920), *The Psychology of the Poet Shelley* (with E. Bainfield, 1925).

CARTELS. See CHEMISTRY, INDUSTRIAL.

CASE SCHOOL OF APPLIED SCIENCE.

An engineering college in Cleveland, Ohio, founded in 1881. In the autumn of 1929, the enrollment was 689 students. The summer session of 1929 was 154. The faculty numbered 69 members. The productive funds of the college amounted to \$4,232,583, while the income for the year was \$379,558. The library contained 24,790 volumes. President, William Elgin Wickenden, D. Eng., D. Sc., who succeeded Charles Sumner Howe in 1929.

CASUALTY INSURANCE. See INSURANCE.

CATHOLIC CHURCH. See ROMAN CATHOLIC CHURCH.

CATHOLIC UNIVERSITY OF AMERICA.

An institution of higher education in Washington, D. C., founded in 1867. Affiliated with it are the Catholic Sisters' College for the training of teachers, Trinity College for women, and the houses of study of 27 religious orders. The enrollment for the autumn of 1929 was 980, distributed as follows: School of theology, 106, canon law, 33, law, 34, philosophy, 466, letters, 85, and sciences, 259. In the 1929 summer session, there was a registration of 500. The faculty numbered 119, of whom 39 had the rank of professor, two promotions having been made from the rank of associate professor during the year. The productive funds amounted to \$2,700,273, and the income for the year was \$866,778. Among the important gifts was \$150,000 from Mrs. Justine B. Ward for the erection of a building for the School of Liturgical Music, this school will be maintained from the income of a foundation of \$1,000,000, established by the Dom Mocquereau Schola Cantorum Foundation. The library contained 300,000 volumes. Rector, the Rt. Rev. Monsignor James H. Ryan, Ph. D., S. T. D.

CATTLE. See DAIRYLING, LIVESTOCK.

CATTLE PLAGUE. See VETERINARY MEDICINE.

CATTLE-TICK ERADICATION. See LIVESTOCK, VETERINARY MEDICINE.

CAUCASUS, ka'ka-sūs. A term applied to the indefinite region in southeastern Europe, comprising the isthmus which separates the Sea of Azov and the Black Sea from the Caspian Sea, formerly an administrative division of the Russian Empire. It was divided into two districts of Transcaucasia and Cis-Caucasia, of which the former was divided among the three republics of Armenia, Georgia, and Azerbaijan. These afterward separated and were respectively incorporated under the constitution of 1923, in the Union of Soviet Republics, and are now known as the Transcaucasian Federation of Soviet Republics. Consult each under its own title.

CAVALRY. See MILITARY PROGRESS.

CELEBRATIONS. The recognition of impor-

tant historical anniversaries and the birthdays of well-known personages is coming more and more to be an accepted procedure, and the practice everywhere is a growing one. In the United States during the year 1929, many of the events so celebrated were sesquicentennial anniversaries of occurrences during the War of the Revolution.

January 19. The centenary of the first stage production of Goethe's *Faust* and the 200th anniversary of Lessing's birthday were celebrated simultaneously in Brunswick, Germany, with a theatrical exhibition showing different methods of presentation of the tragedy and with lectures on Lessing's works by prominent authorities.

January 23. The 200th anniversary of the arrival of Bishop George Berkeley to the American colonies was celebrated in New Haven at the Berkeley Divinity School. Addresses were given on these topics: The English Background, The American Background, New Light on Berkeley's American Sojourn, Berkeley's Contribution to American Thought, Berkeley's Contribution to American Culture, Berkeley's Contribution to American Thought, Berkeley as a Patron of Art; Berkeley as an Educator, and Berkeley's Significance in Modern Philosophy. There was an exhibit of Berkeley's books, manuscripts, and pictures. On January 20, a sermon commemorative of Berkeley was preached, in the Cathedral of St. John the Divine in New York City, by Dean W. P. Ladd, and similarly in Newport, where Dean Berkeley landed, a sermon was preached by the Rev. S. C. Hughes on February 24. Also in New Haven on February 22, a collection of rare Venetian coins and other historical material was placed on exhibition in Yale University to commemorate this event.

February 25. The celebration of the 150th anniversary of the capture by George Rogers Clark of Fort Sackville, Ind., was held in Vincennes, Ind., under the auspices of the George Rogers Clark Memorial Commission. A commemorative two-cent postage stamp was issued by the Post Office Department in honor of the event.

March 19. The 100th anniversary of the birth of Carl Schurz, editor, diplomat and soldier, was held in the Horace Mann Auditorium, New York City, under the auspices of the Institute of Arts and Sciences of Columbia University. The speakers were Dean F. J. E. Woodbridge of Columbia University, Charles A. Nagel, former Secretary of Commerce and Labor, and George McAneny, representing the Carl Schurz centennial committee, who eulogized Carl Schurz, pointing out that the love of tolerance, recognition of the futility of war, and the potential greatness of the immigrant were the most important lessons taught by the famous liberal.

March 22. The 150th anniversary of the presentation to Louis XVI, by Benjamin Franklin, of his credentials as the first American Ambassador to France, was commemorated in Paris at Théâtre Odeon, where a group of distinguished French actors gave a play entitled, *Le Bonhomme Richard*. The play was written by Louis Evan Shipman, American playwright, and the French translation was by Mlle. Genevieve Pommerehne.

April 13. The 187th birthday of Thomas Jefferson was celebrated with appropriate exercises, conspicuously in New York City and Washington, D. C., under the auspices of the Thomas Jefferson Memorial Foundation. The setting aside of April 13 as "Religious Freedom Day" was strongly urged.

April 29-May 12 The fifth centenary of the relief of Orleans by Joan of Arc was generally celebrated throughout France. From April 29, the date on which Joan first brought food to the

Orleanais, until 10 days later when surrendered, each day had its respective festival. On May 8, the final day of the civic festival, President Doumergue, Premier Poincaré, Marshal Pétain, General Goulaud, more than sixty prelates of the church, including the Papal Legate, Cardinal Lepicier, and the venerable Cardinal Luçon from immortal Rheims, walked afoot in the procession in Orléans, which lasted for hours, during most of which time rain fell steadily. Between 200,000 and 300,000 were present at the various exercises. On May 12, closing ceremonies were held in Paris, Marseilles, Bordeaux, Lille, Rheims, and Toulon, and also in Washington, D. C.

June 1. The 1000th anniversary of the founding of the city of Meissen, Saxony, was celebrated by the placing of clumes of porcelain in the belfry of the Marienkirche, a civic church, overlooking the ancient market place. They were designed in the historic Meissen Porzellanmanufaktur and represent a new departure in bell construction. The tone was declared by experts to be quite as full and round as that of metal bells, and in some respects even more pleasing. Another memorial celebrated the completion of the redecorated interior of St. Nicholas Church, which was dedicated on May 26. Meissen porcelain replaces the wood and stone of the old interior, the walls were covered with huge porcelain tablets to the memory of the 1700 citizens of Meissen, who fell during the World War. In the intervals between the tablets were placed large porcelain figures of crying children and mothers bearing torches. On the altar was a large porcelain group showing Christ extending his hands in blessing mourning mothers and children.

June 3. The 50th anniversary of the invention of the incandescent electric light by Thomas A. Edison was celebrated throughout the United States, conspicuously in Atlantic City, N. J., where, during a convention of the National Electric Light Association, the new National Electric Light Auditorium of over 500 exhibits gave the public a remarkable demonstration of the development of the electric light. The U. S. Post Office Department issued a commemorative two-cent stamp on the occasion. Later, a new edition of Martin's two-volume standard biography of Edison, originally published in 1910, was brought out (in honor of the electric light's golden jubilee), enlarged to cover Edison's career to 1920. See below, under October 21.

June 7. The 75th anniversary of the origin of the Republican party was celebrated in Ripon, Wis., with a pageant entitled, "A New Birth of Freedom," which had its first presentation on the Ripon College campus, across the street from the schoolhouse shrine. The pageant was written by Prof. H. P. Boody of Ripon College, and a cast of 500 dramatized the historical setting of 75 years before, when a new party was formed on the issue of non-extension of slavery. Addresses were made by the Hon. James W. Good and other speakers in commemoration of the event.

June 7-12. The festivities in honor of the 50th jubilee of the Queen Mother, Emma, reached a climax on June 12, when a medieval pageant was held in the Olympic Stadium in Amsterdam,

Holland, before 40,000 spectators. The pageant was witnessed by the Queen Mother, Queen Wilhelmina, and the Crown Princess Juliana. The cast was made up of 14,000 persons, including 1000 school children.

June 20-July 4. The 800th anniversary of the of a charter to Duisburg, Germany, as a city was celebrated with elaborate ceremonies. Duisburg was founded as early as 430 A. D., but it was not until 1120 that it achieved sufficient commercial importance to receive a charter. It is now the largest river port in Germany.

June 29. In Coventry, England, Miss Murtel Mellerup, a beautiful, golden-haired girl, rode through the streets of this ancient city attired only in flesh-colored tights in commemoration of the historic event of 1040, when the Saxon Lady Godiva rode through the streets of Coventry to gain from her husband, Leofric, Earl of Mercia, the remission of oppressive taxes on his people. Her horse, Peaceful, was led by women robed as Benedictine nuns and headed a procession 4 miles long, illustrating episode after episode in the history of ancient Coventry, portraying a wide range of historical personages and incidents, and including Mary, Queen of Scots, Sir John Falstaff, and the gunpowder plots.

June 20-July 4. The 300th anniversary of founding of Lynn, Mass., was celebrated with elaborate exercises. The special guest of the occasion was Gladys, Marchioness Townshend, Lord Mayor of King's Lynn, England.

July 12. The six northern counties of Ireland celebrated the anniversary of the Battle of the Boyne, which was fought in 1690 on the banks of the Boyne River, the armies of William III of Orange defeating a smaller force of James II, last of the Stuart kings. There were many public meetings at which resolutions were adopted expressing joy over King George's recovery.

July 15. The sesquicentennial of the storming of Stony Point by Gen. Anthony Wayne and the Light Infantry of the American Army on the night of July 15, 1779, was observed under the auspices of the American Scenic and Historic Preservation Society. Addresses were made by Senator Royal S. Copeland, the Hon. Hamilton Fish, Attorney-General Hamilton Ward, Lieut.-Gov. William S. Youngman of Massachusetts, Hon. J. Mayhew Wainwright, Charles A. Hale, Dr. William S. Thomas, Robert Hartshorne, representing Governor Morgan F. Larson of New Jersey, and others.

August 8. As part of the Sullivan Sesquicentennial, a pageant, "The Life of Mary Jemison," was presented in Perry, N. Y., in Letchworth State Park in the Genesee Valley by the girls of Camp Deh-gewanus. It showed the Indian raid on the Jemison home at Maich Creek, Pa., Apr. 5, 1758, the eight days of Mary's captivity and her adoption by two squaws at a Seneca castle, in what is now Ohio; also, her marriage to a Delaware Indian and the six-months' pilgrimage from Ohio to the Genesee Valley. Finally, the Indian council at the Big Tree in 1797, when Mary was granted a tract of 17,000 acres, including the site of Letchworth Park.

August 8-10. A three-day celebration of the 100th anniversary of the first trip of the Stoubridge Lion, the "first locomotive to turn a wheel by steam in the Western Hemisphere," was held in Honesdale, Pa. This was followed by the unveiling of a memorial to Horatio Allen, the Lion's engineman, in Riverside Park, and, later,

by a historical pageant and band concerts. The first feature of the programme was a "transportation parade," in which the modes of travel from colonial days down to the present were represented. They included a covered wagon, the pony express for carrying mails, the stage coach, both high and low bicycles, and automobiles, while airplanes, representing the latest method, soared over the town.

August 9-10 The sesquicentennial of the events pertaining to the early history of Cooperstown, N. Y., were celebrated with a water regatta on Otsego Lake, and a historic pageant in which were presented scenes showing the arrival of William Cooper, founder of Cooperstown and father of James Fenimore Cooper.

August 17 The village of Endicott, N. Y., commemorated its part in the Sullivan Expedition with a celebration which included historic pantomime a parade, the dedication of a State monument, patriotic speeches, and a display of fireworks. It was in Endicott that General Poor, sent by Sullivan, met General Clinton with 250 boats of supplies and about 1600 men, coming down from Canajoharie, and escorted him to Tioga Point, now Athens, where he joined forces with General Sullivan. The State of New York erected a monument with two markers telling the story of the Sullivan Expedition and its local significance.

September 6 The 200th anniversary of the birth of the German philosopher Moses Mendelssohn, was celebrated throughout Germany, but most conspicuously in Dessau, Anhalt, where he was born, and in Berlin, where the official exercises were held under the auspices of the Berlin Jewish Community and the Academy of Jewish Science.

September 12-15 The 200th anniversary of the founding of Baltimore, Md., was arranged by a committee of 400 citizens appointed by Mayor Broening with Henry B. Wilcox as chairman. On September 12, the programme was as follows: A spectacular military parade including portions of the Regular Army, National Guard, American Legion and marines and sailors from the war ship. During the evening, there was a bombardment of Fort McHenry in commemoration of the repulse of the British fleet in 1814. On September 13, in the afternoon, 80,000 persons gathered in the Municipal Stadium, where from 3000 to 5000 children gave a programme prepared by the Playground Athletic League. In the evening, the fraternal orders of the United Brotherhood of Carpenters and Joiners of America, Odd Fellows, Knights of the United Order of the Moose, and other organizations, paraded with music and floats. On September 14, a mammoth pageant was held in the afternoon, it comprised 56 floats depicting the city's history and growth industrially, commercially, governmentally, educationally, and otherwise. On September 15, special commemorative services were held in the city churches, one of which, St. Paul's Protestant Episcopal, stands on the ground of its original site of 1730. In the evening, a public mass band concert was given.

September 15 The sesquicentennial of the destruction of the Genesee Castle, or Sachem's Village, where 200 acres of corn and 1500 trees belonging to the Indians of the Six Nations were burned, was celebrated in Cuylerville, N. Y., the farthest western point reached by Gen. James Clinton, who commanded the militia on the expedition under Gen. John Sullivan. The exercises

included addresses and the presentation of historic features, the programme was organized under the State Education Department in co-operation with an advisory committee appointed by Governor Roosevelt.

September 15 The 119th anniversary of the independence of Mexico was elaborately celebrated in the city of Mexico by a parade of 20,000 picked troops, a procession of airplanes, and various official receptions and other festivities. At midnight, President Portes Gil rang the ancient bell on the front of the palace and gave the famous "Long live Mexico" cry.

September 15-21 The 142d anniversary of the signing of the Constitution of the United States was celebrated throughout the week. The American Legion actively cooperated with the American Bar Association and other similar organizations in making the celebration a success. Services on Sunday in the churches and addresses before various civic associations, many of which were broadcast over the radio, were conspicuous features of the celebration.

September 21 The sesquicentennial celebration of the successes of the punitive expedition under Gen. John Sullivan against the Indians of the Six Nations was held in Geneva, N. Y., and included a historic pageant depicting the events of that period which led to the defeat of the Indians and the opening of the Finger Lakes region and the Genesee Valley to colonization. This and the other events connected with the Sullivan Expedition were honored by a commemorative two-cent stamp bearing a portrait of General Sullivan, issued by the United States.

September 22 The 125th anniversary of the death of Commodore John Barry, father of the American Navy, was observed with memorial exercises on the mall in Central Park, New York City. Sailors and marines from the Navy Yard and delegations from veterans' organizations were present. The naval band played and a chorus of 150 school children sang patriotic selections. Similar exercises were held in Boston, Cleveland, and Chicago.

September 27 On this date, Cardinal Hayes issued a letter to the rectors of the 444 churches in the Archdiocese of New York, directing that the entire month of October be dedicated "to the Supreme Shepherd, Pope Pius XI, in honor of the 50th anniversary of his holy priesthood." He said "The recent historical events, namely, the signing of the Lateran pact and the emergence of the Pontiff from St. Peter's, after three-score years, arrested the attention and aroused the interest of the civilized world."

September 28 The third and last part of "The Pageant of Decision," completing New York's celebration of the Sullivan-Clinton Sesquicentennial was held in Elmira, N. Y. Historic events showing General Sullivan's encounter with the Indians at the Battle of Newtown, which occurred in the vicinity of Elmira, were reenacted within a short distance of the one-time summer home of Mark Twain. It was estimated that from 60,000 to 75,000 persons were in attendance.

October 5 Portugal celebrated the 19th anniversary of the founding of the Republic by repealing sentences of 114 criminals and reducing the sentences of deserving long-term prisoners. President Carmona was the central figure in a parade, in which Portugal's best regiments marched down the Avenida Libertade in a ceremony ending at the monument to the national heroes of

the revolution of 1910. The monument was lavishly decorated with flowers.

October 5 The 152d anniversary of the Battle of Germantown was celebrated by the dedication of tablets placed on buildings, walls, and boulders along Germantown Avenue, Church Lane, and Limekiln Pike, on the Chew House, where the battle opened, on the home of Caspar Wister Haines, and on other sites. A committee investigated records of the battle sites and arranged for the markers.

October 9 The 150th anniversary of the death of Gen. Casimir Pulaski in Savannah, Ga., was elaborately celebrated, especially in Savannah, where the exercises began with a military mass in the park extension, a large military reservation in the centre of the city. The military parade formed an escort for the priests and acolytes who took part in the mass which was celebrated by the Bishop of Savannah. The altar was an impressive sight, the Confederate monument towering behind it and palms on either side forming a picturesque setting. The United States flag formed a background for the candles and cross and also hung before the altar, with the French Tricolor on one side and the flag of Poland on the other. Later, two markers describing historic events were dedicated. Appropriate exercises were held also in New York City, Washington D. C., Baltimore, Md., where the Polish Legion was recruited, Northampton, Mass. (where former President Coolidge unveiled a monument to Pulaski), Chicago, Ill., and elsewhere, at many of which Count Francis Pulaski represented the family and the Polish Republic. The Polish Alliance had much to do with the arrangements.

October 12-18 The completion of the canalization of the Ohio River was celebrated by a Pittsburgh to Cairo trip of packets, with appropriate ceremonies including addresses at both Pittsburgh and Cairo. This great waterway of 1000 miles now has a depth of 9 feet and the Federal Government has already expended \$125,000,000 on the work. An address by President Hoover, pertinent to the event, was made at Louisville, Ky., on October 23. A commemorative two-cent stamp was issued by the Post Office Department in honor of the completion of this great step in the improvement of internal waterways.

October 21 The 50th anniversary of the invention of the incandescent electric light by Thomas A. Edison was universally celebrated throughout the world as "Light's Golden Jubilee." In the United States, the celebrations culminated in Dearborn, Mich., where President Hoover, Thomas A. Edison, Owen D. Young, and others were the guests of Henry Ford who had purchased the original Edison laboratory at Menlo Park, N. J., and recreated it as a unit in his industrial museum. The original scene of exhibiting the lamp was reenacted and addresses in tribute to the occasion were broadcast around the world by radio. See also *June 8*.

October 27-November 2 The 250th anniversary of the settling of Trenton, N. J., was celebrated with a week of pageantry, sport, and speech making. These exercises began with patriotic church services and were followed on October 28 with parades of the police and fire departments, and civic organizations. Tuesday was given over to parades of school children, and Wednesday was pageant day, when more than 50

floats depicting events in the history of Trenton from the time of Mahlon Stacy's (the first settler) journey up the Delaware until a period of about 50 years ago. The closing events were a parade of the volunteer firemen's organizations from New Jersey and nearby States, and a speedboat regatta on the Delaware River. An exhibit of Trenton's industrial accomplishments was a feature of the celebration and was continued for two weeks.

November 10 The 25th anniversary of the Battle of Grzybow, the first contest of the Poles against the Czarist government since 1863 was celebrated in Warsaw, Poland, by military parades with open-air gatherings at which addresses were made by Marshals Pilsudski and Daszynski.

November 30 The sesquicentennial celebration of the coming to Morristown, N. J., by the Continental Army was celebrated by parades of military organizations and members of patriotic societies, pageants with parades in costumes, and floats. Washington's headquarters—the Ford Mansion—is now preserved as a museum and contains a large collection of relics of the War of the Revolution.

December 13 The 100th anniversary of the founding of the *Revue des Deux Mondes* France's oldest literary monthly, was celebrated in Paris at the Sorbonne with a series of addresses.

December 17 The centenary of the independence of Venezuela was celebrated throughout that country, but chiefly in Caracas with a series of patriotic demonstrations, parades, and fiestas.

December 23 The golden jubilee of the ordination to the priesthood of Pope Pius XI was celebrated in all the churches and chapels of the Archdiocese of New York with a solemn mass of thanksgiving.

MASSACHUSETTS BAY TERCENTENARY Under this name, an organization of citizens chartered by the Commonwealth had in active preparation for the commemoration in 1930 of the 300th anniversary of the establishment by the Puritans of the Bay Colony in New England, 1630. In this celebration, Massachusetts was to set a new mode for observance of notable anniversaries. Instead of a world's fair, with artificially created central exposition, all the State and section was to become the fair grounds with 50 centres of special attraction besides the scores of historic places and scenes that Massachusetts has made part of America's life and an inspiration to the world. There were to be patriotic pilgrimages, pageantry, parades, music, amusements, sports, ocean and mountain recreation, reunions, old-time manners and customs reproduced for contrast with the present. State-wide open house to nation and world was to be maintained. Three centuries of contributions made since the Puritans planted and rooted free government on this continent, were to be displayed and reviewed: cultural, industrial, educational, spiritual, social, civic. It was estimated that more than 100 towns, cities, and organizations in Massachusetts were to have special programmes. A monthly journal, the *Tercentenary News of 1930*, has been published since July, 1929.

WASHINGTON BICENTENNIAL COMMISSION In accordance with the bill passed by Congress (see *YEAR BOOK* for 1928, page 142), bids were obtained for the preliminary work on the George Washington Memorial Highway authorized by Congress to extend along the Potomac River

from Washington to Mount Vernon at a cost not to exceed \$4,500,000. This Highway will be 15½ miles long, with a right-of-way 200 feet wide, except in Alexandria, and with a 40-foot pavement and two 10-foot shoulders. Seven or eight masonry bridges will be constructed, monumental in design and harmonizing with the Arlington Memorial Bridge now being built, to provide a direct route between Washington and Arlington National Cemetery at a point below the Lee Mansion. The masonry bridges will carry a 60-foot roadway with a 5-foot sidewalk on each side. Automobile parking spaces will be provided at nine places on the route. Starting at the Virginia end of the Arlington Memorial Bridge, the roadway will traverse Columbia Island, pass under both the highway bridge and the shore space of the Southern Railroad Bridge over the Potomac, on the outskirts of the capital, and follow the Potomac, as closely as topography, alignment, grades, and plans for future development will permit, to the postern gates of Mount Vernon.

According to Senator Fess, vice chairman of the commission, the programme committee has two tasks awaiting it. First, to make suggestions as to how communities throughout the United States should observe the bicentennial year, and second, to make direct arrangements for the national celebration at the seat of government. Arrangements for celebrations throughout the United States will be left to the States, but the commission probably will offer certain suggestions to State, county, and municipal authorities, as for example, the commission may recommend to county officials throughout the land that a week be designated for George Washington Bicentennial exercises in the schools. With regard to the prospect for great physical improvement in the appearance of the national capital before 1932, the approval by Congress of plans for beautification of Union Station Plaza was encouraging. Two coats of arms of George Washington's ancestors had been obtained in England by Dr. Albert Bushnell Hart, historian of the commission, and were to be brought to the United States by him in connection with preparations for the celebration in 1932.

CELL. See ZOOLOGY.

CELTIC LITERATURE. See PHILOLOGY, MODERN.

CEMENT. The preliminary estimates of production for the Portland cement industry for the United States indicated for 1929 a total of 170,198,000 barrels, as compared with 176,290,000 barrels in 1928, or a decrease of 3.5 per cent. The shipments in 1929 aggregated 169,394,000 barrels, as against 175,838,000 barrels in 1928, or a decline of 3.7 per cent. At the end of the year, the stocks on hand at the various plants amounted to 23,519,000 barrels, as compared with 22,918,000 barrels at the end of 1928. At the close of December, 1929, the total output of finished cement, as compared with the estimated capacity of 165 plants, was 51.5 per cent, as compared with 60.4 per cent for 1928 plants at the close of December, 1928. The relation of production to capacity for the calendar year 1929 was 66.4 per cent, as compared with 74.0 per cent in 1928. The accompanying table gives the production and shipments of finished portland cement by districts in 1929 and 1928.

In addition to Portland cement, the production of clinker (unground Portland cement) in 1929

was 168,988,000 barrels, as compared with 173,742,000 barrels in 1928. The accompanying table shows the production and stocks at the end of the month by district. In 1929 the imports of hydraulic cement aggregated 1,727,900 barrels valued at \$1,938,240 as compared with 2,284,085 barrels valued at \$3,090,860 in 1928, while the exports in 1929 amounted to 886,172 barrels valued at \$3,083,911 as compared with 824,050 barrels valued at \$2,938,702 in 1928.

ESTIMATES OF PRODUCTION AND SHIPMENTS OF FINISHED PORTLAND CEMENT IN 1929 AND 1928, BY DISTRICTS
[In thousands of barrels]

DISTRICT	1929	1928
<i>Production</i>		
Eastern Pennsylvania, New Jersey, and Maryland	37,638	39,677
New York and Maine	11,408	11,484
Ohio, Western Pennsylvania, and West Virginia	17,882	18,326
Michigan	18,727	18,848
Wisconsin, Illinois, Indiana, and Kentucky	21,369	22,749
Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana	13,765	15,919
Eastern Missouri, Iowa, Minnesota, and South Dakota	15,698	16,693
Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas*	12,869	10,939
Texas	7,369	6,346
Colorado, Montana, Utah, Wyoming,* and Idaho*	2,696	2,772
California	12,881	13,556
Oregon and Washington	3,396	3,960
	170,198	176,299
<i>Shipments</i>		
Eastern Pennsylvania, New Jersey, and Maryland	37,573	39,739
New York and Maine	11,521	11,357
Ohio, Western Pennsylvania, and West Virginia	17,717	18,017
Michigan	13,326	14,044
Wisconsin, Illinois, Indiana, and Kentucky	21,169	22,627
Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana	14,046	15,770
Eastern Missouri, Iowa, Minnesota, and South Dakota	15,981	16,544
Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas*	12,254	11,222
Texas	7,084	6,211
Colorado, Montana, Utah, Wyoming,* and Idaho*	2,789	2,628
California	12,577	11,700
Oregon and Washington	3,354	3,939
	169,394	175,818

* The inclusion of Wyoming begins with April, 1929, of Idaho with June, 1929, of Arkansas with September, 1929.

CENSUS, FEDERAL. The Fifteenth Decennial Census to be taken in 1930 was provided for in the amended bill which passed both Houses of the special session of Congress called in April, 1929, and which was signed by President Hoover on June 18. It provided that "a census of population, agriculture, irrigation, drainage, distribution, unemployment, and mines shall be taken by the Director of the Census in the year 1930 and every 10 years thereafter." The Census of Manufactures for 1929, which also was to be taken in 1930, was provided for by a section of the law which directed that the statistics of manufacturing industries should be collected and published every second year after 1927. According to the 1929 Census Act, the population and agricultural censuses should be taken as of April 1, 1930; and it was required that the 100,000 enumerators should complete their work within two weeks in all cities having more than 2500

inhabitants and within 30 days in all other places Cooperative arrangements also were made with various organizations and government bureaus, including the Bureau of Indian Affairs, for the enumeration of Indians on reservations, the Foreign Service division of the State Department, for the enumeration of American citizens employed in the foreign service of the Government the War Department, for the enumeration of Army posts, the Navy Department, for the enumeration of the officers, sailors, and marines at naval bases and on naval vessels, the National Park Service, for the enumeration of persons in the national parks, the Bureau of Lighthouses, for the enumeration of persons on lightships and

that were not accessible to enumeration. The Bureau of Navigation and steamship companies, for the enumeration of persons employed on mercantile vessels, and the Bureau of Mines, for the census of mines.

The 1929 Census Act was the first since 1850 to combine the census and congressional apportionment. According to the report for 1929 of the Director of the Census, it provided that after each census the President should transmit to Congress "a statement showing the population of the several States as ascertained by the census and also the number of Representatives to which each State will be entitled under an apportionment of the then existing number of Representatives (at present 435) by each of the following methods: (1) By the method used in the last preceding apportionment, (2) by the method known as the method of major fractions, which happens at this time to be the same as (1), and (3) by the method known as that of equal proportions. If the Congress to which this statement is submitted fails to pass a law apportioning Representatives, the apportionment by method (1) as announced by the President goes into effect. But if the statement required from the President is not submitted within one week after Congress meets in regular session following the census, these provisions of the law have no effect." This was the first census law to provide that the results of the census should be sent to Congress by a specified time.

The population census scheduled to be used in 1930 was to be, in the main, the same as that used in 1920 and earlier censuses, most of the 25 to 30 questions covering such basic and essential information as age, sex, color, marital status (whether single, married, widowed, or divorced), nativity and nativity of each parent, and occupation. It also was to carry questions as to literacy, school attendance, and ability to speak English and, in the case of the foreign-born, whether naturalized or alien and the year of immigration to the United States.

For the information of the Veterans' Bureau, two new questions had been proposed to ascertain whether the person enumerated was a war veteran and, if so, in what war he had served. There also were two questions as to whether or not the person was living on a farm at the time of the census and whether he was living on a farm a year ago, which, taken in conjunction, would afford the basis for statistics of migration to and from the farm. Another new question on the population schedule related to unemployment, a supplementary sheet carrying additional questions which must be filled out for any person usually engaged in a gainful occupation who was not employed at the time of the census.

The agricultural schedule contained 375 inquiries, covering such questions as acreage, classes of farm land, such as crop and pasture land, the tenure under which the farm was operated, total value of the farm with separate items for buildings, dwelling houses, implements and machinery, farm debt, principal farm expenses, land drained, farm machinery and facilities such as automobiles, tractors, telephone, radio; quantity produced of all major crops and most of the minor ones, various kinds of domestic animals on the farm, including age and sex, and other data. In addition, a supplemental schedule was prepared, at the request of agricultural interests in the States of California and Florida, which included inquiries concerning certain subtropical fruits, and another supplemental schedule, prepared especially for use in the West, contained 250 inquiries as to irrigated crops.

The provision for a census of distribution was incorporated in the 1929 Census Act in response to a general demand for basic data that would throw light upon the important problem of eliminating unnecessary economic waste in the distribution of commodities. The test census, taken in 1927 in 11 cities, developed important facts in regard to the sale of commodities by retailers, wholesalers, brokers, and similar agencies, but it included no data relating to the sale of commodities by one manufacturer to other manufacturers for use in assembling or for the purpose of fabricating other products. The census was to be taken in cities at an earlier date than that for the enumeration of the population and by special enumerators selected for the work.

The population, agricultural, and industrial censuses, although of great magnitude, are only a part of the many activities of the Bureau of the Census, which issues regular periodical inquiries involving the compilation and tabulation of data in regard to births and deaths, marriages and divorces, persons in Federal and State institutions, such as prisons and reformatories, institutions for mental patients, and institutions for the feeble-minded and for epileptics, electrical industries, including electrical railways, telegraphs, telephones, and central electric light and power stations, financial transactions of States and cities, forest products, including the production of lumber, laths, shingles, wood pulp, and current production of numerous commodities, such as fats and oils, hides, skins, and leather, boots and shoes, leather gloves and mittens, wheat and flour, wool and wool manufactures, hosiery and knitted underwear, etc. The bureau issues the *Monthly Survey of Current Business* in which are brought together current reports of business activities, emanating from both governmental agencies and representative private organizations, including trade associations. During 1929 it published the following monographs: *Growth of Manufactures*, by Edmund L. Day and Woodhief Thomas, *Earnings of Factory Workers, 1896 to 1927*, by Paul F. Brissenden, *Women in Gainful Occupations*, by Joseph A. Hill, and *Ratio of Women to Children*, by Warren S. Thompson. The director of the Bureau of the Census in 1929 was W. M. Stewart. See STATISTICS and under article on UNITED STATES.

CENSUS, WORLD AGRICULTURAL. See AGRICULTURE.

CENTRAL AMERICA. The term generally applied to the southern portion of the North

American continent lying to the north of the Panama Canal and south of Mexico and consisting of the five states, Costa Rica, Guatemala, Honduras, Nicaragua, and Salvador. See the articles on these respective countries. See EXPLORATION.

CENTRAL STATIONS See DYNAMO ELECTRIC MACHINERY. POWER PLANTS, STREAM.

CENTURY OF PROGRESS See EXPOSITIONS.

CEREALS See BARLEY, OATS, RYE, WHEAT. **CEREBRO-SPINAL FEVER.** See MENINGITIS, EPIDEMIC.

CEYLON, *śrī lāṇ*. An island in the Indian Ocean off the southern extremity of Hindustan, belonging to Great Britain. Capital, Colombo. Its extreme length from north to south, i.e. from Point Palmyra to Dondra Head, is 266 miles, its greatest width 140½ miles from Colombo on the west coast to *Point Palmyra* on the east coast. Area, 25,332 sq. miles. Population, at the census of 1921, 4,504,549, as compared with 4,106,350 in 1911, estimated at the end of 1927, 5,288,792. In 1921 there were 8099 Europeans, 29,403 burghers, or Dutch descendants, and other Eurasians, and the remainder of the population comprised Singhalese, Tamils, Moors, Malays, Veddas, and others. The registered movement of population in 1927 was as follows: Births, 205,170, deaths, 113,007 marriages, 30,566. The chief cities with their populations in 1921 were Colombo, 244,163, Jaffna, 42,136, Galle, 39,073, and Kandy, 32,047. The number of vernacular schools in 1927 was Government schools, 1180, attended by 114,856 boys and 57,892 girls, aided schools, 1876, attended by 137,863 boys and 90,775 girls, unaided schools, 416, attended by 12,207 boys and 6825 girls, English and Anglo-vernacular schools, 423, attended by 63,539 boys and 17,783 girls.

Ceylon is almost entirely agricultural and specializes in export crops. Plantation tea, rubber, and coconuts make up the bulk of its products, but considerable amounts of cacao, cinnamon, citronella grass, and miscellaneous products are grown, largely by individual native farmers. Considerable rice also is raised but more than half of the country's total consumption of this food supply is imported from India and other sources. Specializing in export crops as Ceylon does, its export record is an excellent gauge of its prosperity. Tea is the ranking product of the island, but rubber is rapidly approaching it in value of output.

The volume of foreign trade in 1929 amounted to \$298,045,000 as compared with \$294,134,000 in 1928. Imports for 1929 totaled \$145,489,000 and exports, \$152,556,000. The increase in Ceylon's total trade is indicated by the fact that in 1913 it amounted to \$144,835,000 and in 1922, to \$193,174,639. About one-third of the total trade is carried on with the United Kingdom, one-third with the other British dominions and possessions, and one-third with all other countries. In 1927, 41 per cent of the exports went to the United Kingdom, 17 per cent to other British dominions, and 41 per cent to all other countries, including 25 per cent to the United States. About 15 per cent of Ceylon's total trade is carried on with the United States, but the latter country furnishes only about 3 per cent of Ceylon's imports. The principal products of Ceylon, with the value of the respective exports in 1927, are tea, \$77,174,957, rubber,

\$46,843,924, copra, \$11,496,326, coconut (desiccated), \$7,395,221, coconut oil, \$5,980,062, cinnamon, \$1,727,885, areca nuts, \$1,083,490, coir fibre, \$1,040,869. Other products are cacao, pineapples, coir yarn, skins, fresh coconuts, citronella oil, coconut poodar, cardamoms, and pupain. Husked rice, cotton piece goods, wheat products, sugar, raw cotton, coal, oils, iron and steel manufactures, and automobiles and vehicles constitute the chief imports. Livestock in 1927 included 1500 horses, 1,588,000 horned cattle, 60,000 sheep, 51,000 swine, and 176,000 goats.

Plumbago is the chief mineral mined, 67 plumbago mines worked in 1927 having an output of 258,000 cwts. Gold, thorium, and monazite exist and there are small gem quarries producing sapphires, rubies, moonstones, etc. In 1927 there were about 1600 tea, rubber, and cacao factories, 1400 cinnamon, citronella, coconut, fibre oil, and other factories, and some 20 sawmills.

For the fiscal year ending Sept. 30, 1927, the revenues totaled \$8,623,928 and the expenditures, \$8,069,753. The net public debt on Sept. 30, 1927, was \$3,628,543, incurred entirely for public works. Shipping cleared and entered from Ceylon ports in 1927 totaled 20,103,000 tons (British, 12,381,000 tons). In 1929 the island had 112½ miles of government-owned railway line, of which 704 miles were main lines. In 1927 operating revenues were \$10,888,900 and operating expenditures, \$7,171,062. There was an excellent system of roads, 4238 miles in length, of which 3644 were surfaced. The mileage of telegraph wire was 9771.

GOVERNMENT. The administration as embodied in an Order in Council of December, 1923, was in the hands of a Governor, aided by an executive council of nine members, and a legislative council of 49 members (12 official and 37 unofficial). Of the unofficial members, 23 are elected to represent the territorial divisions, two to represent the Europeans, two the Burgher community, one the Chamber of Commerce, one the Western Province Tamils, three the Mohammedans and two the Indians. Subject to the approval of the legislative council, a new system of government proposed by a special commission was approved in November, 1929, by Lord Passfield, the British Secretary of State. A representative Chamber elected by the suffrage of all adult males and of women over thirty and with legislative and executive functions was provided for. Government departments were divided into ten groups, the chairman of which would have the standing of ministers. Seven of the chairmen would be elected by a revised legislative council of 50 elected members, eight nominated unofficial members, and the Colonial Secretary, Attorney-General, and Secretary. Powers of veto were reserved to the Governor. The former system of communal representation was abolished. The suffrage was formerly restricted to about 4 per cent of the population. The changes approved were formulated in response to administrative difficulties involved in the former system and in a larger measure of self-government by the native population. Governor in 1929, Sir Herbert James Stanley.

The Maldivé Archipelago, consisting of 13 coral islets, 100 miles west of Ceylon, is tributary to Ceylon. They are sparsely settled by a mixed race of probably pure Aryan stock and governed by a native Sultan. The islands are cov-

ered with coconut palms, and yield millet, fruit, and coconut produce. The population numbered over 70,000 in 1921. The islanders are civilized and are great navigators and traders.

CHAMBERLAIN, EUGENE TYLER American editor and official, died in Baltimore, Md., Oct. 8, 1929. He was born in Albany, N. Y., Sept. 28, 1856, and was graduated from Harvard. He engaged in editorial work during 1882-93, in which time he was associate editor of the *Albany Journal*, political correspondent at Albany for Boston, New York, Philadelphia, and Washington papers, and editor of the *Albany Times*. During 1893-21 he was commissioner of navigation in the U. S. Department of Commerce. He was the American delegate to the International Conference on Safety at Sea, held in London in 1913.

CHAMBER MUSIC See Music

CHAMBER OF COMMERCE OF THE UNITED STATES A national federation of more than 1600 business organizations, established in 1912 primarily as a vehicle for the expression of national business opinion on important economic questions. The President of the United States and other government officials aided in its organization and it has since served as an agency for the cooperation of business and government in the furtherance of national economic policy, holding itself ready at all times to advise the government regarding the needs of business and the possible economic effects of legislative measures.

The members of the chamber are trade associations and local or regional chambers of commerce, these groups being represented on a board of directors composed of 34 members chosen from geographical districts or specific fields of business and elected for a term of two years. The membership in 1929 consisted of 1776 business organizations, 10,705 individual members, and 12,494 associate members. The policies of the organization are formulated only by resolutions adopted at its meetings or by direct referendum in order that they may reflect as accurately as possible the opinion of all classes of business represented in the constituent membership. Among the questions to which the chamber directed its attention during the year were: The tariff, foreign trade policies, farm legislation, produce exchange trading, reduction of government in business, reorganization of Federal government departments and agencies, voluntary consolidation of railroads, relief for the Interstate Commerce Commission and continuance of its rate making authority, modernization and codification of American navigation laws, adherence of the United States to the protocol of the Permanent Court of International Justice, prudent reduction of armaments, and tax revision.

For the convenience of its members the chamber maintains at its national headquarters 12 service departments covering the main divisions of business activity. The agricultural department aids local chambers of commerce in the solution of agricultural problems and the enhancement of trade area prosperity. The civic development department aids business men to approve not only local municipal and civic development but also matters of general national importance. The commercial organization department assists member chambers in strengthening their organization and extending their usefulness to the communities which they serve. The department of manufacture aims to assist local

chambers with their problems of industrial extension. The domestic distribution department attempts to determine in a scientific manner the costs of distribution. It also has cooperated with the U. S. Bureau of the Census in working out a distribution census so as to obtain an accurate account of the channels of distribution, wages of employees, and volume of business in different parts of the country. The finance department studies methods of Federal, State, and local taxation and problems of corporation and international finance. The foreign commerce department deals with tariff policies and import and export prohibitions and restrictions. The insurance department is concerned with life extension and in 1929 inaugurated an inter-chamber health conservation contest; it also continued the inter-chamber fire-waste contest in which more than 660 local chambers and similar organizations participated in 1929, showing a decreased fire loss of more than \$13,500,000. The natural resources production department attempts to promote proper use of water power, oil, coal, forest, and other natural resources. The trade association department serves as a clearing house as to the activities which a local association can carry out most effectively. The transportation and communication department studies problems of rail, highway, waterway, and air transportation and of postal service and electrical communications. The research department covers the general field of economic research. The chamber also publishes a monthly magazine, *The Nation's Business*, and issues from time to time reports on economic subjects.

The seventeenth annual meeting of the chamber was held in Washington April 30 to May 3, 1929. The officers elected for 1929-30 were: President, William Butterworth of Moline, Ill.; chairman of the board, Julius H. Barnes of New York City; vice presidents, A. J. Brosseau of New York City, W. Ruess Abbott of Chicago, Robert R. Ellis of Memphis, Paul Shoup of San Francisco, Charles W. Lonsdale of Kansas City; treasurer, John Joy Edson of Washington; secretary, D. A. Skinner of Washington. National headquarters are in Washington with divisional headquarters in New York City, Atlanta, Chicago, Minneapolis, Dallas, and San Francisco.

CHAMPIONSHIPS See AMATEUR Box, INC. and other sport titles.

CHAUTAUQUA INSTITUTION An educational movement established in 1874 by Lewis Miller and Dr. John H. Vincent, both prominent in the Methodist Episcopal Church. The institution is nonsectarian in principle although the original idea of the organization was a Sunday school for teachers where a series of correlated lectures and entertainments were presented during the months of June, July, and August. The three general fields of activity are the general assembly, consisting of an educational and popular series of lectures and addresses, concerts, dramatic entertainments, etc.; the summer schools, offering courses of formal classroom instruction and a home reading circle in which a set of four books is designated for reading during the year, in addition to a news narrative appearing in a monthly review. In 1929 there were 18 departments in the summer school, with 125 instructors and approximately 2500 students, while the attendance at the annual session was estimated at 45,000. Financial support is obtained largely through individual gifts

Permanent buildings, valued at \$1,250,000, are owned by the institution in Chautauqua, N. Y., where the general summer assemblies are held and the Chautauqua Press is located. Officers in 1929 were George E. Vincent, honorary president, Arthur I. Hestor, president, William L. Ransom, chairman of trustees, Shailer Mathews, chairman of the executive board, Charles E. Pearce, secretary, and Jessie M. Leslie, treasurer.

CHECKERS. The American Checker Association held its seventh annual tournament at Cedar Point, Ohio, in August. This meeting was the outstanding event of the year 1929, as it was in the preceding year to the followings of draughts in the United States. The championship was won by Asa Long, of Toledo, Ohio, who had also captured the crown in 1922. Louis T. Bailey of Brooklyn finished in second place. The other prize winners were Basil Case, of Chicago, third, N. Rubin, Detroit, fourth, E. F. Hunt, Nashville, fifth, W. Ryan, New York, sixth, J. B. Hanson, Flint, Mich., seventh, Saul Weslow, Boston, and H. S. Reynolds, Buffalo (tie), Guy Garwood, Fort Recovery, Ohio, tenth.

CHEESE. See DAIRYING.

CHEMICAL INDUSTRY, SOCIETY OF See (CHEMISTRY, INDUSTRIAL).

CHEMICAL SOCIETY, AMERICAN. See (CHEMISTRY, INDUSTRIAL).

CHEMISTRY. A review of the literature of chemistry for the year 1929 fails to reveal any outstanding announcement worthy of conspicuous notice. The advance is evident and it is shown by the ever-increasing contributions, giving the results of studies contained in the journals devoted to this branch of science, some of which are presented in the following paragraphs.

An event of more than passing interest was the presentation in Washington on October 30 of a draft for \$50,000 to Mme. Marie Curie by President Hoover on behalf of a number of admirers in the United States. The money was for the purchase of a gram of radium to be used in the further investigation in the Curie Cancer Hospital and Laboratory in Warsaw, Poland.

NEW ELEMENTS. The isolation of no new element was reported during the year, but at the September meeting of the American Chemical Society the remarkable announcement was made by K. F. Bohnhoeffer that hydrogen, which had hitherto been regarded as invisible, was a mixture of two gases, which may be called parahydrogen and ortho-hydrogen. See CHEMISTRY, INDUSTRIAL.

ATOMIC WEIGHTS. New determinations of atomic weights make possible more exact analytical methods and there are those who devote their attention to the calculations of these important factors. Among the more recent results were the following:

The most probable value of the atomic weight of cerium was found by O. Hönigsmundt and H. Holch (*Zeit. anorg. Chem.*, vol. 177, p. 91) to be 140.125 ± 0.007 . An interesting series of determinations of the atomic weight of copper from the Lake Superior region and from Chile by T. W. Richards and A. W. Phillips (*Jour. Amer. Chem. Soc.*, vol. 51, p. 400) gave 63.557 independent of the value of the metal O. Hönigsmundt (*Zeit. anorg. Chem.*, vol. 178, p. 1) continued their work on fundamental atomic weights and find

that the mean of five determinations gave 107.880 ± 0.001 as the atomic weight of silver. For barium, they found as the mean value from five determinations 137.355. The atomic weight of phosphorus from determinations of the density and compressibility of phosphine according to M. Ritchie (*Nature*, vol. 123, p. 838) is 30.97 and 30.98. According to G. P. Baxter and S. Ishimaru (*Jour. Amer. Chem. Soc.*, vol. 51, p. 1729), terrestrial and meteoric nickel have identical isotopic compositions. They find the atomic weight of nickel to be 58.694. The atomic weight of arsenic from an analysis of arsenic trichloride is 74.937 according to H. Krepelka (*Nature*, vol. 123, p. 944).

ANALYTICAL CHEMISTRY. Analysis is the key by means of which the composition of chemical compounds is determined and improved methods of analysis and new forms of apparatus are valuable advances in the progress of science. An automatic pipette which is described by M. Hyman (*Jour. Soc. Chem. Ind.*, vol. 47, p. 368T) is said to be a modification of an ordinary pipette which is filled by suction as usual, but in which the level of the liquid is brought automatically to the graduation mark. The following improvements in Dubsky's micro-method for nitrogen determination are described by S. Okido (*Bull. Inst. Chem. Res.*, Tokyo, vol. 8, p. 2). (a) By passing carbon dioxide through the preheated combustion tube while still hot, to avoid occlusion of air, and (b) by use of a three-way cock between the carbon dioxide generator and the bubble counter. C. Dhery (*Bull. Soc. Chem.*, vol. 45, p. 183) describes a reaction tube as follows. The two components of a reaction are separated by placing the one in a small test tube which rests on three indentations inside a larger tube containing the other reactant. The larger tube is sealed off, and the reaction brought about by inverting the tube. The coloring matter of the juice of the black mulberry (*morus nigra*) according to L. Mosendz (*Zeit. anal. Chem.*, vol. 77, p. 37) may be used as an indicator in acidimetry, the colorations in acid and alkaline media being red and green, respectively. It is found that the most accurate results are obtained when acids are titrated with alkalis.

R. E. Zinn (*Ind. Eng. Chem.*, vol. 1, p. 112) describes a new air separator for the laboratory in which the powder to be separated is carried by an air stream into the annular space between two cylindrical containers, when the velocity is depressed sufficiently to cause deposition of coarser particles. The air then enters the inner container, where finer particles are deposited. Escaping dust is arrested by a muslin filter. It was found by S. R. Benedict (*Jour. Biol. Chem.*, vol. 82, p. 1) that picric acid, for the purpose of the colorimetric determination of creatinine, is best purified by crystallization from glacial acetic acid, or by solution in sodium carbonate, and then decomposition of the latter with dilute hydrochloric acid. R. A. Van Linge (*Chem. Werkblad*, vol. 26, p. 301) describes a simple viscosimeter as consisting of a pipette having a capillary tube in place of the lower limb and provided at the upper end with a three-way tap, which permits of easy filling to a constant level, a half turn allows the measured quantity to flow through the capillary tube. For the determination of very small quantities of mercury, A. Stock and W. Zimmerman reported (*Zeit. angew. Chem.*, vol. 42, p. 429) that the effect of

carbamide in the colorimetric determination by means of diphenylcarbazone is apparent if the acidity of the test solution is kept low. A new type of ionization electroscrope is described by B. F. J. Schonland (*Proc Camb Phil. Soc.*, vol. 29, p. 340) which combines a high voltage-sensitivity with a small capillary, and has a sensitivity for quantity of electricity of the same order as a combination of an ionization chamber and a Compton electrometer.

BIOLOGICAL CHEMISTRY. The application of chemistry to the many phases of life is a fascinating study. There are those who believe that life may be generated in a proper chemical environment as was indicated by the experiments of Jacques Loeb, while others are dubious.

Some of the results published during the year are given in the following paragraphs. According to E. Sadolin (*Biochem Zeit.*, vol. 201, p. 323) the arsenic of fish occurs principally in the fat soluble compounds. The arsenic compounds appear to be acidic, since they are extracted by a weakly alkaline solution along with the fatty acids. The concentration of arsenic is higher in the liver of fish than in muscular tissue. The oil extracted from tissue contains more arsenic than the tissue itself. The arsenic content of fish bears no relation to their oil content. G. Pfeiffer finds (*Biochem Zeit.*, vol. 201, p. 298) in determining small amounts of iodine in organic compounds that fatty acids which would otherwise distill into the receiver are intercepted by a special condenser from which the condensate can be run off. They are received in dilute potassium hydroxide solution and removed as calcium salts.

According to R. P. Kennedy and G. H. Whipple (*Amer Jour Physiol.*, vol. 87, p. 192) spectrophotometric analysis of chicken-blood hemoglobin showed it to be identical with dog-blood hemoglobin. The muscle-hemoglobins of the two animals were also found to be identical. The announcement is made by M. Goldzicher (*Klin Woch.*, vol. 7, p. 1124) that a physiologically active substance, called interrenin, which when injected intravenously reduces arterial blood pressure and causes a decrease of blood-lipids, has been prepared from the suprarenals. For the detection of bile pigment in urine, L. Van Itallie (*Pharm Weekblad*, vol. 66, p. 13) recommends that the pigment be absorbed on filter paper or talc, and after washing with water, removed again in acid alcohol solution, also that treatment of the solution with an oxidizing agent gives the characteristic green coloration.

It is reported by S. Loewe, H. E. Voss, F. Lange, and A. Wahner (*Klin Woch.*, vol. 7, p. 1376) that testicular hormone is present in the urine of males, although it does not respond to the Allen-Doisy test. Testicular and ovarian hormones can be separated by fractionation. The following process is recommended by S. Kannegger (*Pharm Weekblad*, vol. 66, p. 129) for the preparation of urea from urine. The urine is shaken with from 2 to 3 per cent of norit, filtered, evaporated to one-sixth of its original volume, cooled, and treated with nitric acid. Pure urea is obtained directly. The base is obtained by treatment with barium carbonate and extraction with alcohol.

A comparison of analytical data of sound spruce and spruce decayed by the action of the fungus *Merulius laecharmans* was made by G. C. Barton-Wright and J. G. Boswell (*Biochem. Jour.*, vol. 23, p. 110). They found that there

was a removal in the latter of galactan, mannan, and cellulose fractions. The hemicelluloses and lignin are not affected by the fungus. E. N. Harvey (*Plant Physiol.*, vol. 123, p. 315) reported that certain marine algae can produce oxygen, which may be detected by luminous bacteria, from carbon dioxide when illuminated in absence of oxygen. It is found by F. W. Went (*Proc. K. Akad. Wet.*, Amsterdam, vol. 32, p. 35), that a hormone which is able to promote root formation and is nonspecific and resistant to heating at 100° C may be extracted from leaves of *Acalypha* and from germinating barley. That the action is nonspecific was shown by the fact that the root-forming substance produced from leaves of *Carica papaya* promoted root formation in *Acalypha*. This substance seems to be transported by the phloem and is found in leaves and sprouting buds and in considerable quantities in branches.

According to E. J. Bigwood and A. Wuilott (*Compt rend Soc. Biol.*, vol. 99, p. 352), the difference in reducing power of blood-serum before and after acid hydrolysis is no proof of the presence of a protein sugar. The chemical examination of a mummy from the Vatican Museum according to A. Tulle (*Atti R. Acad. Lincei*, vol. 9, p. 223) showed absence of nitre, arsenic, heavy metals, and bitumen, from which the author assumes as probable that natural balsams only were used in the mummifying process.

Bounhol reported (*Compt rend.*, vol. 188, p. 1340) that guinea pigs in 80 per cent oxygen died within two or three days. Under such circumstances death is accompanied by increase in the soluble nitrogen compounds of the blood. The ease of obtaining oxygen retards circulation so that the metabolic products accumulate and cause death. According to Kurishita (*Chem. Zentr.*, vol. 2, p. 2376), dried blood contains more bilirubin than circulating blood. It is his belief, therefore, that most of the bilirubin is formed outside the liver. The presence of nickel in gelatin has been traced according to A. Maitani (*Mikrochem.*, vol. 7, p. 235) to the bones used in its manufacture. Nickel is apparently a normal constituent of bones. From his experimental observation, E. Schilling (*Chem. Zentr.*, vol. 2, p. 760) deduces the belief that catalase, by protecting tissue from the oxidizing action of peroxide, may be accepted as a protective enzyme. B. Buchholz reports (*Chem. Zentr.*, vol. 1, p. 188) that iodine was found in all of the human organs examined, although individuals showed differences. The thyroid gland contains the most iodine, the adrenals, ovaries, thymus, and sometimes the spleen contain fairly large amounts. He finds that chronic pathological conditions affect the values. The total iodine content of the human body varies considerably around 11 mgr. It has been found by G. Fricke (*Zeit. ges. exp. Med.*, vol. 64, p. 81) that by simultaneous administration of dextrose and insulin to the normal dog the dextrose threshold of the kidneys is diminished. In the pancreas of a diabetic dog, the renal elimination of sugar is increased by the action of insulin with diminishing blood-sugar.

GENERAL CHEMISTRY. Under this heading are mentioned some of the advances reported during the year that pertain to the chemistry of the mineral elements or compounds, as distinguished from the organic compounds.

F. Ashton in an interesting article (*Nature*,

vol 123, p. 488), claimed that there was no evidence that oxygen is other than a simple element and cites the fact that faint lines which might be ascribed to the existence of O^+ are capable of other interpretations. E. W. R. Steacie and F. J. Toole (*Jour Amer Chem Soc*, vol 51, p. 1134) report that very pure silver which has been fused and kept just below the melting point for several days and then cooled very slowly dissolves nonuniformly in dilute nitric acid, gradually assuming the shape of an octagonal prism. The O^+ ions do not come into contact with oxygen during the operations. The crystal form of the prism is briefly described in this paper.

In a study for the interpretation of the atmospheric absorption bands, W. F. Giauque and H. L. Johnston (*Jour Amer Chem Soc*, vol 51, p. 1436) found that the weak band in the atmospheric absorption bands for oxygen originates from oxygen molecules each consisting of an atom of mass 16 combined with an atom of mass 18. G. Klein (*Zeit anorg Chem*, vol 180, p. 306) presents a historical survey of the problem of the genesis of the actinium family of elements. According to this paper, all the known facts support the view that the actinium series is derived from a radioactive isotope of uranium, actinouranium, which must have an atomic weight of 238. A study of the continuous spectrum of the hydrogen atom by S. P. Epstein and M. Muskat (*Proc Nat Acad Sci*, vol 15, p. 405) resulted in the publication by the authors of expressions suitable for numerous calculations by means of a new integral representation for the wave function. These results were also applied to the calculation of the absorption spectra of hydrogen beyond the limits of the Balmer and Lyman series, as well as certain limiting values of the absorption. H. J. Schumacher and G. Sprieger presented in an interesting paper (*Zeit anorg Chem*, vol 42, p. 697) the evidence published for and against the existence of the compound $UO_2(NO_2)_2$.

K. L. Vernon (*Wass Veroff Steuans Kong*, vol 8, p. 26) published a valuable review of the literature dealing with the physical properties of beryllium and its behavior toward acids, bases, gases, and various oxides. The trivalent rare-earth metals of the cerium group, according to G. A. Barbieri (*Atti R Acad Lincei*, ser 6, vol 9, p. 906), form argenticyanides and amercyanides, and, of these, the salts have been made of the elements cerium, lanthanum, and neodymium. It has not been found possible to produce analogous salts of the other trivalent metals.

MINERALOGICAL CHEMISTRY. A better knowledge of the composition of the solid crust of the earth's surface is of great value. It gives information as to how mineral combinations have been formed, and includes the discovery of new minerals.

The rare earth elements which, according to C. E. St. John and C. E. Moore (*Isotopes Jour*, vol 68, p. 93), are probably present in the sun, include lanthanum, cerium, neodymium, praseodymium, samarium, europium, gadolinium, dysprosium, erbium, and ytterbium, probably in the ionized state. Umanigite was originally described by Klockmann as found by P. Ramdohr to be a new mineral with the composition Cu_2Se and to which the name Klockmannite was most appropriately given. A new mineral was reported from the bauxite deposits of the Tikhvin district by J. M. Anshelov and N. J. Vlodavetz (*Mem Soc Rus*

Min, vol 56, p. 53), which has a composition corresponding to the formula $2SrO, 3Al_2O_3, P_2O_5, 7H_2O$ and to which the name Tikhvinite was given. C. E. Tilley (*Min Mag*, vol 22, p. 77) described a new calcium orthosulfate with the formula Ca_2SiO_4 from Sawt Hill, near Larnie in Ireland, which he calls Larnite. Renardite was a new uranium mineral from Chinkolobwe (*Bull Soc Franc Min*, vol 1, p. 374) which according to A. Schoep has a composition corresponding to the formula $PhO, 4UO_2, P_2O_5, 9H_2O$. Rimann (*Bol Acad Sci Cienc*, vol 31, p. 5) reports a new red mineral with a glassy lustre from Argentina which has the composition $4MO_2, 3MO_3$, which he names Bodenbenderite.

ORGANIC CHEMISTRY. The chemistry of the carbon compounds continues to attract a large number of students for its possibilities are very great. From its study will come in time the synthetic compounds such as artificial rubber, that will revolutionize commercial industries.

E. Kleink reported (*Zeit Physiol Chem*, vol 179, p. 312) that treatment of cerebionic acid with hydriodic acid dissolved in acetic acid gave lignoceric acid thus confirming the constitution of cerebionic acid as an alpha hydroxylignoceric acid. The probable derivation of the lipins from the sugar was also discussed by the author in his paper referred to. According to W. Fuchs (*Ber*, vol 61, p. 2599) diphenylene oxide is converted into diphenyl by passage over calcium hydride at $450^\circ C$ in an atmosphere of hydrogen. According to E. Bahl (*Biochem Zeit*, vol 204, p. 474) cholesterol gives a yellowish coloration with a solution of benzidine in glacial acetic acid and an intensely red coloration with a faintly pink solution of rosaniline in chloroform. Both tests are parallel to those of Salikowski and Liebermann.

A new combination of sulphhemoglobin is obtained by A. D. Volta (*Arch Ital Biol*, vol 77, p. 6) who found that by treatment of blood with freshly prepared ammonium sulphide solution saturated with hydroxylamine, hydrochloride, or sulphite affords an olive-green coloration due to chlorohemoglobin. Additions of pyridine changes the green color to brick red and the phenochromogen spectrum may then be observed. The author recorded his spectrographic measurements. According to W. S. Sadikov (*Biochem Zeit*, vol 25, p. 360) hydrolysis of proteins by ammonium carbonate under pressure at $150-180^\circ C$ gives after one to six hours principally peptones, and only after 24 hours are crystalline products obtainable. Caseinogen gave a peptone suitable for bacteriological purposes and on further hydrolysis a number of products which were crystallizable or separable by precipitation. Leucine was obtained and nine other preparations for which empirical formulas are suggested.

The synthesis of sucrose was accomplished by G. Zemlin and A. Gerecs (*Ber*, vol 62, p. 510) as follows. The condensation of tetra-acetyl gamma fructose with tetra acetylglucose in the presence of phosphoric oxide causes the production of 10-15 per cent of a disaccharide from which octa-acetylglucose could not be obtained crystalline. The acetylated sucrose does not crystallize when seeded with mixtures of 50 per cent of it with 50 per cent of tetra-acetyl gamma fructose or 50 per cent of tetra-acetylglucose. The conditions for the synthesis of sucrose, according to these authors, appear particularly suitable. According to B. Rutovskii and A. Kozolev

(*Chem Zentr*, vol 2, p 2353), the electrolyte reduction of salicylic acid afforded salicylaldehyde in a yield of 33 per cent of the theoretical. If magnesium butyrate is added in order to avoid sparking and explosion of the benzene, the chief product (45 per cent) is saligenin. C. A. Rojahn and F. Struffmann (*Pharm Zentr*, vol 70, p 277) find that while hydostome and papaverine separately give poorly characterized color reactions with alkaloid reagents, mixtures of the two alkaloids give intense colorations, and this fact may be utilized in their identification. For the detection and determination of methylpentose, T. Fukui (*Bull. Feim*, Tokyo, No 100, p 106) reports that the distillate obtained from methylpentose and hydrochloric acid gives a violet-red coloration with vanillin in 0.5 per cent sulphuric acid. Soluble differences of the phenolglucosides of fufuraldehyde, methylfufuraldehyde and hydroxymethylfufuraldehyde are applied to their separation.

A. Pictet and H. Vogel (*Ber*, vol 60, p 1418) describe in full their preparation of tetra-acetyl-gamma-fructose, the condensation of the tetra-acetates of glucose and gamma fructose, and then the isolation and hydrolysis of sucrose octaacetate. Anserine, a new constituent of bird-muscle tissue was obtained by Dr. Ackermann, O. Timme and K. Poller (*Z. Physiol. Chem*, vol 183, p 1) by extraction of goose flesh with water and treatment of the extract with mercuric sulphate and sulphuric acid. The new substance is precipitated from solution by alkaloidal reagents and gives the ninhydrin reaction. Anserine is not present in the liver, stomach, or heart.

A. E. Tschischibabin discussed (*Journ. Russ. Phys. Chem. Soc*, vol 61, p 607) the theoretical possibility of the existence of cis-trans-isomerism of oxalic acid and certain results obtained by previous writers are considered in the light of this possibility. According to C. S. Hudson and E. P. Paces (*Science*, vol 69, p 278) crystals of turanose from a syrup of hydrolyzed melizitose after keeping for several years have been successfully used to seed fresh syrups and obtain rapid crystallization. The crystals are moderately soluble in methyl alcohol, from which they can be easily recrystallized in prisms with a melting point of 157° C. A study on the denaturing of proteins by T. Tadokora and his assistants showed (*Journ. Fac. Agr.*, Hokkaido vol 25, p 117) that rice ovsein was denatured in solution by boiling and by freezing, soy-bean glycin by boiling, freezing, superheated steam, gasoline or benzene, soy beans by heating, boiling, freezing, and soaking in gasoline, salmon proteins by cooling, freezing, salting, and smoking. The resulting chemical and optical changes also are reported on by these chemists. According to W. L. O. Whaley (*Planter and Sugar Mfg*, vol 81, p 321) alcohol may be satisfactorily determined by measurement, with the Juvet ebulliometer, of the lowering of the boiling point of its aqueous solution.

PHYSICAL CHEMISTRY. The action of the physical forces on chemical substances is an important branch of science. In 1929 the world celebrated the fiftieth anniversary of the wonderful results of the action of electricity on a carbon film, resulting in the electric light.

The red line in the spectrum of the aurora borealis, long supposed to be an unclassified oxygen line was reexamined by J. Kaplan (*Proc. Nat. Acad. Sci*, vol 14, p 892) and found to be

a band belonging to the first positive group of nitrogen. The green line is probably the only oxygen line in the auroral spectrum. Observations on the furnace spectrum of beryllium were made by R. F. Paton and G. M. Rassweiler (*Physical Rev*, vol 33, p 16) from 2150 to 7000 Å and up to 2500° Abs., in both absorption and emission, using a specially designed, all metal, atmosphere vacuum furnace. Their results confirmed that the beryllium line 2318.62 Å is the first line of the principal series of singlets for the neutral atom. The diffuse and sharp series of singlets of the element were discovered and tabulated.

A Japanese scientist, M. Miyazishi (*Japan Journ. Phys*, vol 5, p 67) reported that the streamers emanating from the anode and cathode of a spark were examined spectrographically and found to consist of positively and negatively charged particles, respectively. Then velocity and luminosity also were measured. Additional records on the creeping of crystals are reported by H. Eilenmeyer (*Helv. Chim. Acta*, vol 12, p 264). He found that the addition of 1 per cent of glycerol almost entirely prevents creeping in a saturated solution of potassium chloride, also sucrose and thymol have a similar effect. This is not due to a decrease in evaporation. Experiments also are described by this author relating to the factors which influence the height to which crystals will creep up a glass rod placed in a saturated solution of a salt.

According to C. E. S. Phillips (*Nature*, vol 123, p 681), when a cell prepared by condensing the vapor of heated selenium on a gold grid, was exposed to cathode rays, a rapid diminution of resistance, which could be widely varied by deviating the rays with a magnet took place. This effect is not attributed to the production of X-rays in the selenium. J. de Smedt, W. H. Keelson, and H. H. Mooy (*Proc. Acad. Wet.*, Amsterdam, vol 32, p 745) found that, when carefully purified nitrogen was submitted at the temperature of liquid hydrogen to the $K\alpha$ radiations from copper and the results photographed, a critical analysis of the photographs obtained seemed to indicate a quadratic crystal structure. According to I. Farkas, P. Goldfinger, and F. Haber (*Naturwiss*, vol 17, p 276), then earlier work on the suggested chain mechanism for the ignition of electrolytic gas has been confirmed and extended. Atomic oxygen or atomic hydrogen present in minute amount renders electrolytic gas immediately explosive. Further control experiments strengthen the case in favor of the chain mechanism. See CHEMISTRY, INDUSTRIAL, PHYSICS.

CHEMISTRY, INDUSTRIAL. The growth of the application of chemistry to the industrial arts has continued to increase. As evidence of this fact may be cited the statement by Dr. A. D. Little, president of the Society of Chemical Industry, that "the incessant questioning of nature by the experimenter to create wealth and jobs" was scientific research so essential to the progress of industry.

In February, the American Chemical Society announced the awards from the Frisch bequest to be devoted to research in agricultural chemistry as follows: The Boyce Thompson Institute, Yonkers, N. Y., \$20,000, the University of Missouri, \$12,000, and the University of Wisconsin, \$8000 annually for five years.

AMERICAN CHEMICAL SOCIETY. Two meetings,

as usual, were held during the year. The first, in Columbus, Ohio, from April 29 to May 3, at which 1765 persons registered and at which 375 papers were read before 16 divisions. The subject of the presidential address by Dr. Irving Langmuir was "Modern Concepts on Physics and Their Relation to Chemistry." The membership of the Society has reached the high record of 17,273. President-elect Samuel W. Parr tendered his resignation and Prof. William McPherson of Ohio State University was chosen in his place by the Council.

At the Columbus meeting, various interesting papers were presented. These included one by James F. Norris, of the Massachusetts Institute of Technology, on a new alcoholic substance which is a product of petroleum and one of the first results obtained in experiments that aim at using oil wastes as a raw material to make useful things in addition to lubricants and gasoline. Chemists have produced this alcohol under the name of isopropyl. They are now studying it actively in order to extend its industrial uses and to determine whether it may be substituted for grain or ethyl alcohol. It is unlike other alcohols, as its physiological effect on humans is different. It produces no exhilaration but has a deadening effect. If it can be developed sufficiently, it may help to prevent the rectifying of denatured alcohol. We are at the beginning of the use of former wastes of petroleum as raw material. Chemists are experimenting in taking rather cheap substances from these wastes and converting them into articles of value, thereby increasing wealth.

One day of the meeting was given over to a symposium on agriculture and chemistry, described as the largest two industries of the United States. That chemistry, rather than congressional measures, may be the salvation of the farmer seeking relief, was the contention of Louis J. Taber, master of the National Grange, who argued that "farm relief that will endure can come to agriculture through proper research directed by American chemists in discovering new uses for food products as the raw materials for industry." When we can think of farm products as food for machines, as well as for man and beast, we shall find burdensome surpluses vanishing.

Maj. T. P. Walker of the Commercial Solvents Company, Terre Haute, Ind., in discussing M. Taber's address, claimed that corn and cotton are the only crops of major importance to the chemist at present. Other farm products, however, may acquire interest for the chemist as new means of utilizing them are discovered. The corn crops in Illinois, which once went into the making of whisky, are now being converted into lacquer. The production of acetone, and butyl and ethyl alcohols consumes nearly 10,000,000 bushels of corn annually, which is one-quarter of the amount formerly used in the manufacture of spirituous liquors.

More than 50 chemical products are derived from the corn kernel. They include such things as table oil, soap, glycerin, rubber substitutes, fertilizer, starch, corn sirup, tanner's sugar, and vegetable glue. Cottonseed also yields quite a number, including refined oils, stearin, soap, nitroglycerin, roofing paint, writing paper, nitrocellulose, smokeless powder, lacquers, artificial leather, celluloid, rayon, photographic films, sausage casings, toilet ware, furfural, carbohydrates,

and potash. The cotton plant itself is used in bleaching, dyeing, printing, waterproofing, and mercerizing. Major Walker referred to the manufacture of insulating board from bagasse, the refuse of sugar cane after it had been crushed in the mill to extract the juice, and also to the production of ethyl alcohol from "blackstrap" molasses.

Of interest in this connection is the prospect of an increased yield in the beet-sugar industry. A process has been worked out by chemists at Ohio State University, with the aim of enabling sugar farmers to overcome bad crop years. On an average, two out of every three years bring poor yields for the beet growers, due to a gum caused by insoluble matter in the juice of the beets, which then produce little sugar, but plenty of molasses. The molasses is salable, but at a lower price than sugar. Lime sulphitation was employed to overcome similar gum in sugar-cane juice, but the use of lime and sulphur dioxide to eliminate the gum in beet-sugar refining was not successful, owing to the difficulty of ascertaining the amount of gum present and how much lime and sulphur to use. Ethyl alcohol and hydrochloric acid are used in the perfected method for control of the gum in sugar-beet juice, and it is claimed the amount of gum is now accurately and quickly determined.

Economic relations between the chemist and the farmer also were discussed by Charles M. MacDowell, of the Armour Fertilizer Works of Chicago, who urged that run-down soil be continually replenished with chemical nutriment. In wide areas of land, there are deficiencies of nitrogen, phosphorus, potassium, calcium, iodine, sulphur, manganese, and manganese. The effect of a total lack of any one of these is often insidious and far-reaching. If the crops are deficient, there may result underweight and weaker livestock and poultry on the farm, milk that is lacking in vital minerals and vitamins, and consequently, ill health and deficiency diseases in the city.

The use of talking motion pictures as a medium of instruction in certain courses in universities and colleges was suggested. Sound pictures, it was predicted, especially in laboratory demonstrations introduced as part of lectures, will reestablish a more intimate bond between instructor and student, enabling the student by "close ups" to follow every phase of an experiment. Several times, when changes were taking place in the substances under experimentation and close scrutiny was essential, the lecturer on the screen invited the audience to look over his shoulder. A "close-up" flashed on the screen and the audience found itself almost with its collective nose in the test tray. The adaptation of the "talkies" for the use of the modern large classrooms, it was predicted, would give a new reality to the oft-quoted definition of education: "A student on one end of the log and Mark Hopkins on the other." Plans were already under way to make projection machines at nominal cost for institutions of learning.

The second meeting was held in Minneapolis, Minn., during September 9-13, at which 1175 persons registered and at which 325 papers were presented before 20 sections. Among the papers presented at this meeting, one by K. F. Bonhoeffer was conspicuous. In a demonstration, from a cylinder of ordinary liquefied hydrogen provided by the University of Minnesota, he drew off some of the liquid to be used as an outside bath

around a glass tube filled with ordinary gas charcoal. The liquid gas bubbled and froze and the charcoal rapidly approached the ultimate cold of the physicists. When everything was cold enough, Mr. Bonhoeffer passed some ordinary hydrogen from the cylinder through the supercooled tube of charcoal and it came out at the other end parahydrogen. By tests, he showed how it differed from the ordinary hydrogen from which it had been divided, showing it to be a mixture of two kinds of hydrogen, of different melting and boiling points, different heat conductivities, and different spectra.

Dr. Irving Langmuir, president of the American Chemical Society, and himself famous for his researches in molecular and atomic structure said: "The division of the hydrogen mixture today would have a compelling effect in spreading the new wave mechanics among chemists who are now seeking to control chemical reactions by understanding their mechanism." Dr. H. S. Taylor characterized it as "the greatest chemical achievement of 1929." Francis P. Garvin sent a paper entitled, "Random Thoughts of a Lay Chemist," in which he said: "I am convinced that, in case of a modern war between great Powers, it would be foolish and useless for any battleship or cruiser to leave its dock or an army to take the field. Should not the terrible powers of chemistry, as we know them, and its war messengers, the airplane, on sea and on land, strengthen the effort to safeguard the peace of the world by treaties and by agreements? Should not the dread possibilities of chemistry rule out the politicians and give to research in chemistry, in medicine, and in the other sciences, a fraction of the huge cost of navies and armies, created to destroy life and property? The Chemical Foundation stands ready to bear all the expenses of any commission the President may care to appoint to inquire into the vast possibilities of chemistry as an agent of peace, outlawing war by its terrors, advancing health and prosperity by its humane discoveries."

In his presidential address, Dr. Irving Langmuir gave an inkling of the things of which chemistry dreams for the future. He asserted that "with Einstein's theory and other purely mathematical concepts of the nature of time and space, it is possible to conceive that in a distant future different forms of light than those now known may evolve." He asked whether it may be possible that "eventually time itself will be different, its arrow pointing in other directions. The idea is of time that grows younger instead of older. Such speculations may seem fantastic. It is, I believe, of the most importance for the chemists and the physicists to evolve fundamentally sound conceptions of such things as time and entropy. It seems that there has never been a time when we can predict with such certainty rapid progress in fundamental chemistry."

According to Gustav Egloff, the motor car's rôle is not as a creator of demand, but as mother to useful chemicals such as that which has come into existence recently from the new process of making gasoline. In the formerly waste gases from gasoline cracking, chemists have found substances used for the manufacture of various articles that bear no resemblance to gas or gasoline, such as cosmetics and pharmaceuticals, lampblack and hydrogen, some of them already on the market. Ethylene, one of the gasoline

products, already is made into anesthetics, is used to ripen fruit and vegetables, and to prepare war gases. Chemists are beginning to get a little "butadiene," which resembles rubber and can be manufactured into rubber-like substances. Many fuel-gas users are getting a better grade, made so by being mixed with some of the product of the former waste from cracked gasoline.

There is enough refuse material to make 300,000,000 gallons yearly of grain alcohol, three times the amount consumed commercially in the United States. Predictions that stale bread will return to the home in the guise of alcohol, pastes, etc., was made by C. G. Harrel, who asserted that the hundreds of thousands of tons of dry or stale bread yearly burned in furnaces or sent to city dumps, could be transformed into those materials, though this was not being done as yet. The bakers have been in fear of public opinion. Economic necessity, however, will open this field to the chemist and the bakery will then keep pace with many other industries.

That large and beautiful diamonds can be made by man was claimed by Prof. J. W. Hershey. He told how he melted iron filings and sugar in graphite crucibles, heated these in an electric furnace at a temperature of nearly 5000° F. and, when white hot, plunged them into ice-cold brine, the theory being that the immense pressure created by fast cooling would turn the sugar into diamonds. Next, he dissolved the iron balls with various acids. After a week, everything except some dust, the sugar-carbon product, was dissolved. Some of it proved to be graphite, another form of carbon when examined with the microscope. Hundreds of microscopic diamond particles and some larger diamonds so far had been produced at McPherson College. Professor Hershey declared his belief that "the artificial construction of diamonds, from the scientific point of view, is no longer an unattainable goal."

Professor S. C. Lind solved a problem that has been bothering chemists in many branches of manufacturing. He had produced phosgene, one of the poison gases used during the World War, merely by turning light upon carbon monoxide and chlorine, which caused the two gases to combine into phosgene. He substituted radium rays for the light and again obtained phosgene. Chemists have been in doubt as to how the change into phosgene took place. The method used by Dr. Lind was quite simple. The point of importance to commercial chemists is that radium substituted for light produced the same result.

The closing session of the Chemical Society's meeting was devoted to a consideration of how best to educate the public to an understanding of chemistry and its function in national defense. It resulted in the adoption of a programme of popular study courses which open with the romance of chemistry, points out the impossibility of naming any three things of importance with which chemistry is not involved; explains that the human body is a chemical factory, what makes some water hard and other water soft, how soap is made, the use of nitrogen and potassium for fertilizer and the importance of sufficient sources of supply, and compares the chemical elements in cotton with those in silk. The concluding sections of the course deal with such titles as "Why Do Large Manufacturers of Explosives Produce so Wide a Variety of Peace Products?", "Have Explosives Been a Blessing or a Curse to

Man", "Classes of Explosives and Uses of Values of Each in War and Peace", and "Which is the Real Goal, 'Peace Regardless of Security' or 'Lasting Peace in Permanent Security'?" The administration of this programme with the organization of lecture courses to make it effective throughout the country, was accepted by the Bureau of Women's Clubs of the University of Kansas, and it is expected that many similar organizations will make it a part of the programmes for the coming year.

SOCIETY OF CHEMICAL INDUSTRY. The 48th annual meeting of this Society was held in Manchester, England, during July 8-13 with President A. D. Little in the chair. The council reported that the membership had declined from 4668 to 4550, a loss of 118 members. The gold medal of the society was awarded to Sir Richard Threlfall for his services during the World War in devising various appliances for the Ministry of Munitions, especially those connected with the use of phosphorus as a smoke-producing agent, and later, as chairman of the Chemical Research Board, he delivered an address, "The Electrolysis of Molten Zinc Chloride." The subject of President Little's retiring address was "Science and Labor." The honorary degree of D. Sc. was conferred by the University of Manchester on past presidents Francis H. Carr and Arthur D. Little. The new officers elected were Dr. Herbert Levinstein as president and H. J. Pooley as secretary. Birmingham, England, was selected as the meeting place in 1930.

EXPOSITIONS OF CHEMICAL INDUSTRIES. The 12th occurrence of this event took place in the Grand Central Palace, New York City, during May 6-11. There were over 400 exhibits, many of which showed the advances made by science during the year. Every State in the Union, and Canada, Mexico, the West Indies, and many European nations were represented. Two educational courses were given daily under the direction of Prof. W. T. Read of Texas Technological College, one for elementary students and the other for advanced chemical engineers, teachers, and experts. Among the exhibits were concrete made of peanut shells, motion picture film which does not burn, houses built of corn, and plants whose growth may be rushed by feeding them poison. Another display was of wire cloth, so finely woven that one inch contains more openings than there are hairs on the human head. How new discoveries in chemical engineering are applicable to radio, television, and talking pictures was described. The sixth annual chemical industries dinner was held at the Hotel Roosevelt on Thursday, May 9, under the auspices of the Salesmen's Association of the American Chemical Industry.

MEMRS. The Perkin Medal of the Society of Chemical Industry was awarded on January 4 to Eugene C. Sullivan for his chemical studies that have improved the quality of American glass. The Nichols Medal of the American Chemical Society was awarded on March 4 to William L. Evans of the Ohio State University for his contributions to the chemistry of the carbohydrates. The medal of the American Institute of Chemistry was awarded on May 4 to Mr. and Mrs. Francis P. Garvin for noteworthy and outstanding services to the science, especially in consideration of their financial support of the Chemical Foundation. In appreciation of a long career of achievement, Charles E. Munroe, chief ex-

plosive chemist of the United States Bureau of Mines, was on June 16, his eightieth birthday, presented with a bronze medal bearing his portrait, the outlines of which were literally blown into the medal by means of the "Munroe effect." The Willard Gibbs Medal of the Chicago section of the American Chemical Society was awarded May 24 to Claude S. Hudson for his researches in the field of sugars. The medal of the Society of Chemical Industry was awarded on July 11 to Sir Richard Threlfall for his work on explosives during the World War. The Priestly Medal, the highest honor of the American Chemical Society, was conferred on Francis P. Garvin "for his distinguished services in chemistry," on September 11. The Grasselli Medal was awarded on November 8 to Prof. Bradley Stoughton for his paper, "Light Structural Alloys," and on December 13, the Chandler Medal of Columbia University was awarded to Dr. Irving Langmuir, president of the American Chemical Society and associate director of the research laboratory of the General Electric Company.

CADMIUM. According to a report on the uses of this metal, by Paul M. Tyler issued by the U. S. Bureau of Mines, cadmium formerly entered largely into dental alloys as an amalgam 26 per cent cadmium and 74 per cent mercury, but this discolors the denture more than other mixtures and has been largely discontinued.

Chelché metal for stereotype plates may be made of about 22.5 per cent cadmium, 50 per cent lead, and 27.5 per cent tin, a mixture superior to the corresponding chelch metal containing bismuth. An important use of the metal is in copper telephone and trolley wires. In proportions of 0.5 to 1.2 per cent, cadmium raises the annealing temperatures and adds materially to the strength and wearing qualities of copper without greatly reducing the conductivity. Some quantities of cadmium are used to improve the properties of both plated and sterling silverware. In the jewelry trade, cadmium is employed for producing green gold. A recent use for cadmium is in rustproofing steel, particularly nuts, bolts, sundry small parts for automobiles, and various light hardware, including locks, refrigerator trimmings, and certain wire products. Cadmium has been employed in the form of wire for coating or metal spraying, plaster casts, statuary and other objects.

Alloys containing cadmium are used in non-rusting hand-springs for watches and clocks. For the manufacture of electric-light filaments one of the earlier processes employed cadmium. An amalgam which is 42 per cent cadmium, 53 per cent mercury, and 5 per cent bismuth can be impregnated with tungsten metal powder and then extruded through dies to produce a raw filament which is later heated to a high temperature to drive off the volatile metals. Five per cent of cadmium is sometimes added to aluminum powder to improve the color and lustre and to make it more resistant to atmospheric influences.

Cadmium has been recommended for use in electric storage batteries. A battery having cadmium plates can be discharged completely and allowed to remain discharged indefinitely, whereas such abuse causes serious damage to ordinary lead batteries. The monochromatic red light for scientific investigation in physical laboratories is produced by means of cadmium. In the quartz-cadmium vapor lamp developed by the U. S.

Bureau of Standards, the cadmium is alloyed with a very small fraction of 1 per cent of gallium, giving a long-lived lamp that does not become clouded by adhesion of cadmium vapor to the walls.

CHROMIUM From a report on the uses of chromium issued by the U S Bureau of Mines, the following is taken: Chromium steels that are approximately 1 per cent chromium and 1 per cent carbon are utilized in the manufacture of shoes and dies, for use in stamp mills and burglar-proof safes. The expanding market for stainless steel and iron is playing its part in the increasing consumption of chromium in the manufacture of steel. In the manufacturing of chromium steels and irons, the chromium is added in the form of ferrochrome, which is made from chromite in the electric furnace. In this process, the bath tends to take up much carbon, and as carbon is considered undesirable, the quality and price are in inverse proportion to the carbon content.

The potential uses of chromium seem to open a field so useful to humanity that attention is called to the consumption of chromite as a refractory. As chromium may be used for the preservation of many metals, it becomes evident that any of the uses which rapidly dissipate chromium should be eliminated. The demand of the paper-pulp mills for chromite brick has lately developed an expanding market. These bricks fulfill a need in the lining of the kilns used in the sulphite process for drying pulp, as they resist corrosion caused by the liberated gases in the kiln.

POTASSIUM A consent decree, signed Feb. 27, 1929, by Federal Judge Bondy, disposed of the suit of the Government against the Deutsches Kali-syndikat Gesellschaft and the Société Commerciale des Potasses d'Alsace which were charged with violation of the anti-trust laws in the importation and sale of potash. The suit, begun in April, 1927, under instructions from the U S Department of Justice, alleged that a group of German and French producers of potash were in New York City to complete arrangements with American distributing agencies for the creation of a monopoly. It also was alleged that the foreign producers had reached an agreement effective May 1, 1927, for the division of the United States business, but that the defendants had been dividing the potash trade since August, 1924.

Government agents reported that 1,000,000 tons of potash worth \$50,000,000 were imported annually, that 90 per cent of it was sent here by the defendants, the German producers providing 70 per cent of this and the French, the remainder. This decree binds the principal defendants and their agents to observe the anti-trust laws and enjoins them from fixing resale prices or unfair discrimination among purchasers. Jurisdiction is retained by the court to enforce the decree and to correct any inadequacies or inappropriate provisions as the business develops.

The passage by Congress of a bill makes possible further investigations into the potash resources of the United States. Previous investigations were limited to the exploration of potash deposits in Texas and New Mexico, which geological data indicated as being present but which had not been proven. The U S Geological Survey located the most promising sections for drilling. Following this, the Bureau of Mines carried on a

comprehensive diamond-drilling campaign and laboratory study of the drill cores. By the provisions of the new bill, investigations are authorized to cover other potash minerals, such as the leucites and aluminates, greensands, and other potash ores, also, that investigations shall be conducted by the Bureau of Mines and the Department of Commerce, and the Bureau of Chemistry and Soils of the Department of Agriculture.

HELIUM A press notice published on May 30, announced that a rich deposit of helium gas had been discovered in Utah near the government's reserve. The find was hailed as of much importance in the development of ' ' ' ' an craft in the United States. The contents in the Utah natural gas, it was estimated, might reduce the cost to one-third of the present 3½ cents a cubic foot. In July, it was announced that new deposits of helium gas had been found in Colorado that would provide sufficient lifting gas for inflation and operation of all United States airships for the next 20 years. The new field was said to be the richest helium deposit yet found, the gas having a helium content of 7.07 per cent, the best previous content being 3.6 per cent.

In Canada, the greatest source of supply comes from the Bow Island district of Alberta, near Calgary, where it is estimated some 12,000,000 feet of helium are lost annually. In 1919 a plant was erected at Calgary for extraction and from which vast quantities of helium were exported to France and utilized in balloons and lighter-than-air war craft. It was officially stated that, if this gas had been utilized earlier, it would have had a marked effect upon the operation of craft of this nature and resulted in a considerable saving of life. The termination of the War brought an end to the demand, the British Government's subsidies were withdrawn, and production ceased.

The new government plant at Amarillo, Tex., announced in June the sending of a tank car filled with about 200,000 cubic feet of helium to Langley Field, Va. The helium is extracted from natural gas having a helium content of 1½ per cent produced from the Cliff-side structure lying northwest of Amarillo. Gas from 20,000 acres of land is available to the plant. The helium-bearing natural gas is transported from the wells to the plant, by the natural pressure of the wells, through a welded steel pipe line 11 miles long. In the plant, the gas is cooled to a temperature so low that all of the constituents except helium are reduced to liquids. This temperature is approximately that of liquid air and is lower than 300° F below zero. The helium is drawn off as a gas and the liquids are returned to the gaseous state by allowing their temperature to return to that of the atmosphere. A part of the gas resulting from the evaporation of the liquid is used as fuel for generating power to operate the plant and the remainder is discharged into a pipe line which carries it to Amarillo, where it is used as domestic and industrial fuel. The process of extracting helium is a continuous one involving pressures as high as 2500 pounds to the square inch.

STEEL The Westinghouse Electric & Manufacturing Co. announced the manufacture of steel with a skin which is produced through a process called nitriding, by placing the steel in a box of ammonia gas at 1000° F. This forms a thin

skin extremely hard, quite tough, and rustproof. It is claimed that, by this process, bearings may be made that seem never to wear and which may run safely though heat to redness. A new mechanism to start and stop electric motors was recently built and tested "on" and "off," until after some 22,000,000 or more operations, everything wore out except some bushings and pins of nitrided steel, still as good as new. In the making of small machine parts by die casting, in which molten metal is flowed into a steel mold, the new material withstood 2000 operations, though former steels perished after 100. Nitrided tools do not rust when left out in the weather.

NEW ALLOYS A new metallic composition consisting of tungsten, carbon, and cobalt, originating with the Krupp Steel Works in Germany and sold there under the name of Izett, has appeared in the United States under the name of Widia. After a thorough test by the General Electric Company at its plant in Bridgeport, Conn., it has been found serviceable as a cutting metal, cutting through steel at a rate of 230 feet a minute, and through cast iron at a rate of 600 feet a minute. Notwithstanding its high cost of \$500 a ton, it promises to supplant other cutting metals. Its properties are described as follows: Its strength, hardness, toughness, and chemical stability, as well as its ability to take and keep a characteristic characterize it as a material of possibilities.

The performance of carboloy on the lathe and in the shop actually exceeds the predictions which might be made from a knowledge of its properties. Glass was quite easy to machine or to cut with screw threads and it was found that hard porcelain insulators could be machined on a shaper. Mycalex is an insulating material of excellent properties and there is a considerable demand for it in the electrical industry. Ordinary tool materials are worn away on mycalex so quickly that it would be difficult to give quantitative data on their performance. Carboloy tools, on the other hand, are capable of machining mycalex commercially, and we have had tools cutting over 1000 feet linearly before losing their edge. Materials like bakelite and hard rubber are very abrasive when machined at high speeds. Carboloy tools keep their edge very well on hard rubber. The metal is sold in the United States under the trade name of "carboloy."

The announcement was made in September that a new alloy that gains tensile strength as it grows hotter—something entirely different from anything heretofore known—has been perfected by Dr. Erwin F. Lowry of the research department of the Westinghouse Electric & Manufacturing Co. The alloy consists of a combination of cobalt and nickel from which it derives its name, konel, and ferrotitanium. Konel has been subjected to exhaustive tests which revealed many valuable qualities. Almost without exception, metals grow softer and lose tensile strength as they undergo high heat, but konel, heated to 600° C., which is approximately 1100° F., will withstand a pressure of 60,000 pounds to the square inch. Even further tests show konel is tougher and harder when heated to 1800° F. It is used in the manufacturing of the filament in high-class radio tubes, replacing iridium, long believed the only metal fitted for that purpose; also, it should be highly efficient where metal is exposed to great

heat generated by friction or internal combustion.

MOTOR FUEL Early in 1929 the American Chemical Society issued a summary of the advances made during 1928 in motor fuels, most of which had already appeared in various issues of the *YEAR BOOK*. In addition to gasoline and its many mixtures, there are motor fuels derived as by-products from coal, which are now commercial products in Germany, produced by the direct hydrogenation of coal, yielding a motor fuel that resembles, but is cheaper than, gasoline. More recently, chemists have turned their attention to other carbonaceous materials as a source, and in June, 1929, announcement was made of an anti-knock motor fuel obtained from tar of the Douglas fir. The development of a practical and economic means of converting wood waste into motor fuels provides a source of motor fuels for the future which is under the direct control of man. The great storehouse of potential motor fuel from petroleum, coal, and oil shales are heritages from past ages, while wood tars and other vegetables are producible under controlled conditions.

Approximately 24 per cent of the standing tree is converted into useful products, while 76 per cent is wasted. As an example of the possibilities of the utilization of this waste, from an average annual yield of 7,500,000,000 board feet of Douglas fir, the equivalent of 2,500,000 cords, or 4,200,000 tons, is available for destructive distillation, yielding the following products: turpentine and light oils, 8,500,000 gallons; tar, 70,000,000 gallons; wood alcohol, 9,780,000 gallons; calcium acetate 187,500,000 pounds; charcoal, 2,440,000,000 pounds; and a large yield of gas for fuel. The 70,000,000 gallons of tar will produce by cracking, it is claimed, 23,300,000 gallons of motor fuel equal to benzene in anti-knock properties.

According to tests made by the Pittsburgh station of the Bureau of Mines, ethyl gasoline used as an automobile engine fuel does not materially increase the percentage of carbon monoxide in exhaust gases. As to the effect of ethyl gasoline on health and safety, the amounts of carbon monoxide produced by the engine, under any comparable operating condition, were found to be the same for ethyl gasoline and straight gasoline.

GLASS A special new glass is reported from Japan. It is composed of two sheets of glass with a thin sheet of celluloid between. It is patented and approved for use in the Japanese Army and Navy. At present, this glass is produced in only one size, namely, 5 millimeters thick, 24 inches wide, and 48 inches long. It is sold at 4 yen per square foot, factory packing and shipping charges being extra. Only 200 pieces of the above dimensions are produced each month.

SUGAR The announcement of the discovery of a new sugar was made in February, 1929, by the U. S. Bureau of Standards, where experiments on inulin, a starch-like substance found in dahlias, chicory, artichokes, and other plants, have yielded a new product called "difructose anhydride." The process is as follows: By treatment with acid, inulin is changed to the very sweet sugar, fructose or levulose. Experiment showed, however, that not more than 92 per cent of the expected amount of fructose was obtained, and a study of the remaining 8 per cent revealed the presence of a new sugar which was composed of two molecules combined in such close union

that the acid was unable to convert it to fructose.

EXPLOSIVE Amatol is the name of a substance experimented with as a high explosive at the Pettawawa Military Camp in Canada. It was said that amatol was produced by British chemical engineers and was being used in some of the new guns with which artillery divisions of the British Army have been equipped. Experiments were being carried on by the military authorities of all the dominions of the British Empire with amatol, and it was said that if the cost of manufacture is no greater than that of cordite, the new explosive eventually would be adopted as the charge of the quick-firing guns. One of the features of the new explosive is that there is no charred residue of the envelope containing the charge. In cartridges of quick-firing guns charged with cordite, the charge is contained in a cotton envelope and, on opening the breech immediately after firing, the remains of this envelope are still in the cylinder, charred and smoldering, but when amatol is used the whole content of the cartridge case is immediately consumed.

PURIFIED WATER. A press dispatch from Berlin, Germany, in February, 1920, claimed that sterilizing water for drinking purposes could be easily accomplished by using $1\frac{1}{2}$ grains of silver prepared by the Krause method. Dr. Rudolf Degkwitz, professor of hygiene at Greifswald University, made a thorough test of the process and found that, within less than an hour, he succeeded in completely sterilizing a cubic centimeter of water which contained a million germs. The new method is said to work independently of temperature, can be applied to any quantity of water, and needs no supervising.

SYNTHETIC RUBBER. Late in October, 1920, a press dispatch from Geneva, Switzerland, announced that E. Kleiber, of Basel, after many years of experiment, had discovered a process for producing cheap synthetic rubber on a large scale. Kleiber asserts that it possesses all the qualities of rubber, but has more elasticity, its basis being natural mineral oils. He also claims that, owing to the cheapness and durability of his product, streets and roads may be covered in the future with synthetic rubber and that it also may be used in many other fields. A German chemist from Frankfurt already had produced synthetic rubber costing \$7.50 a kilogram which is 10 times the price of ordinary rubber, but Kleiber's product costs only 8 cents a kilogram.

COMMERCIAL CONSIDERATIONS. At a meeting of the American Institute of Chemists held in New York City on May 4, 1920, Francis P. Garvin again expressed the opinion that German dyestuff makers had launched a war to destroy American post-war progress in dye manufacture and other chemical processes, thus endeavoring to recapture the market. He said the German Interessen Gemeinschaft was brought into the United States by a group of American commission-mad bankers who had taken \$30,000,000 out of the funds in their custody, or under their control, to assist the I. G., under the guise of bonds, in the new war to destroy United States chemical progress. Mr. Garvin gave this succinct admonition and warning: "Always and forever remember the stake for which the Germans strove before the War and in the War and since the War—world power through a monopoly of science. The battle will be taken up and fought over again, and that Grecian horse will be driven

out of the country. American I. G. What an insult to every man, woman, and child in this country! It is a sad thing to find men so money-mad as to be willing to betray their country and their families for just a few more dollars!"

In July, 1920, came the press announcement that the American I. G. Chemical Corporation, representing an alliance between the German Dye Trust and the Standard Oil Company of New Jersey, would establish a \$20,000,000 plant near Monroe, La. It was said in Wall Street that the proposed Louisiana plant would be in a position not only to manufacture dyes but to use a new process for extracting gasoline from petroleum controlled by the American I. G. Chemical Corporation. Oil from the fields in Louisiana and nearby areas is to be used in the process.

During August 3-4 representatives of the U. S. Department of Commerce, from all the principal cities of Europe, and Washington officials and spokesmen of the chemical interests of the United States met in the American Embassy in Paris for a four-day conference to consider the present state of chemistry and chemical industry. The principal object of these sessions was to devise ways and means to stimulate the American chemical trade. During the conference, chemical experts surveyed the entire chemical situation in Europe. Much time was given to an examination of the European chemical cartel's smooth operation, which has given the new American industry strong competition. While the foreign trade of the American industry is very great, the American companies are very keenly aware of the European trust.

It was brought out that there exist three separate divisions in the world chemical trade—the European cartel, probably the strongest, Great Britain, and the United States. Each group is employing the latest methods and ideas and each is going after world trade with a force and efficiency which is creating the swiftest kind of competition. Most remarkable of all, however, is the fact that the United States, within five or six years, had been able to develop her chemical industry to the point where it ranked with the cartel. Twelve years previously, the American industry, practically speaking, did not exist, the American chemical experts explained. By 1920 the United States had become the greatest chemical producer and consumer in the world.

Germany, it was true, remained in the first place as an exporter, owing to her far-sightedness, long before the War, of seeing the advantages politically and commercially, of a strong chemical industry, but in exports, the United States was rapidly catching up. The Americans pointed out that a " " " " export figure had already been exceeded. It was further disclosed that, a few years before, the foreign chemical interests, viewing with disturbed eyes the American chemical expansion, put their heads together with the idea of crushing the potential new competition. With commendable foresight, however, the Americans obtained the necessary protection to make it possible for them to grow and become strong. It is true that the protection took the form of high protective tariffs; but as the Americans explained, in this, they merely followed the example of their older foreign rivals.

An item from the *Commercial Reports* of the Bureau of Commerce, issued at the beginning of the year, indicated the trend of affairs in Belgium, which also prevailed elsewhere. The for-

mation of the Union Chimique Belge was the outstanding event in the chemical industry during 1928, as being indicative of the transition from small independent units to large central organizations that was taking place and was interpreted as a preliminary step toward further integration. The central organization controlling the production and regulating sales of sulphuric acid would have a total estimated output of 700,000 metric tons, and the erection of a new plant with an additional capacity of 50,000 metric tons was proposed.

The output of sodium sulphate had increased to approximately 100,000 metric tons. Intensive agricultural cultivation was creating a strong demand for chemical fertilizers. Three synthetic-ammonia plants had been completed and a fourth was under construction, the total productive capacity was estimated at 85,000 tons. The manufacture of coal-tar derivatives also had shown increased development during the year. The dye industry was producing 50,000 tons of ultra-marine blue. The explosive industry was active, its production increasing.

BIBLIOGRAPHY. Among the more important works on chemistry published during the year are Allen's *Commercial Organic Analysis* (vol. vii, 5th ed.), on "The Vegetable Alkaloids", Beilstein's *Handbuch der organischen Chemie* (vol. vii and Supplement 2), *Organic and Food Chemistry*, by G. E. Culver, *A Text-book of Inorganic Chemistry* (part 1, vol. xi), on "Organometallic Compounds," by J. Newton Friend, the part on "Eisen" of Gmelin's *Handbuch der Anorganischen Chemie*, *The Constitution of Sugars*, by W. N. Haworth, *Catalytic Processes in Applied Chemistry*, by T. P. Hilditch, *Applied Inorganic Analysis*, by D. F. Hillebrand and G. E. F. Lindell, *The Pyrolysis of Carbon Compounds*, by Charles D. Hurd, *Thyrsæus*, by E. C. Kendall, *Reference Book of Inorganic Chemistry*, by W. M. Latimer, *Chemisches Fachwörterbuch*, by A. W. Mayer, *A Comprehensive Treatise on Inorganic and Theoretical Chemistry* (vol. ix), by J. W. Mellor, *Oxidation-Reduction Potentials*, by L. Michaelis, *The Biochemistry of the Amino Acids*, by H. H. Mitchell, and *Photometric Chemical Analysis* (vol. ii, on "Nephelometry"), by John H. Yoe.

NECROLOGY. Thomas Burr Osborne, distinguished for his studies in the field of nutrition and a member of the National Academy of Sciences, died in New Haven, Conn., on Jan. 29, 1929. Frank Austin Gooch, Kent professor of chemistry in Yale University and member of the National Academy of Sciences, died in New Haven, Conn., on Aug. 16, 1929. Karl Auer von Welsbach, eminent for his investigations in incandescent lighting, died in Schloss Welsbach, Carinthia, Austria, on Aug. 5, 1929. William Henry Perkin, Waynflete professor of Chemistry in Oxford, England, died in Oxford, England, on Sept. 17, 1929 (he was the son of Prof. W. H. Perkin, who discovered the first aniline mauve), Raoul Pierre Pictet, well known for his pioneer work on the liquefaction of gases, died July 27, 1929.

CHESS. The fact that Dr. Alexander Alekhine, champion of the world, was called upon to defend his title by E. D. Bogoljubow of Tiberge gave significance to the chess happenings of 1929. Dr. Alekhine was successful in retaining his title against the challenger, winning eleven games and losing five, with nine games drawn. The

games of the match were contested at Heidelberg, Berlin, The Hague, Weisbaden, Amsterdam, and Rotterdam. José Capablanca immediately challenged the victor and the match was to be played in October, 1930. Alekhine also made a successful tour of the United States, which was brought to a close by a triumph at the international tournament at Bradley Beach, N. J., in June.

The greatest tournament of the year, the one at Carlsbad in October, was captured by Aron Nimzowitsch of Copenhagen. Capablanca divided second and third prizes with Rudolf Spielmann of Vienna. Capablanca also made the best score for a foreign team which met a British one at Ramsgate. Akiba Rubinstein of Warsaw was the victor in an important tourney at Rogaska-Slatina in Yugoslavia.

The annual Metropolitan Chess League championship competition was won by the representatives of the Marshall Chess Club after a hard battle with the Manhattan Chess Club team. Herman Steiner and Jacob Bernstein both of New York City tied for the State championship at Buffalo. The former won the playoff. Hermann Hahlbohm of Chicago won the Western championship tournament played in St. Louis. Harvard captured the title in the H. Y. P. W. College Chess League, while City College of New York finished first in the Intercollegiate League.

CHICAGO. See 11111018.

CHICAGO, UNIVERSITY OF. An institution of higher education and research situated on the Midway Plaisance between Washington and Jackson Parks on the South Side of Chicago. The university is privately endowed, coeducational and nonsectarian, although three fifths of its 40 trustees must be Baptists. John D. Rockefeller founded the university in 1890 and his personal gifts amounted to a total of \$35,000,000 over a period of 20 years. Divisions of the university include an under-graduate college, graduate schools of arts, literature, and science and a group of professional schools, including law, medicine, divinity, library science, education, commerce and administration and social service administration. The university year is divided into four quarters of 12 weeks each. During a regular term during the summer months a class of the college is limited to 750 students, and a selective admission system is in force. On account of changes in student personnel, the total number of persons enrolled at one time or another during the course of the academic year attained approximately 14,000. These figures do not include the enrollment in the home study, or correspondence, department, which has an average of 7000 students at any one time. During the autumn quarter of 1929, 8230 students were in residence for class work. The total enrollment for 1928-29 was 14,443.

The members of the several faculties, exclusive of assistants, numbered 789 on June 30, 1929. In all departments and in all grades of service, the university employed approximately 2300 persons. Important additions to the faculties during the calendar year 1929 included the following: John Shaplev, as chairman of the department of art, Dr. Russell M. Wilder, as chairman of the department of medicine, Dr. Joseph B. DeLee, as chairman of the newly created department of obstetrics and gynecology and Dr. Fred L. Adair, as professor in that department, August Vollmer, as professor of police administration, Karl S. Lashley, as professor of

psychology, Dr Nathaniel Allison, as chairman of the department of orthopedic surgery, Edwin E Aubrey, as professor of Christian theology, Albert S Olmstead, as professor of Assyriology, Eleanor Rontecou, as professor of legal relations, Leonard V Koos as professor of secondary education, and Floyd W Reeves as professor of education Dr Franklin McLean was appointed director of the university clinics, and Prof Harry A Bigelow was made dean of the law school. Others who were accepted from Prof George A Works dean of the graduate library school, who became president of Connecticut Agricultural College, and from Prof Katherine Blunt, chairman of the department of home economics, who became president of the Connecticut College for Women. During 1929 seven special professorships known as distinguished-service professorships, were established at the university, each carrying a salary of at least \$10,000. Six of these bear the names of the donors who contributed funds sufficient for their endowment, as follows: Martin A Ryeison, Frank P Hixon, Charles H Swift, Sewell L Avery, Charles F Grey, and Morton D Hull. A seventh was named in honor of Prof Elakim H Moore.

The assets of the university on June 30, 1929, were \$88,357,337, an increase of \$10,545,116 over the figure for the same date in 1928. These assets were divided as follows: Endowment fund, \$50,889,403; plant fund, \$30,833,067; current assets, \$4,688,994 and other fund assets, \$1,945,873. The total income under the university's combined budget for the fiscal year 1928-29 was \$6,015,538, while expenditures amounted to \$5,991,196. Student fees provided 39.11 per cent of the income and invested funds, 11.88 per cent. A significant factor in the increase of assets was the receipt of gifts during the year amounting to \$6,926,411. Among the important gifts, pledges, and bequests were the following: \$250,000 from a friend of Charles Markham for a medical endowment in his honor, \$250,000 from Julius Rosenwald, \$125,000 from Albert D Lasker and \$75,000 from John Hertz, in support of the university clinics and for medical research, \$400,000 from John P Wilson, Jr., and Mrs William R Dickinson, for an endowment of the law school in memory of their father, John P Wilson, \$177,121 from friends of the late Samuel Deutsch to establish a foundation in social service administration in his honor, \$200,000 under the will of the late H G B Alexander for an endowment in commerce and administration, \$1,000,000 from Max Epstein for the erection of an Institute of Fine Arts, and \$1,500,000 from the General Education Board for the further development of the school of education.

With the completion of five new structures during 1929, the number of buildings operated by the university for educational purposes was increased to 77, including the Yerkes Observatory at Williams Bay, Wis., the buildings of the Rush Medical College on the West Side of Chicago, and the expedition headquarters at Luxor, Egypt, Armageddon, Palestine, and Khorsabad, Iraq. The five buildings opened in 1929, valued at a total of \$3,850,000, were the social science research building, Bernard E Sunny Gymnasium, George Herbert Jones Chemistry Laboratory, botany greenhouses, and Blackstone Avenue power plant. Buildings under construction in 1929, involving an expenditure of \$3,250,-

000, were the Chicago Lying-In Hospital and Dispensary, Bobs Robert Memorial Hospital, Bernard A Eckart Hall, for mathematics, physics, and mathematical astronomy, and the botany research laboratory. Plans were formulated for the construction of the following during 1930: Two quadrangles of South-of-the-Midway dormitories, Oriental Institute, art building, Gertrude Dunn Hicks Hospital for Orthopedics, Nancy Adele McElwee Memorial Hospital, International House, Athletic Field House, and a graduate building for the school of education. These projects were estimated to cost \$7,500,000.

The University of Chicago Press published 90 books of a scholarly nature during the year, while publications of faculty members in the various fields, including books, monographs, and articles, totaled over 800. An addition to the list of 13 quarterlies published currently by the Press was the *Journal of Modern History*, introduced under the editorship of Prof Benadotte Schmidt. Among the scientific achievements of the year were the discovery of the wave-properties of the proton, by Prof Arthur J Dempster, discovery of the palace of Sennacherib, by Prof Edward Chiera, conclusion of a study by Prof I S Falk, indicating that a form of pleomorphic streptococcus was the organism responsible for the 1928 influenza epidemic, and the preparation of detailed social statistics on the Chicago metropolitan area by the Local Community Research Committee, a cooperative group of social scientists of the university. Accessions to the university libraries increased the number of bound volumes to 871,276, the number of pamphlets to approximately 400,000, and the number of periodicals received regularly to 4429. On April 17, 1929, Robert Maynard Hutchins, dean of the law school of Yale University, was elected president. He began his administration in September, 1929, and was formally inducted into office on November 19, as fifth president of the university.

CHICAGO ART INSTITUTE See ART EXHIBITION, ART MUSEUMS.

CHICAGO DRAINAGE CANALS See CANALS, ILLINOIS.

CHICAGO EXPOSITION See EXPOSITIONS. **CHICHESTER**, BISHOP OF See BURROWS, THE RIGHT REV WINFRIED OLDFIELD.

CHILD LABOR NATIONAL CHILD LABOR

COMMITTEE In a series of conferences held in December, marking the twenty-fifth anniversary of the existence of this organization, the National Child Labor Committee indicated that it was prepared to resume agitation for the adoption of a Federal child-labor amendment. Speakers before the conference pointed to the fact that the two million gainfully employed children in the United States appeared to be displacing a similar number of adult workers in industry. One of the speakers, Miss Ruth Morgan, vice president of the National League of Women Voters, said in urging the resumption of efforts for a Child Labor Amendment: "The truth seems to be that in the question of child labor, the advanced States continued to go forward, but the backward States are kept very backward indeed. Since the failure of the child labor amendment, only one State with low standards has brought up its State laws to the very moderate standard of the good State laws."

In 1929 the National Child Labor Committee reached the twenty-fifth year of its activity. This organization has consistently applied itself

to the problem of the checking of child labor in industry, and what successes have been obtained in the field must be largely attributed to its efforts. At this point, it is permissible to summarize the progress of child labor in the United States over the quarter of a century. At the time of the organization's founding, there were 1,750,000 children between the ages of 10 and 15 employed gainfully. Of this number, 680,000 were in nonagricultural occupations, 24,000 being in mining and 260,000 in manufacturing and mechanical pursuits. In some States of the Union, no age limits were fixed in the employ of children. In others, 10 years and in some 12, 13, and 14 years were placed as the legal minimums. Compulsory-attendance school laws were nonexistent in 14 States, in many others, they extended only to 12 or 13 years and required attendance for two or three months. Only two States had established an eight-hour day for children under 16, a handful had a ten-hour day, some efforts already had been begun in the direction of checking night work, but this applied only to children under 14 and started with 10 P. M. at night.

In the 25 years that have elapsed, the progress obtained has been extraordinary. Every State in the Union today has one kind or another of a 14-year age limit for entering industry, and a few go up to 15 or 16 years. All States regulate hours of work. Most of them have an eight-hour working day for children under 16. Almost every State restricts night work for children, with 6 or 7 P. M. being the closing hour in two-thirds of the States. In 31 States, the school laws require the completion of at least six grades before a child of 14 may leave school, in 27 States, the requirement is the eighth grade. Twenty-six States require a physician's examination and a certificate of physical fitness before a child of 14 can go to work. All these measures have had an important bearing on the decline of the number of children gainfully employed.

Between 1900 and 1920, the percentage of children 10 to 15 years inclusive dropped from 18.2 to 8.5 per cent. In 1904, only 17 States prohibited the employment of children under 14 years in factories, by 1920, 39 States barred children from factories. In 1904, 5 States prohibited the employment of children under 16 in factories after 7 P. M., by 1920, the total had reached 36 States. In 1904, only 2 States had an eight-hour day for children under 10 years in factories, by 1920 the total had increased to 36.

As these first objectives were realized, the National Child Labor Committee moved forward to new problems. Demands were growing that the entering age in industry should be raised to 15 or 16 years. Such a change would necessitate an overhauling of the educational system in order to make provision for retarded children who were swelling the child-labor ranks. Other problems include vocational education of children, the strengthening of the safety movement, and the creation of special safeguards and supervision for children between the ages of 16 and 18. The National Child Labor Committee appreciates that, with the increasing mechanization and technological unemployment, keeping children out of industry assures their fathers a longer period of employment. Nevertheless, serious education problems must be faced. If chil-

dren are to be kept longer in the schools, what is to be done about those who are mentally retarded and cannot profit from the customary academic programme? In the second place, is it advisable to combine school and gainful work on a part-time basis? The organization has dedicated itself to these principles. "Children must not be allowed to work at too early an age for long hours, at night, in work involving health strain or accident hazard, but equally important, their education must be assured, their vocational aptitudes developed, and when their time for employment comes, they must be aided in making the transition from school to industrial life."

EMPLOYMENT CERTIFICATES The Children's Bureau has been collecting figures bearing on the issuance of employment certificates to children between the ages of 14 and 16 for occupations other than domestic service and farm work. During the calendar year 1928, in the 16 States of Alabama, Connecticut, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Minnesota, New Hampshire, New Jersey, Oregon, Tennessee, Vermont, Washington, Wisconsin, and also in the District of Columbia, as well as from 65 cities in 15 other States, there were issued 150,269 work certificates. On the basis of the 1920 census, it is estimated that these 14- and 15-year-old children represented more than one-half the children in the two age groups in the United States going to work.

It is significant to note that, for the same States and cities, the 14- and 15-year-olds going to work in 1928 were 6 per cent less than in 1927 and that in 1927 they were 8 per cent less than in 1926. In 1928, as compared with 1927, the reports for 11 States and 29 cities in other States showed decreases varying from less than 1 per cent to 93 per cent in the numbers of such certificates issued. In the State of Alabama, there was a decrease of 13 per cent. In Kentucky, there was a decrease of 17 per cent. In Maryland, there was a decrease of 15 per cent. On the other hand, increases of from 3 to 64 per cent for 1928 over 1927 were reported from the District of Columbia, Kansas, New Hampshire, Vermont, and Washington. In New York City, the decrease was 4 per cent, in Chicago, 2 per cent, in San Francisco, 14 per cent. In Detroit, on the other hand, the gain was 46 per cent. It is also interesting to note that there were considerable gains in the 16- and 17-year-old children, when 1928 is compared with 1927. States and cities for which the information was available reported an increase of 6 per cent in 1928, as compared with 1927. This is to be contrasted with the 12 per cent decrease in 1927, as compared with 1926.

A variety of factors naturally affects these trends. The figures show decreases or increases in opportunities for employment, changes in the school-attendance law, more complete administration of existing laws. For example, in Saginaw, Michigan, which showed a decrease of 93 per cent, the reason was to be found in the adoption of a policy of issuing certificates to children under 16 only if their earnings were necessary for the support of the family. In Sacramento, Calif., a special curriculum of certificates to increase the 14- and 15-year-olds receiving employment certificates in 1928 (for whom information as to school grade was ob-

tainable), it was found that more than half had completed the eighth or a higher grade in school, while only 24 per cent had completed only the sixth or a lower grade. In the two States of California and New York, where the completion of the eighth grade was required for children 14 years of age (but not for the 15-year-olds), the percentage of 14- and 15-year-old children completing the eighth grade was as follows: In Los Angeles, 66 per cent, San Francisco, 83 per cent, in New York, 69 per cent; in Rochester, 61 per cent, in Buffalo, 60 per cent.

MIGRATORY WORKERS Dr. G. M. Mangold, in a pamphlet published by the New York Child Labor Committee, was authority for the statement that migratory child workers were on the increase, particularly in those sections of the country where fruit and vegetables were being raised and canned. The increasing use of the automobile had made it easier for whole families to follow harvesting seasons, and, as a result of this, migratory child workers were increasing in the South and West. The increasing use of Mexicans as casual laborers on fruit, vegetable, and sugar-beet farms accounted to a sizable extent for the greater number of child agricultural workers. Dr. Mangold found that the social and physical effects of life in the labor camps were reprehensible. Not only physically, but educationally, children suffer. Very often, in the case of entirely migratory families, children are likely to have no schooling at all. This authority found necessity for immediate State and Federal action, calling for the regulation of labor camps, the provision of traveling schools for the education of migratory children, and more explicit child labor legislation, to protect the migratory child workers in agriculture.

Another section of the pamphlet, written by Lillian B. Hill, showed that the problem was particularly acute in the State of California. According to the school census of 1927, there were 36,891 in the State who had no settled homes. The same census showed that there were in the school population 102,405 Mexican children who were for the most part migratory. Miss Hill declared that 85 per cent of these children were engaged in seasonal labor for probably 10 months out of each year. California, in order to cope with this serious problem, enacted legislation for the maintenance of schools for children of migratory laborers. During the period of July 1, 1928 to July 1, 1929, migratory schools established under this act secured from the State and the county in which they were established almost \$20,000. The attending problems are, of course, many. The language difficulty is serious, there is great need for the development of physical education programmes for children who are already overworked and undernourished, retardation is a constant factor, and the continual change from one school to another breaks up social adjustments that may already have been created.

ENGLAND On July 18, the English government announced in Parliament that, beginning with Apr. 1, 1931, the compulsory school attendance age in England would be raised to 15 years. Not only is the change expected to improve the educational status of the English child, but it probably will have serious repercussions as far as the unemployment problem is concerned. With the keeping of the child a year longer in the

public schools, the supply of young workers will be decreased. Not only will more work be thrown to the adults, but the increasing physical budget will mean larger employment in the building and maintenance of school plants.

WISCONSIN. During the year 1928, the total number of work permits issued to children in the State of Wisconsin (excluding Milwaukee) was 8535. In Milwaukee, the number issued was 5791. In Milwaukee, all children applying for regular work permits are given a medical examination for the purpose of determining their fitness for the particular job they are taking and to discover physical or health defects. Of the 3483 examined, in 1928, only 246 were free from defects. The responsibility for illegal employment in this State is fixed squarely upon the employer, upon whom rests the burden of proof in clearing up the age of the minor. Wisconsin is on the roll of those progressive States which demand increased compensation for industrial injuries received by minors unlawfully employed. If a child of permit age is injured while employed without a permit, total compensation is paid, if he is injured while employed without a permit, in an employment which he is not legally permitted to enter, he is entitled to treble compensation. The history of Wisconsin's experiences has definitely indicated that such added liability is a definite deterrent in checking the illegal employment of minors. During the year 1928, increased compensation was paid in the cases of 53 minors, as contrasted with 1924, when such compensation was paid in 87 cases. In 1924 the total indemnity paid was \$55,819, as contrasted with 1928's record, which was \$17,248.

MASSACHUSETTS. The Supreme Judicial Court of Massachusetts on June 1, 1929, confirmed an award of compensation in favor of the dependents of an illegally employed minor killed as the result of an industrial accident. The insurer of the employer had argued that the Workmen's-compensation Act did not apply because the minor was illegally employed. The Court, however, declared that the responsibility rested with the employer, in view of the fact that the Compensation Act specifically declared "that no person shall employ a minor under 18." The Court said further: "The minors are free from statutory inhibitions, their contracts as to themselves are free from the taint of illegality, in each case, they are entitled to similar benefits and to an equivalent amount of protection. . . The violation of the statute subjects the employer to the penalties mentioned in the statute."

NEW JERSEY. The Children's Bureau, in a study made of child labor in that State, found that children under 16 years of age were working under conditions considerably more lax than those found in other industrial States. As a result of the study made of the employ of children in Paterson and Newark, it was found that children worked earlier in the morning, later at night, and for longer hours than the law permitted them. In Paterson, the children's working day in vacation time was as long, if not longer, than those of older brothers and sisters who were regularly in industry. The surveyors found that the law of the State had been weakened by adverse judiciary decisions and that laxity on the part of the officials responsible for their enforcement permitted the unfortunate conditions that existed. The survey covered all children in the public schools of Newark and

Paterson under 16. It was found that 4309 children were employed in indoor and street work in Newark. Newark had 176 children under 12 years of age working 48 hours or more a week in vacation and 256 under 12 years working at least 24 hours a week during the school year. In Paterson, the situation was found to be largely similar.

ILLINOIS In that State, the total number of industrial accidents involving minors under 18 years of age for the year 1928 was 1028, of whom 945 were involved in accidents that were compensable. Of this total, 101 children were 16 years of age. According to the Illinois law, an extra compensation of 60 per cent must be paid in the cases of children illegally employed. Of the 101 minors under 16, 30 were legally employed and 69 were illegally employed. Of the 69 illegally employed, the following was the extent of disability: fatal accidents, one, accidents in which the disability was permanent, 12, accident in which there was disfigurement, one, accidents in which disability was temporary, 50, accidents in which six or less working days were involved, five. Of the 30 who were legally employed, in the cases of two, fatalities occurred, and in the cases of three, disability was permanent. In the cases of 22, the disability was temporary.

CHILD NUTRITION See **FOOD AND NUTRITION**

CHILD WELFARE The YEAR BOOK has referred before to the excellent work that has consistently been performed by the Children's Bureau of the United States Department of Labor, whose chief is Miss Grace Abbott. There is no question that the careful researches being performed by this organization have been one of the factors in the creation of an improved public attitude toward the problems of child welfare in the home, the school, and in industry. The record of the fiscal year 1929 shows that there were issued 27 new and revised publications of the bureau. Significant reports included "A List of the Psychiatric Clinics for Children in the United States," "Child Labor in New Jersey," "Child Workers on City Streets," "Children in the Street," "Children in the Court," "Public Dance-Halls," and a "Study of Illegitimate Children." During the fiscal year, the bureau distributed 1,173,430 publications concerned with child care, child management, infant care, and pre-natal care. The Bureau also issued its *Child Welfare News Summary* 30 times during the year.

BIRTH RATES AND INFANT AND MATERNAL MORTALITY The birth rate for 1928 in the official birth registration area of the country was 19.7 per thousand of estimated population as compared with 20.7 for 1927. In 33 of the 38 States for which figures for both the years were obtainable, the birth rates were lower in 1928, as compared with 1927. The same States in 1928 had a death rate of 12.3 per thousand, as compared with 11.4 for 1927. Increases were reported in 36 of the 38 States. The infant mortality rate increased in 1928 to 68 per thousand from 64.6 in 1927. The highest infant mortality was 142.2 per thousand in Arizona, and the lowest was 46.9 per thousand in Oregon. In New York State, the number of infants under one year of age dying in 1928 was 14,393. The birth rate in New York State dropped from 19.9

per thousand in 1927 to 19.3 in 1928. The infant mortality rate in New York State was 64.5 per thousand in 1928, as compared with 59.4 per thousand in 1927. In New York City, the birth rate dropped from 21.6 per thousand in 1927 to 21 per thousand in 1928. The infant mortality in New York City increased from 56 per thousand in 1927 to 59.3 in 1928.

In 1922 six countries for which comparable statistics were available, had a lower infant mortality rate than the United States birth registration area, viz., Australia, Irish Free State, New Zealand, Norway, Sweden, and Switzerland. The rate in England and Wales was the same as that of the United States. Despite reductions in this country, the latest available figures for Norway, Sweden, the Netherlands, Australia, New Zealand, and Switzerland still show infant mortality rates lower than the American rate. New Zealand, for instance, reduced its rate from 48 in 1921 to 40 in 1926. The lowest American rate was 47 in Oregon in 1928.

Maternal mortality rates have shown little improvement during the period 1922-27. In 1922 the rate was 66 maternal deaths per 10,000 live births, as compared with 65 in 1927. In the rural areas, the rate dropped from 59 in 1922 to 55 in 1927. The above figures relate to the expanding birth registration area. If the States that were in the birth registration area each year from 1922 to 1927 are considered alone, the reduction in the total maternal mortality rate is considerably greater, dropping from 65 in 1922 to 62 in 1927. Evidently, some progress has been made in the checking of puerperal deaths from albuminuria and convulsions, largely due to the programme of education of expectant mothers. The rate from this cause in the States that were in the birth registration area in the years 1922-1927 dropped from 18 deaths per 10,000 live births in the earlier year to 15 deaths in the later year.

DELINQUENCY The Children's Bureau was able to report a continuous increase in the number of courts cooperating with it in maintaining its plan for uniform recording of juvenile court statistics. On July 1, 1929, 150 courts had indicated their willingness to cooperate. During the calendar year 1928, 65 courts reported their statistics, as compared with a total of 43 in 1927. During the calendar year 1928, 38,882 delinquency cases, 16,289 dependency or neglect cases, and 10,429 cases of children who were discharged from probation were reported to the Children's Bureau by the juvenile courts cooperating. A juvenile delinquency rate has been determined by calculating the ratio of the delinquent children brought before the court to 1000 population of juvenile court age. These ratios indicate that delinquency is much more common among boys and also that there are unexpected differences which can be cleared up only by studies of local conditions. A number of these ratios for girls and boys are presented here. In San Francisco, the ratio of delinquent boys to 1000 estimated population of juvenile court age in 1927 was 14.5, as compared with a ratio of 1.3 for the girls. In Buffalo, the ratio for the boys in 1927 was 15.9, and in 1928 17.0, as compared with the girl ratios of 1.1 in 1927 and 1.4 in 1928. In New York City, the boy ratio in 1927 was 8.3 and in 1928, 11.6, for the girls, they were 1.4 in 1927 and 1.8 in 1928. In Philadelphia, the ratios for the boys were 27.5 in

1927, and 266 in 1928, as compared with 40 for the girls in 1927 and 42 in 1928.

The survey of the Bureau finds that Negro children are more likely to come to the attention of juvenile courts because of delinquency. Only 5 per cent of the population served by the courts in 1928 were Negroes, whereas 15 per cent of the boys and 21 per cent of the girls dealt with in delinquency cases were Negroes. It is interesting to discover that foreign-born children constitute a very small percentage of delinquent children coming before the courts. In 1928, only 2 per cent of the delinquent white boys and 3 per cent of the delinquent white girls dealt with by the 62 courts were reported as of foreign birth, although in 1920, 27 per cent of the white boys and 24 per cent of the white girls residing within the areas served by these courts were recorded as being foreign born.

The following table indicates the disposition in 1927 and 1928 of delinquency cases disposed of by juvenile courts reporting then statistics to the Children's Bureau.

DISPOSITIONS IN 1927 AND 1928 IN BOYS' AND GIRLS' DELINQUENCY CASES, DISPOSED OF BY JUVENILE COURTS REPORTING STATISTICS TO THE CHILDREN'S BUREAU

Disposition	1927 (42 courts reporting)				1928 (62 courts reporting)			
	Boys cases	Girls cases	Boys cases	Girls cases	Boys cases	Girls cases	Boys cases	Girls cases
	Number	Per cent distribution	Number	Per cent distribution	Number	Per cent distribution	Number	Per cent distribution
Total	21,244		4,143		32,822		6,060	
Disposition reported	21,088	100	4,116	100	32,739	100	6,043	100
Dismissed (closed after adjustment or continued indefinitely)	11,286	47	1,628	40	14,551	44	2,112	35
Child placed on probation	7,852	33	1,182	34	11,076	34	2,034	34
Child placed in institution	2,675	11	710	17	4,494	11	1,224	20
Restitution for or costs	1,151	5	51	1	1,715	5	61	1
Other disposition	1,124	5	145	4	1,923	6	612	10
Disposition not reported	156		27		83		17	

* One of the 43 courts reported too late for the figures to be used in the 1927 study.

* Three of the 65 courts did not report delinquency cases in 1928.

The following table indicates the character of the offenses committed by the children brought before the juvenile courts cooperating with the Children's Bureau.

CHARGES IN 1928 IN BOYS' AND GIRLS' DELINQUENCY CASES, DISPOSED OF BY JUVENILE COURTS REPORTING STATISTICS TO THE CHILDREN'S BUREAU

Charge	1928 (62 courts reporting)			
	Boys	Girls	Boys	Girls
	Number	Per cent distribution	Number	Per cent distribution
Total	32,822		6,060	
Charge reported	32,667	100	6,021	100
Stealing	14,064	43	727	12
Automobile stealing	1,811	6	26	
Burglary or unlawful entry	4,219	13	43	1
Robbery	698	2	41	1
Other type of stealing	4,729	14	405	7
Type of stealing not reported	2,567	8	212	4
Tuancy	2,880	9	752	12
Running away	2,005	6	904	15
Unlawful	2,274	7	1,113	28
Sex offense	564	2	1,158	19
Injury to person	922	3	152	3
Act of carelessness or mischief	9,146	28	179	8
Violating liquor or drug law or intoxication	740	1	65	1
Other charge	472	1	67	1
Charge not reported	155		39	

DEPENDENT CHILDREN The Children's Bureau has, in recent years, sought to be a centralizing

agency for centralizing the practices and the programmes of the various activities in the different States. In view of the fact that, in 1920, there existed in 35 States programmes concerned with child welfare, where public authority has the right to supervise in whole or in part private child-caring and child-placing institutions, it can be seen that the problem has large proportions. In 1920 a series of conferences were held in Washington at the instance of Secretary of Labor Davis in which there participated representatives from 32 States. The chief topic for discussion was dependence and child protection. The Children's Bureau also cooperated with individual States in the studies of the functioning of their Children's Bureaus. During the year, such an investigation was made in Minnesota. There was continued during the year, too, a general study in 10 representative States of the work of State Departments or Boards concerned with the care of children who were socially, physically, and mentally handicapped. The Bureau, too, continued to maintain contacts with the International

American Institute for the Protection of Childhood (Pan American organization), the League of Nations and the International Social Welfare Conference.

CHILD WELFARE LEGISLATION, 1929 *Child Hygiene* California passed a law calling for the employment of dentists and dental hygienists by towns and cities and also authorized any city or county to establish and maintain tuberculosis preventorium and to receive State aid for the support of indigent persons. In Nevada, a law was passed, permitting any county or group of counties to levy a tax for the purpose of establishing and maintaining public hospitals and training schools for nurses. Laws in Illinois authorized the employment of school dentists. Pennsylvania amended its law relating to the employment of school nurses authorizing two more districts jointly to employ a school nurse. Texas passed a law making physical education courses part of the training in public, elementary, and secondary schools. Colorado and New Jersey authorized Boards of Education to install and operate without profit cafeterias or lunch rooms for school children.

Child Labor and Compulsory School Attendance In Illinois, the standard for the obtaining of employment certificates was raised from completion of the sixth to the completion of the eighth grade, and in Missouri from no educational requirement at all to completion of the sixth grade. In Maryland, a new law required completion of the course prescribed for elemen-

tary schools, thus raising the standard for Baltimore to completion of the sixth grade. In California, a new law required that children between 14 and 18 years of age who had left school for work must attend continuation school three hours a day while temporarily unemployed. The same law also provided for vocational guidance for continuation-school children. In Michigan, the law permitting a child over 14 to engage in specified employments during school vacation was amended to provide that such employment might be in any occupation not deemed injurious to health or morals or unduly hazardous. New York made provision for vocational and educational guidance and for the establishment of guidance bureaus as part of the public school system. Michigan amended its workmen's compensation law, requiring double compensation in the case of minors illegally employed (between 16 and 18 years of age) to apply to all minors under 18 years injured while employed. The new workmen's compensation act of North Carolina allowed compensation to all minors, whether legally or illegally employed.

Dependent Children. Laws relative to public aid to dependent children in their own homes were amended in the following 12 States: Delaware, Florida, Illinois, Iowa, Maine, Maryland, Michigan, Minnesota, Nevada, New Hampshire, New York, and Wisconsin. Delaware increased from 14 to 16 years the age of children to whom the mothers' pension law was to apply. In Florida, the change in residence requirement for the application of the law was from one year to two years. Michigan also amended its residence requirement. In Illinois, an amendment authorized the State to reimburse counties to the extent of one-half the amounts expended for aid to mothers with dependent children and appropriated \$500,000.

In Iowa, boards of supervisors in counties of 80,000 population or more were authorized to levy a tax not exceeding one mill. In Maine, the law was amended to provide that aid should be paid by the State, which is to be reimbursed by the municipality to the extent of 50 per cent of the expenditure. The Maryland law provided for a system of mothers' aid throughout the State applicable to widows with dependent children under 14 and those with children 14 to 16 who are ill or incapacitated for work. Nevada and New Hampshire increased the maximum amount of allowance authorized. In New York, the law was amended to permit aid in New York City to children of tuberculous parents receiving medical treatment in their own homes. Wisconsin authorized counties of 250,000 to permit food and fuel to be granted to needy families as part of and supplemental to the relief granted under the law. The bill to establish a system of mothers' aid in New Mexico failed of passage.

Juvenile and Domestic Relations Courts. Connecticut, Florida, New Jersey, North Carolina, and Tennessee created new courts. New juvenile courts were established in Bridgeport, Connecticut and Broward County, Florida. California made investigation and approval by a probation officer a prerequisite for the filing of a petition of delinquency, dependency, or neglect. New Mexico raised the age of delinquency from 16 to 18 years. The New York Wayward Minors' Act was amended to include within the definition of wayward minors not only those in danger of becoming morally depraved, but also those

who are morally depraved. North Dakota passed a law giving the juvenile courts continuing jurisdiction over children declared delinquent, dependent, or neglected until they reached the age of 21 years. The Ohio law provided for psychological and psychiatric examinations of children coming before the juvenile courts. The new Wisconsin children's code changed the age jurisdiction to include all delinquent and neglected children under 18 and dependent children under 16. Twenty-four-hour schools for pre-delinquent minors 8 to 16 years of age were authorized by a new California Act.

Offenses Against Children. Hawaii, Indiana, Michigan, and Texas increased the penalty for kidnaping. Minnesota amended its law which makes it an offense to take indecent liberties with boys and girls under 16. The New York law made it a misdemeanor for a man 18 or over to take indecent liberties with a girl over 10 or under 16.

Illegitimate Children. Wyoming passed a law based on the provisions of the Uniform Illegitimacy Act. Such a law is now on the statute books of six States.

Physically and Mentally Handicapped. The following States passed legislation concerned with the treatment and care of physically handicapped children: Arkansas, Florida, Illinois, Kansas, Michigan, Connecticut, New Jersey, Maryland, Missouri, and New York. Laws for the establishment of State training schools for the feeble-minded were enacted in Utah and Wyoming. The Nevada law required county commissioners to make provision for the education and the care of feeble-minded children.

Marriage and Divorce. California, Hawaii, Maine, New York, and Vermont passed laws relating to the ages of minors contracting marriage. California prohibited the marriage of boys under 18 and of girls under 16. Hawaii raised the age requiring consent of parents to boys and girls under 20. In New York, the written approval of a children's court judge, in addition to the consent of the parent, was required for the marriage of a girl between 14 and 16.

PRESIDENT HOOVER'S CONFERENCE. In July, President Hoover announced the appointment of a planning committee to call a White House Conference on Child Health and Protection. It was the hope of the President that such a conference would be in a position to take national stock of the progress that has taken place in safeguarding the health and in protecting childhood. In connection with the call for the conference, the President declared: "I need not urge upon you the fundamental importance of this undertaking. The greatest asset of a race is its children, that their bodily strength and development shall prepare them to receive the heritage which each generation must bequeath to the next."

Secretary of the Interior Wilbur was appointed secretary of the committee. The following other persons were members of the planning committee whose function was to be to lay out the agenda for the conference and to divide the work of the organization into special fields: Edgar Rickard, treasurer, of New York City; Dr. H. E. Bernard, executive secretary, of Indianapolis, Ind.; Grace Abbott, Children's Bureau, Department of Labor; Henry Breckenridge, National Amateur Athletic Federation, of New York City; Mrs. Grace S. Burlingham of

St. Louis, Mo., Bailey B. Burritt, the Association for Improving the Condition of the Poor, of New York City, Judge Frederick P. Cabot of Boston, Dr. Frank Cody, Superintendent of Schools of Detroit, Dr. S. J. Crumrine, American Child Health Association of New York City, Dr. Hugh S. Cumming, Surgeon General, United States Public Health Service; Dr. Lee K. Frankel, Metropolitan Life Insurance Company, of New York City; William M. Green, president, American Federation of Labor, Dr. Samuel McHammill, president American Pediatric Society, of Philadelphia, Dr. William F. King, State Health Commissioner, of Indianapolis, Gertrude B. Lane, editor of *The Woman's Home Companion*, of New York City, Mrs. William Brown Meloney, editor, *Herald-Tribune Magazine*, New York City, Mrs. Elizabeth A. Perkins, department of child welfare, World's WCTU, of Evanston, Mrs. Raymond Robins of Brooksville, Fla., Mrs. F. Louis Slade of New York City, Dr. William F. Snow, National Health Council, of New York City, Dr. Louise Stanley, Bureau of Home Economics, Department of Agriculture, French Strother, White House.

The special fields for study and discussion were to be the following: growth and development of the child, medical service and public health, education and training, care of the handicapped child. The principal work of the conference was to be under the direction of Dr. H. E. Bernard of Indianapolis.

It will be recalled that this White House Conference was the third of its kind. The first one was held in 1909 under Roosevelt and ended among other things in the establishment of the Children's Bureau in the then Department of Commerce and Labor. The second conference was under the auspices of President Wilson.

In November, a further announcement was made by Secretary Wilbur, which indicated that more complete plans had been effected in the arrangement of the studies to be made. Surveys were to be made in four different fields. The first of these was to be a study of medical service headed by Dr. Samuel McHammill of Philadelphia. This work, in turn, was to be divided into the three sub-sections of pre-natal care, medical care for children, and the study of growth and development. The second section would concern itself with a study of public health service and administration under the direction of Surgeon-General Hugh S. Cumming, head of the Federal Public Health Service. This section had also been further subdivided into studies of public health as it related to communicable disease control, and milk production and control. Section three was to be devoted to education and training under the direction of Dr. F. J. Kelly. This section had been further subdivided into six branches, viz., the family and parent education, the infant and pre-school child, the school child, vocational guidance and child labor, recreation and physical education, and special classes. Section four was to be devoted to the study of the handicapped child and was to be under the direction of Mr. C. C. Carstens, director of the Child Welfare League of America. The work of this group had been divided into the following four sub-sections: Study of the State and local organizations of the handicapped, study of the physically and mentally handicapped, study of delinquency, and study of the dependent child.

FOUNDATIONS. In the spring, there was re-

ported the establishment of a unique philanthropy, "The Children's Fund of Michigan" made possible by the gift of \$10,000,000 from Senator James Couzens of Michigan. The grant was accompanied by the following proviso: principal and interest were to be spent in 25 years, the fund was not to memorialize anybody's name, it was not to create an elaborate administrative machinery with buildings and expensive overhead, it was to be spent on child care. Dr. Hugo A. Freund, appointed president of the fund, declared in an early statement that the money would be spent on the following activities: Mental hygiene and child guidance clinics, vocational and educational problems, assistance of group recreation, study of dietetic, hygienic, nutritional, and other subjects bearing upon the health of children. Particularly, attention was to be devoted to the problems of the physically handicapped. Dr. Freund commendably declared "Nor will any edifice be erected to serve as a centre for the many activities. This fund is for the purpose of assisting and developing those agencies and institutions that are already established; of creating new projects for the welfare of children, and supplementing the work already begun on well-established organization." Another outstanding gift was that made by Mr. August Heckscher of New York. He created a fund of \$4,000,000 to be used in the service of underprivileged children. Unlike Senator Couzens' philanthropy, Mr. Heckscher's was institutional in character. His programme called for the construction of day nurseries, dental clinics, playgrounds, and summer camps.

MOTHERS' PENSIONS. PREVIOUS YEAR BOOKS have from time to time indicated the progress being made in this important field of social legislation. Recently prepared reports of the U. S. Children's Bureau permit us at this point to summarize the status of mothers' pension legislation in the United States, as of the beginning of the year surveyed. The first State code for the granting of aid to mothers with dependent children was enacted in Missouri in 1911. At first, this applied only to the county in which Kansas City is located, but in the same year the law was extended to operate in St. Louis. The first State-wide mothers' aid law was passed by the Illinois Legislature in 1911. As a result of a popular referendum, Colorado initiated a similar law in 1913. In the same year, the following 18 States enacted mothers' pension acts: California, Idaho, Illinois, Iowa, Massachusetts, Michigan, Minnesota, Nebraska, Nevada, New Hampshire, New Jersey, Ohio, Oregon, Pennsylvania, South Dakota, Utah, Washington, and Wisconsin. In 1915, the following eight States followed suit: Kansas, Montana, New York, North Dakota, Oklahoma, Tennessee, West Virginia, Wyoming. In 1916, Maryland passed a law. In 1917, the Territory of Alaska and the States of Arizona, Arkansas, Delaware, Maine, Texas, and Vermont wrote these laws on their statute books. In 1918, Virginia joined the ranks. In 1919, to the 101 were added Connecticut, Florida, Hawaii, and Indiana. In 1920 Louisiana followed. In 1923 North Carolina and Rhode Island followed. In 1926 the District of Columbia incorporated such a law, and in 1928 Kentucky and Mississippi passed similar legislation.

Thus, by January 1, 1929, laws providing for assistance from public funds for dependent children in their own homes were on the statute

books of 44 States, as well as those of the District of Columbia, Alaska, and Hawaii. The only States making no such provision were Alabama, Georgia, New Mexico, and South Carolina. This is not to indicate that these laws have been universally applied despite the general existence of the principle. In a number of States, advantage has not been taken of the existence of the law, while, in a number of other States, work has been done only in a limited number of localities. The original idea concerned itself with aid rendered to dependent children of widows. However, as a result of progressive amendments, there has been a widening application of the law, with the result that, in many States at the present time, the benefits of such aid are extended to all dependent children regardless of the character of the disability of the male parent. Such disability at the present time now includes cases where the father is dead, divorced, physically or mentally incapacitated, in prison, or has deserted his family.

Originally, too, citizenship was one of the requisites for aid, but liberalization, too, has taken place, so that most States at the present time do not require either citizenship or declarations of intention. Only 12 States and the District of Columbia make an exception. In 41 States, a period of residence is required, and in 17 residence is required both in the State and in the local political unit. Of the 23 States specifying a length of residence, 14 require one to two years, 6 require three years, and three require four or five years. Five of the 41 States require that the father must have been a resident of the State at the time of his death or disability. In the majority of the States, no definite mention is made of ownership and property. The administration of these laws is in the hands of a large variety of agencies including juvenile courts, State child welfare boards, State agencies acting in cooperation with local officials, county boards of guardians, county commissioners, probate or circuit courts. It is interesting to observe that the most liberal codes no longer fix by Statute the maximum allowance. In New York City, for instance, the law merely declares "that the size of the grants shall not exceed cost of institutional care." The same is true of Arizona, Colorado, District of Columbia, Hawaii, Kentucky, Maine, Massachusetts, Mississippi, Rhode Island, Virginia. As the result of a long series of trial suits, the principle of most pension legislation has been definitely established as constitutional. Constitutionality of the acts has been passed upon in 15 States. In 1918, the Supreme Court of the United States found the State of Washington act constitutional.

Great Britain On Mar. 31, 1929, the following number of persons was receiving grants on the basis of widows', orphans', and old-age pensions: total, 1,159,667, of whom 206,292 were widows, 216,727 were children, and 455,271 were aged persons between 65 and 70, and 287,377 were aged persons over 70. For the year ending Mar. 31, 1929, \$35,090,000 was paid out in widows' pensions, \$1,146,885 was paid out in orphans' pensions, \$55,917,000 was paid out in contributory pensions to aged people between 65 and 70, making a total of \$92,155,000.

FAMILY ENDOWMENTS In the article on MINIMUM WAGE, reference is had to the efforts, particularly in Australasia, to determine a minimum wage on the basis of living standards. It has

followed naturally in these countries that the States have sought to preoccupy themselves with the supplementation of family incomes where wages earned in industry have proved inadequate. This realization has led to the passage in the last two years of family endowment acts. In New Zealand, such a measure was passed in September, 1926, and provided for the payment of allowances to families out of the public funds to be borne by the general taxpayer. Families, in order to benefit under the Act, had to show an average weekly income not in excess of \$19.47. As a result of this, the State was prepared to make a grant of two shillings per child per week in excess of two in the family. (The term "child" under the law was meant to apply to children under 15 years of age.) The act became effective Apr. 1, 1927. At the end of its first fiscal year, it was reported that grants had been made for nearly 10,000 children, beginning with the third child, in 300,000 families whose total number of children was 16,000. The total amount paid in allowances was \$183,233. Of the 3154 families aided, the following were the occupations of the fathers: laborers, 1350, farm hands, 208, farmers, 290, public service, 122, waterside workers, 101, others, 94.

It is interesting to observe the number of children (in excess of two) in the families thus aided:

Number of families having 1 child	549
2 children	751
3 "	706
4 "	542
5 "	143
6 "	178
7 "	51
8 "	26
9 "	7
10 "	1

In Australasia, family allowances were entirely restricted to persons in the service of the Commonwealth. In New South Wales, however, a measure was passed in 1927 for the purpose of supplementing family incomes to all workers. The basic wage was declared to be \$20.68 per week for men and \$11.19 for women. In the first year's experience of the Act, there were 40,567 claims received of which 23,310 were granted. In these families, the child beneficiaries numbered 58,375. The amount of endowment paid was \$2,498,000, and the administrative costs totaled \$205,000.

FAMILY ALLOWANCES In 1929, there existed in France 228 family-allowance funds which reached 27,000 affiliated establishments and affected 1,740,000 employees. In 1929, there were distributed by these funds allowances amounting to \$11,446,000. These grants showed an increase of \$1,254,400 over the year 1928. If the figures for public administrations and the private enterprises paying family allowances outside of pension funds are included, the totals are considerably higher. In 1929 the grand total for such family distribution reached \$50,192,000 and the total number of employees concerned was 4,171,000. The leading association in the country presented several bills for introduction into Parliament for the purpose of the extension of family allowance, one of these bills calling for the establishment of a compulsory family endowment fund.

CHILE, Chile. A South American republic situated on the Pacific coast of the southern part

of the continent, extending from Peru to the southernmost point Capital, Santiago.

AREA AND POPULATION. The extreme length of Chile is 2628 miles and the average width is 177 miles, area 290,084 square miles. At the census of 1920, the population was 3,753,799. The Republic is divided into 23 provinces, subdivided into 82 departments and one territory (Magallanes). The populations of the principal cities, according to the census of 1920, with 1927 estimates in parentheses were: Santiago, 507,296 (587,875), Valparaiso, 182,242 (191,750), Concepción, 64,074 (68,155), Antofagasta, 51,531 (60,331), Iquique, 37,421 (36,200), Talca, 36,079 (35,152). The urban population made up 46.6 per cent of the total. The great majority of the population is of European descent. In 1920 the foreigners numbered 115,763, as against 134,524 in 1907. The natives comprise the Fuegians, for the most part nomadic and living in the southern territories, the Changos, civilized and employed as laborers, in the coast region, and the Araucans, who live in the valleys and on the western slopes of the Andes and number about 101,118. The movement of population in 1926 was: Births, 159,540, deaths, 108,221, marriages, 30,314. The population was estimated in 1928 at 4,024,938. Immigration is small but is encouraged by the Government.

EDUCATION. Primary instruction is free and compulsory. According to the latest available statistics, there were 4377 public schools, with 438,781 pupils and 9414 teachers. There were also 459 private primary schools, with 1430 teachers and 62,099 pupils, 15 public normal schools, with 2507 pupils and 453 teachers, 96 public and 102 private secondary schools, with 40,084 and 20,536 pupils and 2038 and 1247 teachers, respectively. 11 public commercial schools, with 181 teachers and 3138 pupils. There are various schools of mines, professional schools, and other special institutions. For higher education, there are the University of Chile belonging to the State, the Catholic University, and two industrial universities, situated at Valparaiso and Concepción. Other noteworthy institutions are the Pedagogical Institute, the National Conservatory of Music, the National Observatory, etc. There are in addition various lycées and colleges maintained in the provinces.

PRODUCTION, MINERALS, ETC. Although agricultural activities are of vital importance to a considerable part of the Chilean population, in surveying the economic structure of Chile as a world market, it is the mineral resources which are of major interest, for the greater part of its exports, as well as furnishing the funds for most of its imports. Prior to and during the World War, Chile enjoyed an unassailable economic position because of its monopoly of natural nitrates, used principally as fertilizer and in the making of munitions, as well as because of the high war time prices prevailing for copper. Prices of nitrate, together with those for iodine, a by-product of the nitrate industry, were fixed by an international association of nitrate producers, this policy being followed until April, 1927, when free sales were adopted. This step was necessitated by increasing competition from synthetic fertilizers, the production of which has been increasing steadily since the War. Eighteen months later, the Government, after a study of the effects of the free-selling plan, announced that it had not permitted the

proper development of the overseas market nor led to economic distribution, and sponsored a new selling agreement among the producers. In 1929 a merger between the principal nitrate interests and the conclusion of a marketing agreement with European producers of synthetic nitrogen promised to improve the industry. Although the manufacturing industries are being developed as rapidly as possible in Chile with the encouragement of a strongly nationalistic Government, the nitrate industry remains the most important in the economic life of the country.

The agricultural zone lies in the centre of the country, the climate permitting the raising of tropical products, as well as those of the temperate zone. Cereals are the leading crops and wheat is the most important. Agricultural production in practically all major groups was greater in 1928 than in 1927 and in the crop year 1928-29 still further increases were recorded. The production in metric quintals of the leading crops in 1928-29, with figures for the preceding year in parentheses, was as follows: Wheat, 7,525,100 (6,341,200), barley, 994,900 (984,800), oats, 766,400 (708,000), rye, 22,100 (20,000). The 1928 tobacco crop was 18.2 per cent larger than that harvested in 1927, the figures being 4,907,000 kilos in 1928 and 4,152,000 in 1927. A severe earthquake in the heart of the agricultural belt of southern Chile in December, 1928, hindered to some extent the rapid recovery of the country from the poor crops and agricultural depression of 1926. Fruit growing has latterly increased and covers an area of approximately 20,000 hectares. On Jan. 1, 1926, the livestock comprised 323,581 horses, 27,304 asses, 40,187 mules, 1,918,433 cattle, 4,093,872 sheep, 357,033 goats and 246,636 pigs.

Industrialization of Chile was rapidly. The 1927 figures the latest . . . show 9093 manufacturing establishments, as compared with 7681 in 1925. The 1925 production was 48 per cent greater than in 1920 and 250 per cent greater than in 1912. While the number of plants has shown relatively moderate change, the capital invested in manufacturing increased 213 per cent between 1920 and 1925. Mining and agriculture seem destined to predominate for many years, but the industrialization of the country has already produced a strong trend toward urbanization. The population of the capital city increased 210 per cent, while the total population increased but 59 per cent. A shortage of labor was experienced by a number of industries during 1929. The commencement of reconstruction work in Talca and in surrounding districts damaged by the earthquake of 1928 stimulated industries producing construction materials. Early in 1929, the President was authorized to secure a loan of \$1,250,000 for this purpose. Tariff legislation calculated to protect Chilean industries was enacted in 1928.

Chile is richly endowed with minerals, being next to the largest producer of copper in the world. Other important minerals are gold, silver, cobalt, manganese, coal, nitrate, borate, salt, sulphur, and iron ore. In 1910 Chile produced 64 per cent of the world's consumption of inorganic fertilizers. During the World War, nitrate production reached a peak of 30,010,000 metric quintals (1917), but a post-war depression in the industry cut production sharply, particularly in 1926. A new record of 31,630,000

metric quintals was established in 1928, although prices averaged below the levels of immediately preceding years. During the year ending May 31, 1929, sales of nitrate amounted to 2,750,672 tons. The stock on hand on June 30, 1929, was 1,682,000 tons, as against 1,165,500 tons on June 30, 1928. Consumption of Chilean nitrate increased 53 per cent during the years 1927-29. Production of nitrate in the calendar year 1929 was estimated at 3,200,000 metric tons.

Copper production also reached a new peak during 1928, amounting to about 300,000 tons, or 30 per cent more than in 1927. Copper exports were valued at 608,793 pesos in 1928 and at 442,422 pesos in 1927. The situation in the coal-mining industry was less favorable, production in 1927-28 being 1,482,605 tons, slightly under that for the previous year. Silver, cobalt, manganese, borate, salt, sulphur, and guano are other mineral products. Iron-ore deposits of over 1,000,000,000 tons have been found in the provinces of Atacama and Coquimbo and 1,000,000 tons are exported annually.

COMMERCE: The total value of exports in 1928 amounted to 1,965,900 pesos and the value of imports to 1,169,700 pesos, the increase over 1927 being 16.4 per cent in exports and 9 per cent in imports. The value of some of the leading exports and imports in 1928 and 1927 is shown in the accompanying table.

LEADING EXPORTS AND IMPORTS OF CHILE 1927 AND 1928 [Value in thousands of pesos]

Exports	1928	1927
Copper bars	608,793	442,422
Nitrate	935,281	860,155
Wool	58,557	39,827
Beans	26,818	6,739
Frozen meat	22,160	17,948
Imports		
Petroleum	47,743	30,642
Pine lumber	34,835	34,137
Sugar	52,069	39,816
Empty bags	57,047	45,740
Automobiles	33,041	13,392

According to preliminary figures, the United States' imports from Chile in 1928 were over 15 per cent greater than in 1927, when they reached \$62,000,000, while exports from the United States to Chile were 5 per cent greater than in 1927, when the total was \$38,000,000. American importations of Chilean nitrate increased from about \$30,000,000 in 1927 to nearly \$37,000,000 in 1928. The bulk of Chile's foreign trade is carried on with the United States, Great Britain, Germany, Peru, Argentina, France, and India. Imports from and exports to the United States continued their upward trend in 1929.

FINANCE: The ordinary budget for 1929 as approved by Congress provides for receipts of 1,123,291,500 pesos and expenditures of 1,071,603,975 pesos, leaving an anticipated surplus of 51,687,525 pesos. The actual surplus was estimated by the Finance Minister late in the year to be 45,000,000 pesos. The total estimated revenues included the sum of 20,000,000 pesos representing the estimated surplus from financial operations in 1928. The 1930 budget estimated ordinary income at 1,215,000,000 pesos, and expenditures at 1,165,000,000 pesos, leaving a surplus of 50,000,000 pesos. The 1928 surplus actually reached the unexpectedly high total of 34,000,000 pesos, as compared with a surplus of 3,404,052 pesos in 1927 and a deficit of 217,

201,700 pesos in 1926. Ordinary receipts in 1928 were 1,009,600,000 pesos, according to preliminary figures, and ordinary expenditures 971,400,000 pesos. Internal taxes received during 1928 amounted to 282,511,750 pesos and the revenues from the new tariff, which went into effect on Apr. 27, 1928, amounted to 78,000,000 pesos by the end of the year. Estimated revenues and expenditures in the 1929 and 1930 budgets are shown in the accompanying table.

CHILEAN ORDINARY BUDGET, 1929 AND 1930

REVENUES (PESOS)	1929	1930
National properties	41,094,000	32,950,000
National services	76,597,500	80,530,000
Direct and indirect taxation		
Imports	257,500,000	325,000,000
Exports	250,000,000	210,000,000
Income	139,000,000	170,000,000
Other	270,642,000	292,500,000
Various receipts	68,460,000	58,650,000
Total	1,103,291,500	1,169,650,000
Surplus from preceding year	20,000,000	45,000,000
Grand total	1,123,291,500	1,214,650,000
ITEMIZED EXPENDITURES (PESOS)	1929	1930
Presidency of the Republic	892,180	1,810,000
Congress	7,361,752	7,440,000
Independent services	7,800,000	7,280,000
Interior	137,851,343	155,600,000
Foreign relations	17,607,480	17,200,000
Treasury	412,627,454	434,500,000
Public education	145,029,531	163,500,000
Justice	26,236,362	30,000,000
War	112,734,585	120,000,000
Navy	114,915,815	120,000,000
Industry	55,895,220	65,500,000
Social welfare	40,662,240	42,600,000
Total ordinary expenditures	1,071,603,975	1,165,530,000

The 1929 ordinary expense budget totaled 128,915,000 pesos greater than in the 1928 budget. Of the total, 620,429,271 pesos were set aside for administrative purposes and 235,650,844, for the service of the public debt. There was also included 119,114,200 pesos for social protection and 73,195,000 pesos appropriated as fiscal quotas to special funds and services. The extraordinary budget approved the expenditure of an additional 225,099,000 pesos from the proceeds of external or internal loans which the President was authorized to contract. The latter sum was to be distributed as follows: Interior, 12,149,797 pesos; Treasury, 6,565,500; Education, 22,505,900; Justice, 5,300,000; Navy, 65,059,405; industry, 62,450,000; social welfare, 29,838,789; losses and expenses from loan issues, 21,160,400. The extraordinary budget for 1930 provided for expenditures of 390,797,575 pesos and revenues of 392,420,000 pesos.

Loans totaling \$200,000,000 were reported to have been floated in the United States during 1929, the proceeds of which were to be used for the construction of a new water-supply system for Valparaiso, the improvement of the water-works of 70 other Chilean cities, and the construction of water system for 36 cities now without a public water supply. In addition to the cost of the Valparaiso water system, the government planned to expend \$2,500,000 annually on the other water systems over a period of six years. Another \$190,000,000 raised in North America was to be used for railway, highway, irrigation, and port developments, and the construction of sewers and school buildings.

President Ibáñez, in his message to the 1929 session of Congress, recommended that the revenue derived from the export taxes on nitrate be devoted entirely to improvements in the industry instead of being considered part of the state income for budget purposes. The nitrate law previously authorized the government to subsidize the industry with the export taxes received in excess of a certain amount. Chile now derives less than 20 per cent of its revenues from the export tax on nitrate.

The latest available figures showed a foreign debt on Jan. 1, 1927, of \$26,006,872 and \$64,492,355. The internal debt on Jan. 1, 1926, amounted to 154,220,000 gold pesos and 243,787,030 paper pesos. The Banco Central de Chile reported net profits of 18,727,058 pesos in 1928, as compared with 17,954,943 in 1927 and 10,386,867 in 1926. Old government note issues, liability for the payment of which was assumed by the Banco Central de Chile when it opened, were reduced from 44,000,000 pesos to below 17,000,000 pesos during 1928. On Sept. 1, 1929, the government reassumed its obligation to redeem those still outstanding. American investments in Chile were estimated at \$500,000,000 in 1928. The peso equals \$0.1217 par of exchange.

COMMUNICATIONS. In 1928 there were 5610 miles of railway in operation in Chile, 3610 miles of which were owned by the state. The private railways are largely British owned. The valuation of all railway properties was placed at 2,665,000,000 pesos. A new line between La Canela and Iquique, completed in April, 1929, opened up the northern section of the Republic and a number of nitrate deposits. Other new lines were under construction. During the year, the government completed the purchase of the Chilean Transandine Line. In 1928 Chile spent 34,957,244 pesos on highway development, of which about 12,000,000 pesos went toward the construction of new roads. Congress early in the year authorized the President to contract loans up to 80,000,000 pesos for use upon roads.

A contract for the construction in Santiago of the first subway system on the west coast of South America was awarded in 1929. In 1926 there were 23,373 kilometers of first-class highways, 16,910 kilometers of telegraph wire, 28,360 telephone instruments in use, and 11,780 automobiles registered (1927). The shipping entered at the ports of Chile in foreign trade in 1926 was 1100 vessels of 3,206,465 tons, cleared, 1044 vessels of 3,001,892 tons.

GOVERNMENT. According to the constitution of Oct. 18, 1925, legislative power is vested in the National Congress, consisting of a senate of 45 members and a house of representatives of 132 members. The executive power is vested in the President who is elected for six years, and who is not eligible to succeed himself. The President is assisted by a cabinet, which is responsible to him, and the members of which may speak in Congress but may not vote. Members of a new cabinet, constituted Aug. 24, 1929, are Manuel Barros Castanon, Minister of Foreign Affairs, Enrique Bermudez, Interior, Rodolfo Jaramillo, Finance, Emiliano Bustos, Promotion, Mariano Navarrete, Education; Osvaldo Koch, Justice; Luis Carvajal, Social Welfare; Bartolome Blanche, War, and Carlos Frodden, Navy. President in 1929, Col Carlos Ibáñez. For Navy, see NAVAL PROGRESS.

HISTORY. Settlement of the troublesome Tacna-

Arica dispute between Chile and Peru was the outstanding event in Chilean history during 1929. Terms of the settlement, under which Chile retained the province of Arica with its nitrate fields and Peru obtained Tacna and the sum of \$6,000,000, were announced May 17 by President Hoover as an act of "good offices." The treaty was formally signed at Lima June 3 and was ratified by the Chilean Senate and Assembly on July 1 and 4, and by the Peruvian Congress July 2. President Hoover, who had been advised of the difficulties in the way of a final settlement during his pre-inauguration tour of South America, proposed the final bases of the agreement to the respective governments on May 15 and the proposal was immediately accepted. Peru and Chile had previously agreed upon most of the questions at issue by direct negotiation. The sulphur deposits of Tacora remain in Chilean territory, while Peru assumed ownership of the canals of Uchusuma and Hauri and complete control of them where they pass through Chilean territory. Chile agreed to provide Peru with a wharf, customhouse, and railway station, and the facilities of a free port, on the Bay of Arica. Children of Peruvian nationals born in Arica are to be considered Peruvians until they reach the age of twenty-one, when they shall have the right to elect their definitive nationality, and children of Chileans born in Tacna shall have the same right. It was agreed to erect a monument commemorating the restoration of friendly relations on the border. On August 28, Tacna was formally placed under the Peruvian flag.

Bolivia, which had hoped to secure an outlet to the Pacific in connection with any settlement of the dispute, protested to Washington against an agreement precluding the subsequent cession of any portion of the disputed territory to a third power. Secretary of State Stimson replied that the settlement left the door open for later adjustment of Bolivia's aspirations among the three interested governments. Chile, however, on May 30, officially stated that she would "never break the continuity of her territory" as established in the treaty with Peru.

By announcing its intention to adhere to the Kellogg Pact early in 1929, Chile broke a deadlock which had existed among Argentina, Brazil, and Chile. Each country had held off, stating that it would not sign the pact until the intention of the other two rival nations was known.

President Carlos Ibáñez remained firmly entrenched in power during the year. In his message to Congress in May, he recommended passage of a new electoral law to make registration necessary before voting and to prevent "the election of persons not interested in the nation's welfare." He announced, however, that he did not advocate a change in the present law which prohibits reelection of a President. In a second message to Congress on July 8, he proposed that women and foreigners of both sexes be allowed to vote in municipal elections. Later, he recommended legislation providing loss of citizenship as the penalty for violation of the law and the loss of Congressional seats by Congressmen who refuse to take the oath of allegiance, who absent themselves from sessions for more than thirty days, or who divulge the proceedings of secret sessions of Congress. An unsuccessful attempt to assassinate him, made by a youth on October 22, greatly increased the President's popularity.

A new penal code, providing for the abolition

of both the death penalty and of life imprisonment, was adopted by Congress and submitted to the President for signature. It fixes a minimum incarceration of 20 years in place of the present alternative sentences of death or life imprisonment. Indemnification of the victims of criminal acts is also provided for.

The worst earthquake since April, 1927, shook central China on August 5, damaging many buildings and interrupting telegraphic and telephonic communications with the capital. Severe storms badly damaged a number of ports, the \$15,000,000 breakwater at Antagasta being practically destroyed. See ARBITRATION, INTERNATIONAL, also PERU and BOLIVIA, under *History*.

CHINA. A Far-Eastern state forming the eastern part of Asia, on the Pacific Ocean, under a republican form of government after Feb. 2, 1912 (capital, under the Nationalist government, Nanking. The name of Peking, the former capital, was changed to Peiping in 1929 by a Nationalist decree).

AREA AND POPULATION. China comprises 18 provinces, the so-called dominion of Sinkiang, the dependencies of Manchuria, Fengtien, Kium, and Heilungkiang, and the regions over which only nominal authority exists, viz., Mongolia and Tibet. The area and population of China can be given only as estimates, as in the following table (figures for certain other countries are added for purposes of comparison).

AREA AND POPULATION OF CHINA

Regions	Area in square miles	Population Density per square mile	
		Total	
China proper, including the three Manchurian Provinces	1,897,000	436,000,000	238
Mongolia	1,370,000	2,500,000	2
Chinese Turkestan	650,000	1,200,000	2
Tibet	465,000	6,500,000	14
Total, Chinese territory	4,282,000	446,200,000	104
South America	6,850,000	60,000,000	8
United States, exclusive of dependencies	3,620,000	110,000,000	30
Japanese Empire	260,000	80,000,000	107
France (continental)	207,000	40,000,000	150

The Chinese Maritime Customs in 1927 estimated the total population at 457,787,000, including 19,290,000 in Manchuria.

The population of the Great Yangtze Basin is estimated at 200,000,000. The Yangtze Delta, comprising an area of 50,000 square miles, or about that of the State of Illinois, has an estimated population of 40,000,000. Two-thirds of China's population is concentrated in one-third of its area, being densest along rivers and in coastal regions. Mongolia, Turkestan, and the three Manchurian Provinces offer vast areas of fertile lands for settlement and mineral resources for development, but lack of adequate means of transportation and protection against brigandage have discouraged settlement of these sections. The accompanying table gives certain essential data concerning the area and approximate population of the provinces of China.

After these provincial statistics were compiled by the Chinese Post Office, the Nationalist government provided for a number of changes in the internal political divisions of the country. The Province of Chihli was renamed Hopei and

AREA AND POPULATION OF CHINA BY PROVINCES

Province (capital)	Area square miles	Population, approximate thousands
Anhui (Anking)	54,826	19,833
Chekiang (Hangchow)	36,680	22,043
Chihli (Tientsin)	115,830	34,187
Fengtien (Kukden)	56,000	17,400
Fukien (Foorhou)	48,132	15,158
Heilungkiang (Tsitsihar)	203,000	2,500
Honan (Kaitung)	67,954	30,832
Hunan (Changsha)	83,198	28,443
Hupeh (Wuchang)	71,128	27,167
Kansu (Lanchow)	125,487	5,928
Kiangsu (Nanchang)	69,498	24,467
Kweichow (Nanking)	38,610	37,786
Kwangsi (Nanning)	105,000	7,500
Kwangtung (Canton)	77,220	12,258
Kweichow (Kweichow)	100,000	77,168
Shansi (Taiyuan)	67,182	11,115
Shantung (Tsinan)	81,853	11,081
Shensi (Sian)	55,984	30,803
Szechwan (Chengtu)	75,290	9,406
Yunnan (Yunnanfu)	218,511	49,783
Yunnan (Yunnanfu)	146,714	9,819
Total China proper (approximate)	1,897,000	435,000
Sinkiang (Tihwa)	550,000	2,500
Mongolia (Urga)	1,370,000	2,500
Tibet (Lassa)	465,000	1,500
Grand total (approximate)	4,300,000	442,000

the capital changed from Tientsin to Peking, the name of which was also changed to its original name of Peiping. A new province of Tsinghai was formed from the former special administrative district of Kokonor with Sining and the Sining prefecture of Kansu Province included within its boundaries. A second new Province of Ninghsia was established in the district lying south of the Gobi Desert and north of the Province of Kansu with Ningsiafu as the capital.

The former special administrative districts of Jehol, Suifu, Chahai, and Sikkang were made provinces with the cities of Chengteh, Kweisui, Kalgan and Kangleing respectively, as the provincial capitals. The seat of the provincial government in Kiangsu Province was moved from Nanking, the new national capital, to Chungking. The name of Fengtien Province was changed by decree to Liao Ning. With the new additions, China had the following 30 provinces: Anhwei, Chahai, Chekiang, Fukien, Heilungkiang, Honan, Hopei, Hunan, Hupeh, Jehol, Kansu, Kiangsu, Kiangsu, Kium, Kwangsi, Kwangtung, Kweichow, Liao Ning, Mongolia, Ninghsia, Shansi, Shantung, Shensi, Sikkang, Sinkiang, Suifu, Szechwan, Tibet, Tsinghai, and Yunnan.

There are similar divergences in the estimates of the population of the cities. According to the 1926 census of the Municipal Bureau, the population of Peking was 811,138. The census of the Metropolitan Police Administration, taken in 1927, estimated the population of Peking and its suburbs at about 1,297,718. The estimates for the chief Chinese treaty cities in 1927 given out by the Chinese Maritime Customs were as follows: Shanghai, 1,500,000; Hankow, 1,583,800; Canton, 746,300; Hangchow, 380,000; Tientsin, 800,000; Dairen, 222,400; Chungking, 623,300; Nanking, 360,500; Ningpo, 284,300; Changsha, 535,800; and Soochow, 500,000. The total number of foreigners and foreign residents in China in 1927, according to the Chinese Customs authorities, was 302,153 of whom there were 201,721 Japa-

nese, 68,097 Russians, 11,714 British, 6970 Americans, 2061 Portuguese, 2719 Germans, and 2688 French. The treaty powers in China down to the beginning of 1928 were as follows: Russia, Great Britain, United States, France, Norway, Sweden, Denmark, the Netherlands, Spain, Belgium, Italy, Peru, Brazil, Portugal, Japan, Mexico, Chile, Switzerland, Bolivia, Persia, and Germany. Of these powers, Chile, Germany, Bolivia, and Persia have renounced consular jurisdiction and others have agreed to do so. During 1928 the Nationalist government announced that treaties that had lapsed or were about to lapse would be abrogated and new treaties negotiated on a basis of equality.

EDUCATION Education throughout China in 1929 continued in a state of flux. Wherever possible, the Nanking government was reorganizing the educational system on the French model. Their plans contemplated that all academic and administrative work should be centralized directly in national and local educational institutions. The country was to be divided into university districts and in each district there was to be one government university, which, being the highest educational unit in the district, would take over administration. Above these districts, there would be a national university, the highest educational organization in the entire country. The functions of a ministry of education were to be vested in the National University.

In China before the Nationalist movement, there were two kinds of primary schools, the higher and the lower. The former were established by the district governments and were intended as intermediate schools between the lower primary schools and the middle schools. According to the latest available statistics, the total number was 10,236, with 582,579 pupils. At the same time, there were 167,076 lower primary schools, with 3,814,375 pupils. At the beginning of 1929 there were nine government universities, although their status and operations were rather shadowy because of the internal conditions of the country. Numerous mission schools, colleges, and universities at Shanghai and other ports, have a total enrollment of about 500,000. The activities of the mission schools and colleges have been in many cases seriously curtailed owing to regulative legislation by the Nationalist government.

The three forms of native religion are Confucianism, Buddhism, and Taoism. Besides these, there are Mohammedans in all the provinces. The Roman Catholic Church at the end of 1923 maintained 57 bishops, 1481 European priests, and the native Roman Catholics numbered 2,208,800. The Protestant missions in 1920 had 6636 engaged in their service and the Chinese Protestants numbered 618,601. Attached to the Protestant missions were 27 colleges of university standing, 256 middle schools, and 581 higher elementary schools.

PRODUCTION, ETC. China is essentially an agricultural country. It has been estimated that the total arable land in the country amounts to 192,060 square miles. The holdings are generally small and the methods of the most primitive kind. Intensive agriculture, with the aid of some irrigation, is commonly found, as is the practice of rotating crops. Horticulture is widely practiced. Wheat, barley, maize, millet, and other cereals, with peas and beans, are chiefly cultivated in the North, rice, sugar, and indigo in

the South. Cotton is grown widely even as far north as the northern part of the province of Chihli, the chief area of production being the Yangtze Valley.

The principal crops of China, with the average annual production and the percentage exported, were estimated as follows: Wheat, 300,000,000 bushels, none; rice, 800,000,000 bushels, none; corn, 100,000,000 bushels, none; peanuts, 600,000 tons, 33 per cent; soy beans, 5,000,000 tons, 65 to 80 per cent, including cake and oil in terms of beans, kaoliang, 200,000,000 bushels, 1 per cent; tea, 800,000,000 pounds, 15 per cent; tobacco, 500,000,000 pounds, 6 per cent; silk, 42,000,000 pounds, 48 per cent; cotton, 2,500,000 bales, 10 per cent. On the whole, crops in 1928 were not as plentiful as in the previous year, particularly in the central Yangtze region and northwest China, where much famine and suffering resulted. During the year ending Jan. 31, 1929, Chinese cotton nolls consumed 2,191,000 bales of cotton, of which 267,000 represented imports from America, 418,000 imports from India, and the remainder was principally Chinese-grown cotton. Important fibre crops, including jute, hemp, and abutilon are also grown. Tea is cultivated exclusively in the West and the South. Silk culture, one of the most successful industries in the country, supplies about 25 per cent of the world's supply of raw silk. Swine are raised everywhere in China and pigs' bristles have become an important article of export. Wool exports in 1928 totaled 63,800,000 pounds, as compared with 47,350,000 in 1927 and 18,200,000 in 1926.

A remarkable expansion in China's agricultural productive capacity was taking place as a result of the occupation of vast farm lands in Manchuria by millions of Chinese immigrants. In 20 years, 20,000,000 immigrants were estimated to have settled in Manchuria, the newcomers in 1927 were about 1,500,000. Yet approximately 45,000,000 acres of arable land, or double the area now under cultivation, remained undeveloped. In 1928 Manchuria's crop of soy beans totaled 5,500,000 tons. Millet, Indian corn, and kaoliang are the most important crops grown in southern Manchuria.

An important feature in the development of the Chinese industries is the erection of cotton and woolen mills, and of silk filatures in Shanghai, Canton, and elsewhere, while native looms are found in most dwellings. The estimated production of cotton yarn in China during the year ended June 1, 1927, totaled 1,954,000 piculs, of which 676,000 piculs were produced in Japanese, 1,116,000 in Chinese, and 162,000 in British-owned mills. The estimated production of cotton piece goods amounted to 11,165,000 pieces, of which 5,658,000 pieces were manufactured in Japanese, 4,409,000 in Chinese, and 1,098,000 in British mills. In 1928 there were 120 cotton mills in China with 3,638,098 spindles and 29,788 looms, as compared with 31 mills, 1,008,986 spindles and 4564 looms in 1915. Of mills in operation in 1928, 74 were Chinese-owned, 43 were owned by Japanese, and three by British interests. At the large centres flour and rice mills are beginning to supersede native methods of treating wheat and rice. There are over 150 modern mills.

China is rich in mineral resources, although they are scarcely exploited. The coal fields, which have been rated as the first in the world,

cover an area of 133,513 acres and the average annual output is estimated at 25,000,000 tons. The production of iron ore is estimated at 1,500,000 tons yearly. Oil, both from wells and shale, is being produced in ever-increasing quantities. Copper, tin, antimony, wolfram, gold, and silver also are produced in commercial quantities. China's antimony mines supply about 75 per cent of the world's needs. The combined value of metal and mineral exports in 1927 was 25,000,000 taels (one tael equaled \$0.69).

1927. (Haikwan tael equaled approximately \$0.69 in 1927 and \$0.71 in 1928.) The combined imports and exports for the year totaled 2,187,324,000 taels (\$1,553,000,000). The merchandise trade showed an increase of 13 per cent over that for 1927 and the revenue collected by the Maritime Customs increased about 20 per cent, due to a new tariff schedule. The principal commodities entering the import and export trade in 1927 and 1928 are shown in the accompanying table.

CHINA'S EXPORTS AND IMPORTS, BY COMMODITIES, 1927 AND 1928
[Quantities and values in thousands—000 omitted]

Item		1927		1928	
		Quantity	Value Haikwan taels	Quantity	Value Haikwan taels
Exports			918,620		991,355
Silk, raw	piculs	160	128,705	180	145,443
Silk piece goods	do	33	25,172	33	23,904
Beans	do	29,111	96,184	39,879	145,128
Raw cotton		1,447	47,307	1,112	34,159
Cotton textile products			44,190		44,110
Eggs and egg products			33,526		43,779
Hides and skins			21,148		31,697
Furs			9,938		16,861
Millet	piculs	6,596	31,273	5,379	23,147
Bean oil	do	2,470	27,684	942	10,370
Tea	do	872	31,617	927	37,129
Wood oil	do	901	21,971	1,094	33,102
Cigarettes	do	95	17,771	112	20,221
Peanuts	do	2,455	16,346	1,693	10,758
Wool	do	360	12,161	486	15,811
Bristles	do	62	9,290	65	10,072
Tin	do	104	8,746	118	9,514
Carpets	square yards	177	6,526	159	5,935
Sausage casings			4,831		4,445
Tobacco, leaf	piculs	227	4,648	117	1,384
Human hair	do	32	1,446	25	1,184
Hair nets	gross	1,203	1,227	1,043	1,021
China ware			1,316		2,007
Imports			1,012,932		1,191,569
Cotton and cotton manufactures			235,229		259,278
Raw cotton	piculs	2,416	79,812	1,917	67,982
Piece goods			128,512		163,330
Rice and paddy	piculs	21,092	107,323	12,656	65,019
Sugar	do	10,023	73,571	14,083	98,183
Metals and manufactures			61,559		81,024
Iron and steel manufactures			32,792		48,101
Mineral oils refined, American	gallons	220,259	57,195	365,828	80,604
Kerosene	do	162,051	43,923	262,792	62,385
Machinery and electrical equipment			29,441		32,625
Fish and fish products			27,318		26,126
Tobacco, leaf	piculs	633	22,057	1,070	34,384
Flour	do	3,825	31,306	5,985	31,646
Dyes, paints, varnishes			20,512		28,519
Aniline dyes, all kinds			8,042		12,452
Cigarettes	number	4,780,674	12,765	9,543,574	25,125
Medicines			8,576		4,277
Wheat	piculs	1,690	7,056		3,339
Railway materials			6,480		5,615
Sulphate ammonia	piculs	914	5,087	1,755	9,191
Sole leather	do	101	4,795	81	4,410
Lumber and timber, softwood	superficial feet	97,359	4,171	149,664	5,183
Motor vehicles			4,022		4,960
Fresh fruit			2,663		2,602
Leather belting	piculs	28	2,579	28	3,085
Tires, tubes, casings			2,585		3,439
Milk, canned	piculs	83	1,991	70	2,669

COMMERCE Political agitation, military operations, commandeering of transportation facilities, labor disputes, and boycotts, while abating somewhat during 1928, revived with the resumption of civil war in 1929, rendering trade spasmodic in some districts and paralyzing it in others. Treaty ports, not disturbed by actual warfare, were, nevertheless, hampered by the same heavy taxes and military exactions imposed elsewhere and by a pervading fear and uncertainty as to the future.

Despite these obstacles, China's imports and exports in 1928 were valued at 1,195,989,000 Haikwan taels and 991,355,000 taels, respectively, as compared with imports of 1,012,931,600 Haikwan taels and exports of 918,619,000 taels in

The 1928 imports showed a gain of 18 per cent in value over those for 1927, notwithstanding an increase in silver exchange which was unfavorable to import development. Chinese exports for the year increased by 8 per cent over 1927, although the crop production for the whole of China in 1928 was reported as somewhat below average for domestic consumption and about average for export products. Approximately 36 per cent of the total foreign trade passed through the ports of Manchuria and North China, while Shanghai and other Central Chinese ports handled 46 per cent and South China ports, 17 per cent.

Raw silk and soy beans were the leading export commodities in 1928, the silk products sold

**DISTRIBUTION OF CHINA'S TRADE BY
PRINCIPAL COUNTRIES OF ORIGIN
AND DESTINATION**
[In thousands of Haikwan taels—000 omitted]

Items	1927	1928
Exports	918,820	991,855
Japan	268,665	277,175
Hong Kong	109,880	182,121
United States	121,753	127,205
Union of Socialist Soviet Republics	77,174	89,731
France	51,437	72,041
Great Britain	57,901	61,064
Netherlands	26,760	24,659
Germany	20,356	22,825
Malaya (Strait Settlements)	22,275	19,495
India	22,195	19,266
Italy	9,494	15,085
Netherlands East Indies	10,856	11,865
French Indo China	6,001	7,228
Siam	5,238	6,623
Philippine Islands	5,951	5,848
Belgium	5,597	5,691
Canada	1,209	1,383
Imports	1,012,932	1,195,969
Japan	302,175	330,881
Hong Kong	207,984	222,196
United States	164,377	204,575
Great Britain	74,226	117,125
Germany	78,895	55,298
India	42,179	47,364
Netherlands East Indies	25,394	48,777
Union of Socialist Soviet Republics	21,155	27,062
France	14,498	21,394
Belgium	11,941	16,740
Canada	12,930	16,152
Italy	11,632	16,039
Malaya	9,533	11,726
Netherlands	8,623	11,149
French Indo China	32,218	16,487
Siam	8,527	6,100
Philippine Islands	4,524	5,577

abroad in 1927 to 187,768,000 taels, or 12 per cent of the total in 1927, and soy bean products to 213,466,000 taels, an increase of nearly 50,000 taels over 1927. Hides and skins exported increased nearly 50 per cent in 1928 and exports of tea gained by 17 per cent, mostly in the inferior grades. Cotton and cotton manufactures constituted more than one-fifth of the value of China's purchases abroad during the year.

British shipments of cotton piece goods to China and Hong Kong in 1928 totaled 186,521,000 square yards, as against 103,195,000 in 1927,

while American exports of cotton cloth to the same markets dropped to 1,590,000 square yards in 1928. In the same year, Japan shipped 654,442,000 square yards of cotton cloth, or 46 per cent of her total exports of cotton piece goods, to China and Hong Kong. China's exports of cotton piece goods in 1927 were valued at \$9,341,000. The distribution of China's trade by principal countries of origin and destination is shown in the accompanying table. Japan and the United States remained the closest competitors in the Chinese market. Hong Kong, it should be remembered, is largely a transshipment centre for both exports and imports.

FINANCE For the fiscal year ending May 31, 1928, receipts and expenditures of the Nationalist government balanced at 148,256,001 Chinese dollars (1,804,385 taels), as shown in the accompanying table.

For 1929 the revenue was estimated at \$457,000,000 and expenditure, at \$507,000,000. The principal items of revenue in the 1929 budget were salt tax, \$117,000,000, likin, \$76,000,000, wine and tobacco tax, \$47,000,000, stamp tax, \$13,000,000. Expenditure for military service was placed at \$192,000,000 and for the service of loans, \$156,000,000. The report of Finance Minister T. V. Soong for the year ending June 30, 1929, showed actual revenues of \$434,000,000, of which \$28,000,000 was used for the civil expenditures of the government, \$206,000,000 for military outlays, and the remainder for meeting loan obligations. The figure for military expenses do not include outlays in Manchuria or 11 provinces in China proper which maintained their own armies or in which civil war was waged during the year.

On Jan. 1, 1929, the public debt stood at \$1,034,569,000, converted at par of the total sum, \$166,580,000 represented internal loans and \$867,989,000 external loans. The total public debt on Jan. 1, 1926, was placed at \$2,256,537,000. A new Chinese tariff, with rates approximately double those of the former tariff, went into effect in February, 1929, with the agreement of all of the countries having interests in China.

COMMUNICATIONS At the beginning of 1928,

FINANCIAL OPERATIONS OF NATIONALIST GOVERNMENT FOR YEAR ENDING MAY 31, 1928

Revenue	Dollars	Expenditure	Dollars
Salt tax	20,777,307	Party organization	1,657,096
Customs duties and other taxes on commodities	13,150,001	Government council	1,195,328
	1,662,006 *	Army and Navy	132,176,340
Opium prohibition revenue	4,489,480	Foreign affairs	739,898
Stamp tax	1,138,501	Judiciary	261,740
Wine and tobacco taxes	9,101,155	Education	2,538,236
Revenue from State property	577,633	Finance	2,757,522
Registration receipts	5,123		50,000 *
Title deed examination fees	770,000	Industry and commerce	50,299
Mining taxes	22,861	Agriculture and mining	41,799
Receipts other than taxes	822,854	Interior	166,262
Miscellaneous receipts	8,876,663	Construction	90,000
Temporary receipts	2,754,460	Engineering works	790,000
Interest	522	Miscellaneous	1,044,858
Exchange	1,948,094	Repayment of loans	60,000
	192,378 *	Treasury notes sinking fund	822,129
Provincial remittances	10,390,075		379,945 *
Treasury notes	61,363,331	Repayment of interest on treasury notes	85,763
Deferred payment on loans	12,023,461	Interest	507,999
Overdrafts on banks	85,474	Suspense account	2,873,133
		Exchange	265,533
			1,424,489 *
		Relief fund on deposit with the Shanghai Customs	489
		Bank deposits	161,567
Total receipts (dollars)	148,256,001	Total disbursements (dollars)	148,256,001
(taels)	1,864,385	(taels)	1,854,385

* Taels

there were 8750 miles of railway lines in China, of which 5555 miles were government-owned, 2305 miles concessioned lines, and 890 miles were operated by commercial and industrial concerns. Railway conditions continued to show improvement until the resumption of civil war in 1929. In North China, a shortage of rolling stock hampered all lines and levies for military requirements remained a heavy burden to trade. The Chinese Eastern Railway (see below, under *History*) made net profits of 27,000,000 Mexican dollars in the fiscal year ending in 1928 (Mexican dollar exchanged at \$0.4647 in 1928). Profits of the South Manchuria railway for the same period were 154,000,000 yen (1 yen had an exchange value of \$0.4040 in 1928).

The merchant marine in 1928 totaled 317,279 tons, of which 315,729 tons were operated by steam or other mechanical power. A total of 154,275 vessels of 116,211,000 net registered tons, entered and cleared the ports of China in 1927 in both the foreign and coastwise trades. Shipping conditions in 1928 and 1929 showed some improvement over 1927, but the difficulties which hindered trade and business after 1920 were still much in evidence, particularly on the Yangtze River. There was a surfeit of tonnage and lack of cargoes on both Pacific and European lines.

A National Highway Planning Commission was organized by the Ministry of Railways in January, 1929, and, after a three months' conference at Nanking, announced a programme for the construction of twelve national arterial highways. In Kiangsu Province, 1036 miles of road were under construction in 1929, in Hunan, some 312 miles of highway had been completed in August, and work on one of the national highways connecting Nanking with Wuhu, the leading trade centre of Anhwei Province, was commenced. There was a fairly well-developed telegraph service, with 52,050 miles of line, and telephones were in use in the principal cities.

GOVERNMENT The National government, of which General Chiang Kai-shek is chief executive, remained the nominal government of China during 1929, although a number of the provinces were dominated by quasi-independent war lords. The National government was established by the Kuomintang political party by an Organic Law adopted Oct. 3, 1928, with the State Council, of which General Chiang is chairman, as the highest unit in the system of government. Other members of the State Council were T'an Yen-k'ai, Hu Han-min, Ts'ai Yuan-p'ei, Tai Chi-t'ao, Wang Chung-hui, Sun Fo, Feng Yu-hsiang, Ch'en Kuo-fu, Ho Ying-ch'in, Li Tsung-jen, Li Chi-shên, Yang Shu-chuang, Lin Sên, Yen Hsi-shan, Chang Hsueh-liang, and Chang Chi.

T'an Yen-k'ai was Premier of the Cabinet of Executive Yuan. Hu Han-min was director of the Parliament or Legislative Yuan, and was assisted by the boards of Codification, Foreign Relations, Finance, and Economics. These two, with Wang Chung-hui, Tai Chi-t'ao, and Ts'ai Yuan-p'ei, comprised the Executive Yuan, which is subordinate to the State Council. The government is subject to the control and supervision of the Kuomintang party, of which the Central Executive Committee, the Central Supervisory Committee, and the Central Political Committee are the authoritative bodies. The Kuomintang, while it does not recognize factionalism, is actually divided into a right wing headed by Chiang Kai-shek and Chang Ching-kiang and a left

wing headed by Wang Ching-wei, Mrs. Sun Yat-sen, and Chen Kung-po. The heads of the various government departments were Foreign Affairs, C. T. Wang; Finance, T. V. Soong; War, Feng Yu-hsiang; Agriculture, Y. Pei-chi; Industry, H. H. Kung; Education, Chiang Mengling; Railways, Sun Fo; Interior, Yen Hsi-shan; Communications, Wang Po-chun, and Health, Hsueh Tu-pi.

HISTORY

The rapid strides toward national unity, independence, and economic rehabilitation achieved by China under the guidance of the Nationalist government during 1928, were halted to a large extent by severe setbacks in 1929. The resumption of civil war and a diplomatic and military defeat suffered in a clash with Soviet Russia over the control of the Chinese Eastern Railway combined to impair the political unity, and financial stability of the country. The year ended with important provinces under the virtually independent control of war lords antagonistic to the Nationalist régime, and with the radical wing of the Nationalist party, headed by Wang Ching-wei, showing increasing strength.

Nevertheless, definite progress was made toward liberating China of foreign tutelage and control. The first autonomous Chinese tariff schedule since 1842 went into effect on February 1 and the Government gave formal notice of its intention of terminating on Jan. 1, 1930, all extraterritorial privileges held by nationals of foreign powers in China. Of the 21 countries which formerly enjoyed extraterritoriality in China under treaty, a number, including Italy, Belgium, Spain, Denmark, and Portugal, agreed during the year to relinquish this right immediately on condition of satisfactory provision for the treatment of foreigners in Chinese courts. In September, the United States and Great Britain declined to take similar action as requested by the Nanking government. The United States announced its willingness to gradually give up extraterritoriality "as improvements are achieved by the Chinese government in the enactment and effective enforcement of laws based on modern concepts of jurisprudence." Great Britain's reply was similar, envisaging "further modification" in consular jurisdiction. On November 15, Great Britain returned to China the concession of Chinkiang, Kiangsu Province, which was leased in perpetuity in 1868.

CIVIL WARS The internal strife, which was continuous from September to the end of the year, was preceded early in 1929 by revolts in the provinces of Szechwan and Hunan. In Szechwan, the Nationalist government, after several months of fighting, defeated the second attempt of the former tuchun (military governor), Chang Tsung-chang, to regain control of the province. In Hunan, a revolt by the so-called Kwangsi-Hankow faction, headed by General Li Tsung-jen, succeeded in replacing the Nationalist appointee, General Lu Ti-ping, by General Ho Chien. Although General Lu's overthrow was considered a local issue, it was interpreted as a blow at the Nationalist government's attempt to centralize control of the country in Nanking.

The Nationalist government, after confirming General Ho Chien as governor of Hunan, turned upon the Kwangsi-Hankow generals and crushed a serious revolt at Hankow, with the aid of

Col. Max Bauer, military adviser and former associate of General Ludendorff. The Kwangsi generals had anticipated help from General La Chai-sun, head of the Canton regional government, and Feng Yu-hsiang, whose nominally Nationalist troops were in Honan. La Chai-sun was arrested in Nanking, however, and his successor in Canton declared for the Nanking government. General Feng remained neutral, although he resigned as Minister of War in the Nationalist cabinet, pleading illness.

The political significance of these events lay in the fact that the ascendancy of any one of the three political parties in China depended upon the support of the three leading military figures, Feng Yu-hsiang, Yen Hsi-shan, Governor of Shansi, and Chang Hsueh-liang, the Manchurian military leader. President Chiang Kai-shek, head of the Nationalist government, representing the right wing of the Kuomintang or Nationalist party, had secured the nominal support of all three generals in 1928 and the first part of 1929. His government was one of the landed gentry, and bourgeoisie. The successive revolts which marked the last four months of the year resulted from the withdrawal of actual support from the Nanking régime by all three generals, although Yen and Chang Hsueh-liang remained nominally affiliated with General Chiang's government. The left wing of the Kuomintang profited by these dissensions and increased its power, although none of the war lords was a member of, or in full sympathy with, the aims of the faction, which stood for increased benefits for the workers and peasants. The Communists, who were driven underground by Chiang Kai-shek in 1927, constituted the third party, but exercised little military power.

A strict censorship marked the Third National Congress of the Kuomintang or Nationalist party held at Nanking from Mar 15 to 28, 1929. All three war lords were absent. An appeal for greater unity by President Chiang Kai-shek revealed the state of affairs.

"Is China united?" he asked. "A cursory survey of the political situation shows that it is not. The provincial governments are acting independently in financial matters. They buy arms without the sanction of the central government and recruit soldiers of their own accord. What is worse, the provincial governments are taking advantage of their military strength to dictate to the central government. The recent military conference decided that troops should not be mobilized except by order of the disbandment committee, but hardly had the conference ended than troop movements were begun in the Wu Han area. Political unity has not been achieved."

The Kwangsi clique—Li Tsung-jen, Pei Chung-hsi, and La Chai-sun—were expelled from the Kuomintang by the Congress.

The death on May 6 of Colonel Bauer (q.v.), the able soldier credited with directing the Nationalist victory at Hankow, was followed by the outbreak of war between the Kwangsi generals and Kwangtung, where the Nationalist government controlled the leading city, Canton. On May 24, the Government ordered the arrest of Marshal Feng Yu-hsiang, whose rivalry with Chiang Kai-shek for the control of Shantung was considered the motivating cause of revolts against the central government. The threatened outbreak of hostilities between Feng's army of some 200,000 men and the Nationalist forces of 250,000 divided into

two armies, was averted for several months by the intervention of Governor Yen Hsi-shan and others and the alienation of several of Feng's leading generals by the Nanking government. Governor Yen was appointed by President Chiang to succeed Feng as Northwest Frontier Commissioner in control of the provinces of Honan, Shensi, and Kansu, in addition to Shansi. Feng's armies were to remain in their former locations under their own officers.

In September, Feng and other dissatisfied elements found their opportunity in a revolt in Hupeh province led by General Chang Fa-kuei, a prominent Nationalist general of left wing leanings. The revolt spread to the north, south, and west, the principal accession (in October) being Marshal Feng's excellently disciplined troops, known as the Kuominchun. Feng himself did not take the field. On Nov. 28, the commandant of the Foochow garrison in southeast China declared the independence of Fukien province from the Nanking government. Late in September, the left wing of the Kuomintang issued a statement denouncing President Chiang Kai-shek and the entire government group. Twelve members of the central executive committee of the Nationalist party signed the manifesto. Their arrest was immediately ordered by President Chiang, who then left for the front, carrying with him a loan of \$15,000,000 silver obtained from Shanghai bankers.

Reports of heavy fighting in November along the Lunghai Railway in Honan and in Hupeh, in which Nationalist forces suffered several severe defeats, were followed by the sudden collapse of the Kuominchun onslaught and, on November 25, President Chiang returned to Nanking, proclaiming a great Nationalist victory. His success was attributed to the assistance of able German advisers, the judicious distribution of funds among enemy generals, and promises of governmental reorganization. The Nationalists admitted losses of 8000 dead and wounded and placed the casualties suffered by the rebels at over 40,000.

Meanwhile, Chang Fa-kuei's "Ironsides" and the Kwangsi rebels had joined forces and were advancing rapidly on Canton. Reinforcements were immediately rushed south to aid the Nationalist generals. The Nationalist cause profited from Russian aggressions in Manchuria, which at this critical time consolidated national feeling behind the central government. Yen Hsi-shan, remained nominally neutral during the Kuominchun revolt, although he was understood to have supplied Feng's forces with ammunition and supplies.

Afforded a breathing spell by the collapse of the Kuominchun offensive, General Chiang immediately commenced to rush additional troops to Canton, which was threatened by General Chang Fa-kuei's "Ironsides" and the forces of the Kwangsi malcontents. At this juncture, he was confronted with two additional revolts and the Nationalist régime appeared for some weeks on the verge of collapse. In Honan, the forces of General Tang Sheng-chi, which had assisted in turning back the Kuominchun attack, revolted and advanced south toward Hankow. About the same time, a Nationalist division, which had been ordered to Canton, mutinied at Pukow, across the river from Nanking, and retreated north along the Tientsin-Pukow Railway to Pengpu in Anhwei Province. On December 11, the rebels near Canton were decisively defeated by

the government troops. By December 18, General Tang Shengchi's revolt had apparently collapsed and the division which mutinied at Fukow had been defeated and scattered. General Chiang, admitting that the fate of the Nanking government had "hung by a single hair," announced December 18 that the crisis had passed. The future of the Nanking régime was not bright, however. Yen Hsi-shan had taken advantage of the internal strife to gain complete control of Shansi and Chihli provinces and of a vast area of northern China north of the Yellow River, from Honan north to the Mongolian border. Manchuria had become more independent of Nanking's control than at any time during the previous year. Rumors of Gen Chiang Kai-shek's impending resignation as head of the Nationalist government became increasingly frequent toward the end of the year and General Yen was looked upon as his probable successor.

CHINA-RUSSIAN RELATIONS. Relations between the Nationalist government of China and Soviet Russia were in a state of extreme tension throughout 1929. A diplomatic and at times military struggle was waged during the year for the control of the Chinese Eastern Railway, key to the immense undeveloped wealth of Manchuria. In 1924 China admitted Russia to joint control of the railway on condition that the latter would refrain from Communist propaganda in China. Russia violated this pledge, according to the Nanking government, and on May 27, the Soviet Consulate at Harbin was raided by Chinese police, who reported finding evidence of a Communist plot to overthrow the Nationalist régime. On July 10, the Chinese assumed forcible control of the railroad, arresting many Russian officials and employees and replacing them with Chinese and with White Russians. A Russian ultimatum was ignored and on July 18, the Soviet Government severed diplomatic relations. Troop movements to the border caused the United States and other leading powers to remind both countries on July 19 of their obligations under the Kellogg-Briand Pact. While armed forces faced each other across the border and carried on unofficial warfare by guerrilla raids and airplane bombing expeditions, frontier incidents were continued for months at various points along the border.

Warning that more drastic action would be taken if border raids continued, the Soviet Government on September 25 sent a note to Nanking, via the German Foreign Office, in which 28 raids into Russian territory between September 10 and 23 were cited. On the other hand, the Nanking government published a summary of Russian raids, estimating the total damage at \$25,000. Border attacks in October were renewed on a more sanguinary scale than before. Russian forces occupied Linkianghsien, at the confluence of the Amur and Sungari rivers, and advanced southward along the latter river.

Late in November, the Soviet forces, in an extensive operation, captured Hailar and all Manchurian territory west of the Khingan Mountains and overran eastern Manchuria over a 45-mile area to Muling. Chinese resistance crumbled under the blow and Moscow reported that Russian troops had disarmed 8000 Chinese and captured 10,000 rifles. On November 26, the Executive Council of the Nationalist government appealed to both the League of Nations and the individual signatories of the Kellogg-Briand Pact to halt and punish the Russian "invasion" of

Chinese territory. A similar appeal had been issued during the summer.

On December 2, the United States dispatched notes to both the Soviet and Chinese governments reminding them of their obligations under the Kellogg-Briand Pact and appealing to them to adjust the dispute by pacific means. Great Britain and France immediately accepted the suggestion of Secretary of State Stimson that they send similar notes and most of the other signatories to the Kellogg-Briand Pact, with the exception of Germany and Japan, followed suit. In the meantime, the Chinese authorities at Mukden had opened negotiations for a settlement of the dispute, apparently without waiting for Nanking's approval. Announcement that the Soviet and Mukden governments "already had agreed to several conditions and were proceeding with direct negotiations" which would make possible prompt settlement of the conflict between the Soviet Union and China" was made by the Soviet government on December 3 in a scathing reply to the American note. See *Russia*, under *History*.

"In view of this fact," the Soviet note stated, "the above (American) declaration cannot but be considered unjustifiable pressure on the negotiations and cannot therefore be taken as a friendly act."

The Chinese reply to Secretary Stimson's note, dated December 4, declared that military action had been taken purely for self-protection and that China was prepared to arrive at a peaceful settlement of the question. The Nationalist government acquiesced in the steps taken by the Mukden government and the Sino-Russian negotiations were continued at Khabarovsk, in Siberia, until December 22, when a joint protocol was signed. It contained the following provisions: (1) A conference to settle the difficulties between the two powers was to open in Moscow, Jan. 25, 1930; (2) both sides were to withdraw their troops from the border as soon as possible; (3) Soviet and Chinese railroad executives who had been dismissed or had resigned since the beginning of the dispute were to be restored to their position; (4) minor Soviet employees discharged were to be restored with pensions, back pay, etc.; (5) White Russians employed in place of Soviet employees were to be removed; (6) all Soviet citizens and Chinese arrested were to be released without distinction or exception; (7) all orders or instructions issued since the commencement of the dispute were to be canceled unless jointly confirmed; (8) the Chinese agreed to dissolve the White Guard Corps and to expel the leaders and organizers from Manchuria; (9) the Chinese and Russian consuls were to be restored with their previous privileges in East Siberia and Manchuria; (10) Russo-Chinese economic organizations interrupted by the dispute were to be reestablished.

The protocol entered into force from the moment of signature. Manchurian authorities appointed a new Chinese president of the railway board who was acceptable to the Soviet Government, and the latter Government appointed M. Rudyi and M. Denissov as manager and assistant manager, respectively, of the railway, in place of the Chinese managers.

SINO-JAPANESE RELATIONS. The none-too-friendly relations between China and Japan were eased somewhat following the fall of the Tanaka cabinet on July 2 and the adoption of a more

conciliatory policy by the new Hamaguchi cabinet. Negotiations for the settlement of the dispute arising out of the Tsinan-fu clash between Chinese Nationalist and Japanese troops in May, 1928, were opened by Foreign Minister Wang and the Japanese Minister at Nanking on January 25, and on March 24, an agreement was announced providing for the immediate withdrawal of Japanese troops from Shantung. Japan also accepted the new Chinese tariff. In January, Premier Tanaka, in an important statement relative to Japan's policy toward China, said that the Government would respect the sovereignty of China over Manchuria and do all in its power to preserve "the principle of the open door and equal opportunity." Calling attention, however, to Japan's economic and political interest in Manchuria, where 1,000,000 Japanese subjects reside, he said the Government was determined "to take appropriate steps" should a state of affairs arise which would jeopardize Japan's vital interests. On May 2, the two governments signed an agreement settling the Nanking and Hankow incidents, China agreeing to pay compensation.

Late in December, a new threat to peaceful relations between the two countries arose when the Nationalist government informed Japan that Torikichi Obata, former Ambassador to Turkey, would not be acceptable as the new Japanese Minister to China. The Chinese Government based its objection to Obata on his connection with Japan's famous 21 demands made upon China in 1915, when he was chargé d'affaires at Peking. The Japanese Government declined to withdraw the nomination, however, considering it a vital test of Chinese-Japanese relations.

The famine areas which are continually to be found in parts of China were considerably extended during 1929. Early in the year, Marshal Feng Yu-huang appealed to the Nanking government for funds or food for 20,000,000 sufferers in the provinces of Honan, Shensi, and Kansu. Dr. C. C. Wu, Chinese Minister at Washington, later announced that the famine affected 57,000,000 people and that thousands were dying daily. The American Red Cross on September 27 declined to undertake famine relief in China in accordance with recommendations of a commission which investigated the situation from June 15 to the end of August. The commission accepted the figure of 65,000,000 as an approximation of those rendered destitute at some time by the famine of 1928-29 and placed the blame upon Chinese militarists and the disorderly conditions prevailing.

At a national conference on military reorganization and troop disbandment held during January in Nanking, it was reported that there were 1,600,000 men under arms in China, and that 78 per cent of the Nationalist government's revenue went for military expenditures in addition to the bulk of the taxes collected by the provincial militarists. The plans adopted for the gradual demobilization of troops and for the substitution of a national for provincial military budgets were everywhere ignored. T. V. Soong, the Nationalist Finance Minister, resigned during the summer because disproportionate military expenditures made it impossible for him to balance the budget. He withdrew his resignation, however, when he was promised that half of the standing armies would be disbanded, a rigid budget system adopted, and that the Finance Minister would be allowed a voice in the expenditure of govern-

ment funds. On August 6, a disbandment enforcement conference at Nanking agreed that the standing army should be limited to 800,000 men. The subsequent revolt nullified these efforts.

The Nanking government exercised a strict censorship over a number of foreign and Chinese-owned newspapers which published reports considered unfriendly to the Nationalist régime. Some of them were denied the use of the mails. Similarly, correspondents of some foreign journals in China were denied the use of cables to send out their dispatches.

On May 26, the body of Sun Yat-sen, "Father of the Revolution," who died in March, 1925, was transferred from Peiping (Peking) to a magnificent tomb built on the side of Purple Mountain at Nanking. During July, the Nationalist government announced that it had signed an agreement with the British Government for the training of Chinese naval cadets in England and the engagement of a British naval mission to assist in the development of a Chinese Navy.

A settlement of the various claims growing out of the Nanking incident of Mar. 24, 1927, amounting to \$887,117 Mex., was agreed upon by the Government.

The Nationalist government, in connection with its reorganization of the nation, called upon numerous Americans and Europeans experienced in governmental problems to assist it. Prominent among them were Prof. Edwin W. Kemmerer of Princeton, who arrived in Shanghai in January to study the economic and financial rehabilitation of China, and Sir Frederick Whyte, first speaker of the Indian Parliament, who was appointed adviser to the Ministry of Foreign Affairs. See MANCHURIA.

An interesting work by Chao-Chu Wu, *The Nationalist Programme for China*, was published by the Yale University Press in 1929.

CHINDA, COUNT SUTEMI, Lord Chamberlain to the Emperor of Japan, died in Tokyo, Jan. 16, 1929. He was born in 1856 in Hirotsaki, Japan, but went to America and was graduated from De Pauw University in 1881. Returning to Japan, he was appointed a junior official in the Japanese Foreign Office in 1886. In 1895 he went as consul-general to Shanghai, a position followed by appointments to Brazil, The Hague, and Petrograd. He was created a baron for his political services in 1907, and in 1908 was sent as Ambassador to Berlin. In 1911 he was created viscount and sent as Ambassador to Washington. He went in 1916 as Ambassador to England, where he remained until 1920, when he retired. For his services as a member of the Japanese delegation to the Peace Conference at Versailles, he was made a count in 1920. He became an adviser to the Emperor Hirohito of Japan in 1927, receiving the title Grand Chamberlain to the Emperor. As Foreign Minister in Tokyo, he had acted as peacemaker at the conference which came at the close of the Russo-Japanese War, and, again, when he was Ambassador to the United States, he had handled the anti-Japanese situation in California.

CHIROL, CHIR'OL, SIR VALENTINE, An English journalist and writer on the Orient, died Oct. 22, 1929. He was born May 23, 1852, and was educated in France and Germany, receiving the degree of *bachelier-ès-lettres* from the University of Paris. From 1872 to 1876, he was a clerk in the Foreign Office. Resigning this position, he spent the next 14 years in travel, going to European and Asiatic Turkey, to Egypt, Persia,

India, and the Far East, and to the United States and the British colonies. In 1892 he became correspondent for the *London Times* in Berlin; and on the retirement of Sir Donald Wallace in 1899, succeeded to the directorship of the *Times* Foreign Office, a position which he held until 1912. Upon retirement in that year, he was knighted. In that year also he was appointed to the Royal Commission on Indian Public Services. Although his years of travel and his work in Germany had given him a keen insight into European politics, his greatest interest was in Eastern affairs, especially in the government of India. That interest is reflected in his published works, which include *Treaty Greek and Turk* (1881), *The Far Eastern Question* (1896), *The Middle Eastern Question* (1903), *Indian Unrest* (1910), *Civil Spring-Rise In Memoriam* (1919), *The Egyptian Problem* (1920), *India Old and New* (1921), *The Occident and the Orient* (1924), *India* (Modern Nations Series, 1926), *Fifty Years in a Changing World* (1927).

CHITTENDEN, FRANK HURLBUT. An American entomologist, died Sept. 15, 1929, in Washington, D. C. He was born Nov. 3, 1858, in Cleveland, Ohio, and was graduated from Cornell University in 1881. Before becoming associated with the Department of Agriculture, he organized the Entomological Society of Brooklyn, N. Y., and was assistant editor of *Entomologia Americana*. In 1891 he was appointed assistant entomologist in the division of entomology of the U. S. Department of Agriculture. He was placed in charge of breeding experiments in 1902, and in 1905, upon the organization of the Bureau of Entomology, he conducted its special investigations of truck-crop insects. He retired from administrative work in 1923, but gave his time to the investigation of a few groups in the order of insects, Coleoptera. Dr. Chittenden had a remarkable knowledge of insect pests in the crops of the United States. He wrote more than 350 articles and bulletins on economic and taxonomic entomology, and was a contributor to books of reference.

CHOLECYSTOGRAPHY. See GALLSTONE DISEASE.

CHORAL SOCIETIES. See MUSIC.

CHORDATA. See ZOOLOGY.

CHOSEN. See KOREA.

CHRISTIAN CHURCH. A church originating in three religious movements, that of the Rev. James O'Kelly, who withdrew from the Baptist Church, that of the Baptist, Abner Jones, who organized a separate church in Lyndon, Vt., in 1801, and that of a group of Kentucky Presbyterian ministers who formed a new denomination in 1804. These groups eventually united, all holding that minor points of belief should be subordinated to Christian brotherhood. In 1929 the Christian Church had 1283 church organizations, 110,326 members, 1047 ministers, 1324 Sunday schools, 801 Christian Endeavor societies, and 307 women's societies. It sponsors home and foreign missions, educational work, publications, evangelism, Christian unity, social service, and other general activities. Its home-mission work includes new Americans in the East, the lumber camps in Washington, Indiana, mountaineers, and Negroes, its foreign field, Japan, Porto Rico, and South America. It also maintains eight educational institutions, including Franklinton Christian College in Franklinton, N. C., in which

colored boys and girls are taught self-help.

The quadrennial general convention, which first convened in Urbana, Ill., in 1826, met in Piqua, Ohio, Oct. 25, 1929, being brought forward a year so as to consider the question of union with the Congregational churches. This plan for the organic unity of the two bodies was the result of the overtures which had been made some years previously to 22 denominations by the commission on Christian unity. It was approved by the National Council of the Congregational Churches at its session in Detroit May 22 to June 3, 1929, and by the General Convention of the Christian Church on Oct. 25, 1929. See CONGREGATIONALISM. The plan anticipated a complete corporate union under one governing body, the General Council of the Congregational and Christian Churches, with a common administration of all benevolent activities. By the end of 1929, it had been effected in parts of the mission fields and in State field work. The periodicals of the two denominations also were combined, being issued under the title of the *Congregationalist and Herald of Gospel Liberty*. The president of the General Convention of the Christian Church in 1929 was the Rev. F. G. Coffin. Headquarters are at 507 Certified Public Accountants' Building, Dayton, Ohio.

CHRISTIAN ENDEAVOR, INTERNATIONAL SOCIETY OF. An organization comprising all Christian Endeavor societies in North America and a member of the World's Christian Endeavor Union composed of Christian Endeavor societies in every country. The first society was organized in Portland, Me., Feb. 2, 1881, by the late Rev. Francis E. Clark for the purpose of training young people in the duties of church membership and the activities of the Christian life. The present name was adopted by vote of the board of trustees in August, 1927, previous to which time it was known as the United Society of Christian Endeavor.

The society is organized into departments to carry on its work. Among the more important are a department of Christian vocations, which yearly gives vocational counsel to thousands of young people in high schools and colleges, and a department of travel and recreation, which supplies, free of charge, monthly church-centered recreation service to Christian Endeavor societies and church workers and conducts world friendship tours to Europe for young people at cost. The society promotes systematic and proportionate giving through the Tenth Legion, in which 1751 were enrolled during the year, and emphasizes regular habits of prayer and daily Bible reading through the Quiet Hour, in which 8453 were enrolled.

The international society comprises an active organization for each State and each Canadian Province. These, in turn, in 1929 were divided into 1200 city, county, and district unions, each including 400 to 500 societies. In the same year, there were throughout the world approximately 80,000 societies, with a membership of 4,000,000. The international society, which meets biennially, held a convention in Kansas City, Mo., July 3-8, 1929, with a total attendance of more than 15,000. The Fiftieth Anniversary International Convention was to be held in San Francisco in July 1931, and a quadrennial world's convention also was planned to be held in Berlin, Germany, Aug. 5-10, 1930. The official periodical of the society is the *Christian Endeavor World*. Officers

for 1929 were: President, the Rev. Daniel A. Poling, vice presidents, the Rev. William Hiram Foulkes and the Rev. Howard B. Grose; treasurer, A. J. Shurtle; and secretary, Edward P. Gates. Headquarters are at Mount Vernon and Joy streets, Boston.

CHRISTIANS. See DISCIPLES OF CHRIST.

CHRISTIAN SCIENCE. A system of metaphysical or spiritual healing discovered by Mrs. Mary Baker Eddy in 1886. The first church was established by Mrs. Eddy in Boston in 1879 and given a charter by the Commonwealth of Massachusetts. In 1892 it was reorganized as a voluntary religious association known as The First Church of Christ, Scientist, in Boston, called more frequently by its adherents "The Mother Church." Mrs. Eddy wrote the textbook of the movement, *Science and Health with Key to the Scriptures*, published in 1875. The Sunday services of the church are conducted by first and second readers, the former reading from *Science and Health*, and the latter from the authorized version of the Bible. In 1929 there were approximately 10,000 practitioners of Christian Science in the United States and other countries, who devoted their entire time to healing the sick through prayer.

A board of directors administers the affairs of The Mother Church. Its annual meeting was held in Boston June 3. Reports indicated expenditures totaling \$1,048,239 from the general fund of the church during the year, \$754,568 from the permanent special funds, and \$134,500 for relief of flood victims in Florida, the West Indies, Alabama, and Vermont. During the fiscal year ending May 31, 65 churches and Christian Science societies, including two university societies, were recognized as branches of The Mother Church, 17 new organizations were located in Europe, three in Africa, one in India, and six in Australia. The total number of recognized branches, including 34 college and university societies, was 2386. Three departments conduct the principal activities of the movement: the board of education, board of lectureship, and committee on publication. The educational board instructs and authorizes students to teach Christian Science, the board of lectureship consists of 24 members who deliver free lectures on Christian Science throughout the world. During the year, 3049 lectures were delivered, of which 3268 were in the United States, Canada, and Alaska, and 381 in foreign fields. Lectures were given for the first time in Czechoslovakia and Poland.

The Committee on Publication aims to correct impositions on the public in regard to Christian Science. It also endeavors to guard the rights of Christian Scientists against restriction by public authority. The Christian Science Publishing Society, which publishes and issues the authorized literature of The Mother Church, operates under a deed of trust granted by Mrs. Eddy, its affairs are now administered by a board of trustees according to the manual of the church. The publishing society issues the daily paper of the organization, *The Christian Science Monitor*, other periodicals include: *The Christian Science Journal*, *Christian Science Sentinel*, *Der Herold der Christian Science*, and *Le Héraut de Christian Science*. The Benevolent Association of the Church conducts a sanitarium, Pleasant View Home, which was opened July 15, 1927. Dr. Frank C. Colby was president of The Mother Church for the year ending May 31, 1929. The headquarters

of the church are at 206 Massachusetts Avenue, Boston.

CHRISTMAS ISLAND. An island in the Indian Ocean lying 190 miles southwest of Java, belonging to Great Britain, annexed in 1888. Area, 62 square miles, population, estimated in 1927, 1159. Christmas Island is important because of its very large deposits of phosphate of lime which constitute its only export. In 1927 exports amounted to \$116,651 and imports, to \$2375. The chief imports are tools, machinery, railway materials, and lorries. For administrative purposes, the island was connected with the settlement of Singapore in 1900.

Christmas Island is also the name of the largest atoll in the Pacific Ocean. It belongs to the British colony of Gilbert and Ellice Islands.

CHROMITE. See GEOLOGY.

CHROMIUM. See CHEMISTRY.

CHURCHES OF CHRIST. See DISCIPLES OF CHRIST.

CHURCHES OF CHRIST IN AMERICA, FEDERAL COUNCIL OF THE. See FEDERAL COUNCIL OF THE CHURCHES OF CHRIST IN AMERICA.

CHURCH OF ENGLAND. See ENGLAND, CHURCH OF.

CHURCH OF GOD. See ADVENTISTS.

CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS. See LATTER-DAY SAINTS, CHURCH OF JESUS CHRIST OF.

CINCINNATI, UNIVERSITY OF. An institution for the higher education of men and women in Cincinnati, Ohio, founded in 1870. The registration for the autumn of 1929 was 9679, distributed as follows: Graduate school, 233, liberal arts, 1301, evening courses in liberal arts, 830, education, 1186, engineering and commerce, 1011; evening courses in commerce, 3484, applied arts, 338, law, 180, medicine, 283, nursing and health, 97, household administration, 136. The summer-school enrollment for 1929 was 1224. There were 581 members on the faculty. The endowment funds of the university for the year ending Dec. 31, 1928, amounted to \$6,398,658, the income for the same period was \$2,256,365. The library contained 144,633 volumes. During 1929 a new library building was under construction. President, Herman Schneider, Sc D.

CINEMAS. See MOVING PICTURES.

CINEMATOGRAPHY. See PHOTOGRAPHY.

CIRCUIT BREAKER. See ELECTRIC POWER TRANSMISSION AND DISTRIBUTION.

CITRUS FRUITS. See HORTICULTURE.

CITY AND REGIONAL PLANNING. Activity in city planning continued, as also its recent notable outgrowth, regional planning. Evidence of this is afforded by the list of 691 cities with planning commissions and the list of 840 zoned cities at the beginning of 1930, compiled by the U. S. Department of Commerce and also by the 25 county and city planning bodies established within 10 years. Although most of the city- and regional-planning bodies had little to show except plans and reports—if zoning be ignored for the moment—large portions of some of the plans and minor parts of many others were executed. Street widenings and extensions for thorough traffic and to lessen traffic congestion probably take the lead in construction. Park systems and civic centres probably come next in cost and impressiveness. This leaves out extensive rapid transit construction, limited to New York and a few other cities, also water supply and sewerage, not ordinarily included in

city-planning studies but both rapidly being taken up as district undertakings, sometimes regional in extent.

One of the reasons why there were so many more planning commissions and resulting plans than executed projects was general lack of integration of planning commissions with legislative and executive departments of cities and absence of local government agencies for regions. The latter may embrace parts or all of several counties but not follow county nor even city lines.

ZONING Zoning has more concrete examples than any other part of city planning because it is limited to planning of uses to which land may be put, percentages of lots that may be built upon, and heights of buildings and requires no capital outlay. Zoning is a fundamental of planning because upon the use to which buildings may be put, their height, percentage of lot covered, and possible number of occupants depends the planning of streets, sewers, water supply, and transit. Except for number and location of planning commissions and zoned cities, no complete exhibit of city and regional planning exists. The nearest approach to it is a recent survey in all the larger cities of the United States and many smaller ones, the latter chosen by size as representative of the whole country. See *Bibliography*, Hubbard, below.

REGIONAL PLANNING Completion of the *Regional Plan of New York and Environs*, by far the largest achievement in city or regional planning yet consummated, was a notable event of the year. The region embraces 436 cities and towns in 22 counties of three States and has an area of 5528 square miles or as large as the whole State of Connecticut or a tenth of the area of England. The population of the area in 1929 was about 10,000,000 which was expected to double by 1965. The work was done by a large staff of engineers, architects, and landscape architects, lawyers, sociologists, and other planning specialists. It was sponsored by the Russell Sage Foundation and directed by a committee of which Frederic A. Delano was chairman. The director of the survey was Thomas Adams. The work took seven years and cost about \$1,000,000. Besides a dozen monographs and a number of pamphlets dealing with various phases of the study, there are two large volumes called the *Graphical Regional Plan*, the first dealing with the plan horizontally—land uses, highways, etc.—and the second taking it up vertically—height and bulk of buildings.

On the question of boundaries for a regional plan vol. 1 of *The New York Graphical Regional Plan* says: (1) "They embrace the area within which the population can and does travel in a reasonable time from home to place of work—that is, the commuting area; (2) they follow the boundaries of cities and counties at the periphery of the commuting areas in order to relate the plan to the areas of administration; (3) they have regard to the physical characteristics, such as watersheds and waterways." The main elements of the *Graphical Regional Plan of New York and Environs* are highways, rapid transit, trunk railways, waterways, airports, parks and parkways, and land uses, including zoning. Maps appropriate to each of these elements, together with descriptive text, are included in the voluminous report.

The second volume (1930) was to go at length into height and bulk of buildings and to include

a project for a municipal civic centre, with an immense building back of the old City Hall, supplementing and dominating the present municipal office building, considered a skyscraper when erected.

Although the Regional Plan was privately made and is non-governmental it was hoped that it would serve as a pattern for the region covered, to which municipalities, individually and by groups, would conform. To promote that end, a regional planning association was organized in 1929. Under its auspices, meetings were held throughout the region at which the plan and its local application were explained. Some of the municipalities had planning commissions, but New York City had none. Some had county park commissions, notably Westchester County in New York State and Essex and other counties in New Jersey. These had already provided or were establishing county-wide park systems, taken cognizance of in the *New York Graphical Regional Plan*. The recently organized Passaic County (N. J.) Park Commission had projected four parks, the boundaries of which were almost identical with those recommended in the *New York Regional Plan*. For a summary of the main features of the *New York Regional Plan* with reproductions of several of its maps—land uses, highway system, rapid transit, trunk railways and airports—see *Engineering News-Record*, June 6, 1929.

A county or regional planning unit embracing 13 cities in Delaware County, Ohio, including Cincinnati, was organized on March 21, each city being represented by two members chosen by the respective local planning commission and in most cases members of the local commission. In Delaware, the Legislature authorized a regional-planning commission for Wilmington and nearby parts of Newcastle County, but it was merely to report on its findings as to "the desirability of establishing a regional plan for Wilmington and vicinity in order to secure an orderly development of highway and other means of communication, sanitation, utilities, and other improvements necessary for the satisfactory development of a modern urban and suburban community." In Wisconsin, a State director of regional planning was appointed (under authority of Laws of 1929, Chap. 267). His duties are to help local planning agencies coordinate their activities, to gather and disseminate city, town, and regional-planning information, to cooperate with the State conservation commission in making a recreational system plan for the State and with the State board of health in the regulation and control of lake and stream platting.

CITY PLANNING. Progress on the oldest and most notable city-planning programme of the United States was summarized by a number of speakers at the annual convention of the American Institute of Architects, held in Washington the latter part of April, and was presented graphically by maps and models. (For abstracts and pictorial reproductions, see *American Architect*, May 20, 1929). Work under way and projected in general line with the L'Enfant plan of 1791, the McMillan Commission plan of 1901, as revised by the National Capital Park and Planning Commission during the last few years, was to cost over \$200,000,000, of which \$120,000,000 had been authorized by Congress before it met in December, 1929. On December 16, the House unanimously passed a bill authorizing an addi-

tional outlay of \$115,000,000, not over \$15,000,000 of which was for land.

The largest unit in the current programme was the Triangle project for a large group of public buildings to fill, with their proper setting of open spaces, the area having its apex at the intersection of Pennsylvania Avenue and B Street near the Capitol, its base along 15th St., opposite the rear of the White House grounds, and its perpendicular along B Street, N. W., one of the boundaries of the Mall, and its hypotenuse on Pennsylvania Avenue. Toward the cost of the Triangle project, \$25,000,000 had been appropriated for land, and \$50,000,000 for buildings. A huge structure to house the Departments of Commerce and Labor at a cost of \$17,500,000 was under construction, as also a large building for the Bureau of Internal Revenue, to cost \$10,000,000. Diagonally opposite the apex of the Triangle, on the north side of Pennsylvania Avenue, an outlay of \$25,000,000 for a Municipal Centre was authorized—\$6,500,000 for land and \$18,500,000 for a large group of buildings.

These two projects are in accord with the L'Enfant plan to make Pennsylvania Avenue a noble street flanked with public buildings, but unfortunately it does this for only one side of the avenue, leaving the other occupied with buildings of all sorts and heights. The city portion of the Mall, a very broad parked area extending originally from the Mall to the rear of the White House grounds and since carried on from the Washington Monument to the Lincoln Memorial, will be protected by the B Street side of the triangle project.

Another important element of the Washington or District of Columbia plan being executed was the Arlington Memorial Bridge and highway connections, leading from the Lincoln Memorial to the Arlington National Cemetery. This project was estimated to cost \$14,750,000, while the Mount Vernon Boulevard, from Washington to the home of George Washington, will cost about \$5,000,000. The Library, a new home for the U. S. Supreme Court was to be erected. As indicated by its name, the National Capitol Park and Planning Commission is charged with making plans for enlarging the park system of Washington, which, with connecting highways, is considered a major part of the city plan.

A \$19,000,000 bond issue to meet a part of the cost of a street widening and extension in the central business district of *Toronto, Ont.*, was defeated at the city election on Jan. 1, 1930, and with it the city administration that had sponsored the project was also defeated. Opponents of the bond issue urged that a comprehensive plan for the entire city should have been brought forward and objected also to placing the entire cost of the defeated project on the city at large instead of at least a portion of it on the property specially benefited. Indications were that a part of the programme, which had been recommended by an advisory planning commission and modified by the administration, was to be carried out soon, especially the widening of University Avenue, for this, the city had special legislative authority which included the right to use excess condemnation or to buy more land than is needed for the widening and sell the excess after the improvement is made.

Cities of *North Dakota* were authorized to

levy a one-mill tax for planning purposes and given a certain amount of jurisdiction for three miles outside of their limits by a legislative act of 1929.

The provision of various acts authorizing cities, towns, and villages in New York State to require approvals of the local planning board before a land subdivision plan may be filed with a county court was upheld by the New York State Court of Appeals on Dec. 3 (*Village of Lynbrook v. George J. Cadoo et al.*). The court stated "Town planning is a new field of legislation, comparable with the recent development of zoning laws and regulations. Its purpose is to preserve through a governmental agency a uniform and harmonious development of the growth of a village [in this case] and to prevent the individual owner from laying out streets according to his own sweet will without official approval."

ZONING A comprehensive zoning ordinance for *Cleveland, Ohio*, was enacted by the city council in May and approved later on referendum by a vote of about 64,000 to 44,000, this being one of the few zoning ordinances ever submitted to popular vote. *Newark, N. J.*, was divided into seven zones or districts by an ordinance introduced Nov. 20, 1929. There are three grades of residence, two of business, and two of industrial uses. The ordinance sets limits on height, percentage of lot built upon, widths of side yards, depths of front and rear yards, dimensions of inner and outer courts and density of population, with some exemptions, chiefly as to depth of front yards in business and industrial districts. Height limits are two and one-half stories in both first and second residence districts, while in the third residence and first business districts they may not exceed twice the street widths, but no street may be considered more than 60 feet wide. In the second business district, the street wall cannot exceed two and one-half times the width of the street, the width here also to be held as not over 60 feet in both industrial districts. Total heights in the second business and the two industrial districts are not limited provided (1) if "above a given level" the building covers not more than 25 per cent of the lot area, and (2) if the building thus contracted in area "sets back from each of its lot lines at every level at least one inch for each one foot that such level is above the curb level."

There are also some height exceptions based on setbacks for second business and industrial districts, that is, for every five feet of setback, the height may be increased one foot. Percentages of lot that may be covered by buildings range from 35 per cent for an interior lot and 45 for a corner lot in first residence districts, to 60 and 70 in the second and 70 and 90 per cent in the third residence district, and 90 to 100 per cent in all the other districts. These percentages are in a measure governed by width of side and depths of rear yards, and dimensions of inner and outer courts, detailed in the ordinance. Density of population is fixed at 2000 feet of lot area per family in first and 1200 feet in second residence districts, while for third residence districts there may not be more than one family per 1000 feet of lot area per story.

In general, residences in business and industrial districts are the same as those for residences in third-class residence districts, except that, in the second industrial district, the only residences permitted are for the family of one watchman for

the Seine in the National Assembly. In 1875 he was president of the Municipal Council of Paris and a member of the Chamber of Deputies for Paris from 1876 to 1885. He was minister of the Interior in 1906, and from 1906 to 1909, Premier of France. Active as a journalist, he had founded *La Justice* in 1880, and though often out of office for long periods of time except for his seat in the Chamber of Deputies, Clémenceau was always a force in the public life of France. So many cabinets were overthrown through his influence that he became known as the Destroyer of Ministries. With him, the professions of journalism and politics were closely related. He was one of the literary men who in the newspaper, *L'Aurore*, championed the cause of Captain Alfred Dreyfus, the wrongfully imprisoned French soldier.

When his paper, *L'Homme Libre*, was suppressed at the end of 1914 because of attacks made in it on the French government, he immediately founded another, which he called *L'Homme Fuchaine*. Long before the World War began, Clémenceau had predicted its coming and warned France to be prepared. At the outbreak of the War, he was president of the Foreign Affairs Committee, later becoming president of the Army Committee of the Upper Chamber. In 1917, when the morale of France was at low ebb, Clémenceau was asked to form a ministry. His flaming enthusiasm, his courage, even his ruthlessness in mobilizing men and resources for the nation, was what France needed to take her victoriously through the last years of the War. M. Clémenceau was duly lauded as the Savior of France, the Father of Victory, and he was elected a member of the French Academy in 1918. As chairman of the Council of Four at the Versailles Peace Conference, Clémenceau's militant ideas and unceasing concern for France clashed with the more idealistic views of President Wilson. Nor did his often arbitrary methods meet with the same approval in France after the Armistice as they had done before. In 1920 his premiership ended, and when he was not chosen a candidate for the presidency of the Republic, he retired from public life. After retirement, in 1922, he visited the United States as an unofficial lecturer on America's responsibilities with regard to Europe. In 1927 he published an exposition of his philosophy, *Au Sour de la Pensée*, which was translated into English in 1929 under the title, *In the Evening of My Thought*. At his own request, he was not given a state funeral, but was buried privately in a little wood beside the village of Colombier near Roche-sur-Yon in Vendée. Public honors, however, were paid to his memory by heads of governments throughout the world. Consult *Clémenceau, sa vie, sa œuvre*, by G. Geoffroy and Lumet (1920) and *Clémenceau* by Jean Martet (1929).

CLEVELAND MUSEUM. See ART MUSEUMS

CLIFFORD, LUCY LANE (Mrs. William Kingdon). English author, died Apr. 21, 1929, in London. In 1875 she was married to William Kingdon Clifford, a distinguished mathematician, and their home became a meeting place for the scientific and literary men of the late Victorian period. Mrs. Clifford's first novel, *Mrs. Keith's Crime* (1885), had as its theme the problem of parents of a hopelessly ill and suffering child. The solution, merciful death for the child, caused widespread discussion. Her second book, *Aunt*

Anne (1893), was also successful. Besides being the author of a number of novels, Mrs. Clifford also wrote plays, among them *The Likeness of the Night*, *The Searchlight*, and *A Woman Alone*, all produced in London theatres.

COAL. The world's production of coal of all grades in 1928 was estimated at approximately 1,450,000,000 metric tons (A metric ton is 2204.6 pounds, roughly the same as the gross ton of 2240 pounds). Of this grand total, 217,000,000 tons were lignite and 1,233,000,000 tons were bituminous coal and anthracite. In 1913, the last year before the World War, the production of lignite was 129,000,000 tons and the production of bituminous and anthracite was 1,213,000,000 tons. In 1928 the world's production was slightly less than that of 1927, 1,473,000,000 metric tons, which was the largest production since 1913.

It was quite interesting to note that in the quarter-century before 1913 the production of bituminous and anthracite coal grew at the average rate of 31,000,000 tons per year, while in the entire 15 years between 1913 and 1928 it had amounted to only 14,000,000 tons. The coal and lignite produced in the principal countries of the world in the calendar years, 1925-28, are given in the tabulation on pages 199 and 200, while the following table indicates the world production of coal of all grades 1914-28.

WORLD PRODUCTION OF COAL OF ALL GRADES,
1914-1928 *

Year	Production, in part estimated (metric tons)	Percentage produced by United States
1914	1,207,000,000	38.7
1915	1,198,000,000	40.5
1916	1,291,000,000	41.5
1917	1,356,000,000	43.6
1918	1,373,000,000	46.3
1919	1,173,000,000	42.8
1920	1,320,000,000	45.3
1921	1,135,000,000	40.5
1922	1,226,000,000	35.3
1923	1,359,000,000	43.9
1924	1,357,000,000	38.2
1925	1,372,000,000	38.5
1926	1,365,000,000	43.7
1927	1,470,000,000	36.9
1928	1,450,000,000	34.7

* Includes lignite and subbituminous coal as reported, without attempting to reduce to equivalent tonnage of bituminous coal.

UNITED STATES PRODUCTION OF BITUMINOUS COAL. The total production of soft coal in the United States during the calendar year 1929, including lignite and coal coked at the mines, was estimated by the U. S. Bureau of Mines at 532,352,000 net tons. This figure represented the total of the bureau's estimate made for the 52 weeks in the year and was subject to slight revision compared with the output in 1928, namely, 500,745,000 net tons. The 1929 figure indicating an increase of 31,608,000 tons, or 6.3 per cent. Figures for the calendar years 1922-29 are given on page 200.

The increase in the production of bituminous coal in 1929 over 1928 was due in large measure to the increased use by electric utilities, railways, and steam plants and was of special significance in view of increased competition from natural gas. The consumers' stock of bituminous coal on Jan. 1, 1929, was estimated at 41,800,000 net tons, as compared with 55,500,000 net tons as of Jan. 1, 1928. On July 1, 1929, consumers' stock declined to 33,100,000 net tons and on October 1 there were in the hands of consum-

COAL

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COAL

COAL AND LIGNITE PRODUCED IN THE PRINCIPAL COUNTRIES OF THE WORLD IN THE CALENDAR YEARS 1925-1928, IN METRIC TONS
 [Compiled by L. M. Jones, of the U. S. Bureau of Mines]

Country	1925	1926	1927	1928
North America				
Canada—				
Coal	8,627,519	11,687,032	12,540,507	12,444,575
Lignite	3,288,262	3,261,599	3,468,798	3,489,400
Greenland	2,100	1,500	2,900	8,000
Mexico	1,444,498	1,309,138	1,031,308	1,021,426
United States—				
Anthracite	56,079,261	76,599,968	72,661,094	68,354,261
Bituminous and lignite	471,781,446	520,147,061	469,704,558	454,265,822
South America				
Argentina	(*)	(*)	(*)	(*)
Brazil	892,376	400,000	400,000	400,000
Chile	1,453,228	1,490,509	1,481,511	1,500,000
Colombia	(*)	(*)	(*)	(*)
Peru	100,681	170,070	158,601	177,827
Venezuela	16,798	15,928	16,104	15,812
Europe				
Albania—Lignite	(*)	1,578	3,008	(*)
Austria—				
Coal	145,900	157,808	175,601	202,098
Lignite	3,038,378	2,957,728	3,064,068	3,262,570
Belgium	28,097,040	25,259,600	27,711,821	27,542,780
Bulgaria—				
Coal	78,000	62,150	69,192	70,836
Lignite	1,156,006	1,140,093	1,168,454	1,360,790
Czechoslovakia—				
Coal	12,558,992	14,176,998	14,016,300	14,560,305
Lignite	18,604,678	18,515,666	19,620,637	20,451,421
France—				
Coal	47,097,297	51,391,523	51,778,580	51,365,777
Lignite	993,352	1,061,122	1,067,290	1,063,691
Germany—				
Coal	132,622,125	145,295,724	153,599,355	150,875,814
Lignite	139,724,614	139,150,557	150,508,914	166,224,159
Saari *	12,989,850	13,680,874	13,595,824	13,106,718
G. I. r. I	142,076	153,321	143,346	120,639
H				
Coal	805,019	827,710	785,922	783,279
Lignite	5,520,760	5,822,169	6,244,275	6,508,562
Irish Free State	(*)	79,715	(*)	(*)
Italy—				
Coal	188,522	209,260	164,089	132,295
Lignite	1,105,474	1,181,842	912,458	695,799
Jugoslavin—				
Coal	178,456	190,814	287,728	457,472
Lignite	3,973,870	3,976,938	4,458,451	4,694,408
Netherlands—				
Coal	7,116,970	8,842,687	9,488,412	10,690,000
Lignite	207,623	211,194	201,382	
Poland—				
Coal	29,081,327	35,747,348	38,084,086	40,612,971
Lignite	65,675	76,026	78,464	73,560
Portugal—				
Coal	123,450	201,732	178,554	(*)
Lignite	16,970	30,699	25,713	(*)
Rumania—				
Coal	313,572	322,191	373,457	397,564
Lignite	2,615,278	2,781,362	2,850,011	2,629,676
Russia—				
Coal	13,354,011	20,614,717	25,944,341	30,566,000
Lignite	983,020	1,605,327	1,768,196	
Spain—				
Coal	6,117,342	6,586,087	6,562,936	6,870,508
Lignite	402,890	399,800	429,602	422,504
Spitsbergen *	413,412	291,211	303,000	274,000
Sweden	263,879	383,673	398,298	358,513
Switzerland	(*)	(*)	7,000	7,000
Turkey—Lignite	2,000	4,698	4,000	(*)
United Kingdom—				
Great Britain	247,079,210	128,305,291	255,264,615	241,283,355
Northern Ireland—Lignite	(*)	(*)	510	650
ASIA				
British Borneo	101,904	92,583	80,466	79,721
China	24,255,000	(*)	(*)	(*)
Chosen	684,257	682,896	709,578	815,817
Federated Malay States	414,674	471,736	470,432	565,523
India—British	21,239,892	21,356,204	22,436,757	(*)
Indo China—				
Coal	1,357,231	1,264,661	1,482,900	1,954,098
Lignite	5,739	5,598	7,000	15,422
Japan—				
Japan proper—				
Coal	31,369,538	31,396,168	33,387,160	(*)
Lignite	169,426	161,134	178,613	(*)
Karafuto	250,615	275,823	357,046	(*)
Taiwan	1,704,581	1,794,511	1,857,257	1,588,598
Netherland East Indies	1,400,725	1,466,359	1,620,205	1,703,474
Philippine Islands	48,681	28,577	23,410	27,857
Russia—				
Coal	1,611,798	2,849,399	3,907,499	
Lignite	533,890	687,648	869,262	4,675,000
Sakhalin	17,782	19,624	46,274	

COAL AND LIGNITE PRODUCTION 1925-1928 (Continued)

Country	1925	1926	1927	1928
Straits Settlements (Labuan)	41	..		
Turkey—				
Coal	708,444	1,222,887	896,074 ^d	922,403 ^d
Lignite	4,062	7,569	6,555	5,169
Africa				
Algeria	10,037	13,781	21,269	16,681
Belgian Congo	83,000	90,250	85,500	92,000
" " " "			5	33
Portuguese East Africa	242,838	329,784	363,643	369,581 ^f
Southern Rhodesia	18,086	10,868	15,834	8,455
Tunisia—Lignite	689,201	874,140	908,744	1,094,843
Union of South Africa	12,321,728	12,949,950	12,580,314	12,606,576
Oceania				
Australia—				
New South Wales	11,579,108	11,060,487	11,034,688	9,599,841
Queensland	1,196,067	1,240,657	1,116,680	1,093,615
Tasmania	83,009	104,000	113,854	130,562
Victoria—				
Coal	543,821	600,487	695,227	668,889
Lignite	890,585	973,110	1,478,842	1,617,407
Western Australia	444,482	482,440	509,551	516,901
New Caledonia	1,800	15,000	(^e)	(^e)
New Zealand—				
Coal	1,044,726	1,215,500	1,299,044	1,370,379
Lignite	1,070,269	1,060,361	1,104,142	1,105,483
Total, all grades	1,372,000,000	1,365,000,000	1,473,000,000	1,450,000,000
Lignite (total of items shown above)	185,000,000	185,000,000	200,000,000	217,000,000
Bituminous and anthracite (by subtraction)	1,187,000,000	1,180,000,000	1,273,000,000	1,233,000,000

^a Estimate included in total^b Approximate production^c Exclusive of output of State of Falcón (about 8000 tons), for which estimate is included in total^d Exclusive of mines in the Saar under French control^e Mines under French control^f Year ended Sept. 30^g Production less consumption at mines, for which data are not available^h Exclusive of Sakhalinⁱ Shipments^j Year ended Mar. 31 of year following that statedUNITED STATES PRODUCTION OF BITUMINOUS COAL
[Net tons]^a

Period	Production	Average per working day
Calendar year		
1922	422,268,000	1,379,000
1923	564,565,000	1,845,000
1924	483,687,000	1,573,000
1925	520,035,000	1,692,000
1926	573,387,000	1,864,000
1927	517,763,000	1,664,000
1928	500,745,000	1,631,000
1929 ^b	525,352,000	1,731,000

^a Figures for calendar years 1922-1928 are final figures as reported by the operators. Those for 1929 are preliminary estimates.^b Subject to revision

ers 37,500,000 net tons, or a net decline in amount of 4,307,000 net tons since January 1.

Soft coal production during 1929 was on the whole undisturbed by labor troubles and was affected by the usual seasonal fluctuations in demand and production. The average spot price for the year at the mines was \$1.79, ranging from a minimum of \$1.68 in May to \$1.90 in October. A notable feature of the bituminous industry during the year was the steady and increasing shipment of cargo coal via the Great Lakes which amounted to 37,933,240 net tons, as compared with 33,402,121 tons in 1928.

During 1929 the exports of bituminous coal increased, amounting to 13,477,877 gross tons for 11 months, as compared with 13,338,891 gross tons in the previous year, Canada taking the greater proportion of the increase, with Italy second. Exports to Cuba, the second largest importer of American coal, decreased slightly, as compared to the previous year.

UNITED STATES PRODUCTION OF ANTHRACITE

COAL. Estimates of production by the U. S. Bureau of Mines for the Pennsylvania anthracite coal fields for the year 1929 amounted to 76,640,000 net tons. This estimate was based on the available reports of cars of anthracite loaded by the railroads including an allowance for colliery fuel and local sales within the anthracite region and for dredge and washery coal. Previous experience indicated that this estimate would prove to be within 1 or 2 per cent of the exact figures later reported by the company auditors. In 1928, for example, a similar estimate was 1.8 per cent higher than the final figures, namely, 75,348,000 net tons. Accordingly the 1929 figure was apparently 1.8 per cent lower than that of 1928, and this apparent gain might be in case the estimate was too high. It was believed, however, at the end of the year by competent authorities that the production of Pennsylvania anthracite in 1929 was slightly greater than in 1928. Figures for the years 1925-29 are given below.

PENNSYLVANIA ANTHRACITE PRODUCTION

1925	61,817,000 net tons
1926	84,437,000 " "
1927	80,096,000 " "
1928	75,348,000 " "
1929	76,640,000 " "

SHIPMENTS BY MONTHS. In the following table is shown the shipments of anthracite by months in 1928 and 1929, as reported by the carriers to the Anthracite Bureau of Information. Those for December, 1929, were estimated by the bureau and may be modified somewhat by the temporary records.

	1928	1928
January	5,811,972	4,523,139
February	5,158,197	4,374,886
March	3,628,691	4,175,482
April	5,160,620	5,603,876
May	4,817,834	6,313,174
June	3,778,679	3,990,698
July	3,687,586	3,406,013
August	4,564,426	5,276,513
September	5,360,130	4,640,995
October	6,477,729	6,770,806
November	4,615,464	5,759,031
December	5,550,000 *	4,844,050
Total	58,570,728	59,778,683

* Estimated

Outside of Pennsylvania, Virginia, Arkansas, Colorado and New Mexico were the leading producers of anthracite, the total output in 1928 amounting to 712,406 net tons, valued at \$2,983,978, or an average of \$4.19 per ton. Of this amount, Virginia alone contributed 171,896 tons, valued at \$477,187, or \$2.78 per ton. The production of hard coal outside of Pennsylvania was of considerable interest again the interval since 1913, when it was 363,324 tons, it had practically doubled. The records of 786,594 and 843,125 net tons in 1925 and 1926 respectively, with the demand for higher grade household fuels were stimulated by the long season of mining in Pennsylvania anthracite fields. The 1928 production reported a gain of 9.3 per cent over 1927 when the total production was 651,860 net tons. Not only had there been an increase in the amount of hard coal mined in the period considered but a gain from \$2.58 to \$4.19, or approximately 62 per cent. The period of greatest prices was from 1919-23, when averages ranged from \$4.91 to \$7.75.

As the table indicates, the progressive decline in anthracite production since 1926 was checked for the first time and an increasing export business was recorded with 2,728,313 gross tons for the first 11 months of 1929, as compared with 2,720,177 gross tons for the corresponding period of 1928. In the latter part of the year, the mild weather caused considerable decline in purchases. An interesting development of the year was the use, by the anthracite interest, of the Frost Research Laboratories in Norristown, Pa., for testing and determining stokers, heat-control devices, and automatic systems, as well as for conducting various burning tests to determine accurately the relative efficiency of anthracite and other fuels. A new type of magazine-feed boiler was developed, as well as a mechanical stoker.

According to the Anthracite Bureau of Information, during the year 1929 there were a number of anthracite companies had either completed or begun extensive construction programmes. The most ambitious of these were the plans of the Philadelphia & Reading Coal and Iron Co. which included the construction of at least two new breakers and electrification of or installation of modern machinery in its other collieries. To quote the president of the company in a statement made by him, the "concentration and consolidation of coal preparation plants on their properties in Pennsylvania, together with complete electrification both of mechanical equipment and of transportation, stand out as high lights in the company's extensive programme. A much greater degree of efficiency and economy in the production and preparation of Reading anthracite is expected to result from these de-

velopments." At the close of the year, one of the new breakers was approaching completion. It was to be the largest breaker in Pennsylvania, which meant the largest in the world. The Lehigh & Wilkes-Barre Coal Co. also began the excavation of a drainage tunnel to cost \$3,000,000, by which it was expected to drain several of its collieries to the south of Wilkes-Barre.

Other interesting developments, as reported by the Anthracite Bureau of Information, were the mechanization of the anthracite industry. The human slate picker, usually young boys or old men incapacitated for heavier work, and once the subject of sob-producing stories peculiar to the anthracite industry, had disappeared. Likewise, the mine mule, once occupying as important a place in the anthracite industry as did his brother the "mule" in the military establishment, had given or was rapidly giving place to a mechanical rival, a victim of the age of machinery. The modern breaker was equipped with mechanical slate pickers and such new coal-cleaning devices as the Chance separator, the Rheolaveur, and the hydrotator, to the operation of which was credited in no small degree the improvement in the quality of the anthracite being shipped to market.

BIBLIOGRAPHY. During the year, an important publication, *Anthracite in 1928*, by O. E. Kiesel and H. L. Bennett, was published by the U. S. Bureau of Mines, presenting in printed form the final statistics of the Pennsylvania anthracite industry in 1928. In addition to the standard tables of production, value, men employed, days worked, etc. the report contained data on the following subjects: Losses in shipments and fuels used in place of anthracite, decline in prices of domestic coal, the movement toward mechanized heating, automatic heat and anthracite, anthracite's effort to meet competition.

COCHIN-CHINA, *Kochin chin'a*. The southernmost colony in French Indo-China (see *FRENCH INDO-CHINA*). Area, estimated at 26,476 square miles, population estimated in 1928 at 4,119,832, consisting chiefly of Annamites, Cambodians, Mons, Chams, and Chinese, with a few Indians, Malays, Tagals and others. In 1927 there were 16,308 French and 10,000 other foreigners. Saigon, the capital, had a population in 1927 of 123,550, of whom 13,150 were Europeans. Cholón had a population of 198,713 of whom 93,556 were Chinese. There are about 1445 schools with 3337 teachers and 101,404 pupils. About four-fifths of the 2,410,834 hectares under cultivation are given over to rice. In 1927, 5,118,000 acres were under its cultivation and in the same year the production of cleaned rice amounted to 1,493,327 metric tons. Other crops are maize, beans, sweet potatoes, groundnuts, cotton, rubber, sugar cane, tobacco, coffee, coconuts, pepper, oranges, bananas, etc. Other sources of wealth are livestock and fisheries. The output of the latter being valued at 2,800,000 francs annually. There are 11 rice mills in Saigon and Cholón, which turn out 3000 tons of rice daily. There are also in these cities two sawmills, two soap factories, and a varnish factory. Commerce is largely in the hands of the Europeans and Chinese, although the Annamites are traders on a small scale. The total exports in 1927 amounted to 2,854,879,872 francs and the total imports, to 2,314,754,255 francs. In 1928 the local budget balanced at 19,810,136 piastres (par value of the

piastre equals \$0.50) Trade is carried on mainly through the port of Saigon, which was visited by 882 steamers of 2,029,297 tons in 1927. Cochinchina is ruled directly by a governor and a council of 24 members.

COINS, VALUES OF FOREIGN The legal estimates of the values of foreign coins on Jan. 1, 1929, as issued by the Secretary of the Treasury are given in the table on page 203.

COKE. Naturally, with the increased production of pig iron during the year 1929, the output of coke made a record for by-product coke and an increase in production of beehive coke. The 1929 figures are shown in the accompanying table.

PRODUCTION OF COKE AND PIG IRON, 1925-29
[Figures for coke in net tons, for pig iron in gross tons]

Year	By-product Coke	Beehive Coke	Total	Pig iron
1929 *	53,478,500	6,015,000	59,493,500	42,285,669
1928	48,713,025	4,492,804	53,205,829	37,817,804
1927	43,885,000	7,207,000	51,092,000	36,232,806
1926	44,377,000	12,489,000	56,866,000	39,070,470
1925	39,912,000	11,355,000	51,267,000	36,403,470

* The figures for 1929 are estimates subject to revision when final returns are furnished by the coke operators.

The total quantity of coal consumed at by-product plants in the United States during 1929 was estimated at 77,162,000 net tons, as against 70,165,906 tons in 1928, an increase of 10 per cent. Beehive ovens consumed 9,354,000 tons of coal in 1929, as against 7,017,974 in 1928.

The production of by-product and beehive coke for groups of States for the calendar years 1928 and 1929 (estimated) are given in the accompanying tabulation.

PRODUCTION OF COKE BY GROUPS OF STATES
[Net tons]

	Calendar years	
	1929	1928
By-product coke—		
New England, New Jersey, New York, east of Buffalo district	4,966,756	4,216,258
Pennsylvania, Buffalo district, Ohio, and adjacent plants	27,853,895	25,665,154
Alabama and Tennessee	4,899,826	4,440,458
Illinois, Indiana, Michigan, and Missouri	13,517,600	11,979,051
Northwest and Far West	2,237,604	2,012,104
Total	53,475,481	48,313,025
Beehive coke—		
Pennsylvania, Ohio, and West Virginia	5,385,100	3,908,187
Georgia, Kentucky, Tennessee, and Virginia	377,300	393,572
Colorado, Utah, and Washington	252,600	191,044
Total	6,015,000	4,492,803

The chief cause of the increase in coke production in 1929 was the greater activity of iron blast furnaces, the output of pig iron being increased by 11.8 per cent above the 1928 level. In 1929, 47 plants connected with iron furnaces produced 41,549,000 tons of coke, or 77.7 per cent of the total by-product output. The remaining 40 non-furnace plants produced 11,926,000 tons, or 22.3 per cent of the total. The by-product ovens contributed 89.9 per cent of the total output, as compared with 27.5 per cent in 1913, the beehive ovens contributed 10.1 per cent, as compared with 72.9 per cent in 1913. With the addition of 261 new ovens during the year the potential coking capacity of by-product plants was estimated at 59,000,000 net tons, with an increase in 1930 to

a potential capacity of 62,000,000 net tons through the construction of 408 additional ovens.

Allowing for imports and exports and for changes in producers' stocks, the indicated consumption of coke in 1929 was 57,812,000 tons. Of this amount, approximately 44,226,000 tons was consumed by blast furnaces in the manufacture of pig iron and ferro-alloys. The remaining 13,586,000 tons was used in foundries in smelting non-ferrous metals, in the manufacture of water gas, in miscellaneous other industrial uses, and for domestic heating.

COLE, MAJ GEN ELI KELLEY Officer in the United States Marine Corps, died in San Francisco, Calif., July 4, 1929. He was born in Carmel, N. Y., Sept. 1, 1867, and was graduated from the U. S. Naval Academy in 1888. Commissioned second lieutenant in the United States Marine Corps, July 1, 1890, he rose through the successive grades until made major general, June 3, 1924. He first commanded the Marine Barracks in Puget Sound, 1899-1901. From 1902 to 1910, Cole served alternately in the Philippines and in Panama, being returned to the United States for short periods. During 1911-14 he was attached to the office of the major general commandant of the Marine Corps of the Navy Department and in 1915 he commanded the Marine Barracks at Annapolis, Md. He was in Haiti, 1915-16, commanding the First Provisional Brigade of the Marines, for which service he was given the Navy Cross. In 1918 he was sent to France where he commanded the 5th Brigade of the U. S. Marines of the A. E. F., the first depot division of the 41st Division, and the American Embarkation Centre of the A. E. F. For this work, he was decorated with the Croix de Guerre and the American Distinguished Service Medal. On returning to America, he successively commanded Marine Barracks in Pennsylvania, South Carolina, and Virginia. After July 2, 1927, he was acting general of the Department of the Pacific with headquarters at San Francisco.

COLGATE UNIVERSITY. A nonsectarian institution for the higher education of men up Hamilton, N. Y., founded in 1819. In the autumn of 1929, there were 985 students enrolled. By vote of the board of trustees, the enrollment has been limited to 1000 students, the freshman class of 320 men was selected from a list of approximately 450 applicants. The faculty numbered 78 members. The productive funds amounted to approximately \$4,250,000, and the income for the year was approximately \$410,000. The library contained 110,000 volumes. A new chemistry building, costing \$450,000, was under construction in 1929. The building formerly used as a chemical laboratory was to be remodeled for use by the department of physics. President, George Barton Cutten, Ph.D., D.D., LL.D.

COLLEGES. See UNIVERSITIES AND COLLEGES.
COLOMBIA. A republic in the northwestern part of South America, third in population and fourth in size among the countries of that continent. Capital Bogotá.

AREA AND POPULATION. The area of Colombia is given at 440,846 square miles and the population according to the census of Oct. 14, 1918, 5,855,077; estimated in 1928 at 8,000,000. The total population was distributed as follows: whites 20 per cent; Negroes, 5 per cent; Indians, 7 per cent; mulattoes, 18 per cent; mestizos, 50 per cent. The net gain from immigration in 1926

VALUES OF FOREIGN COINS

Country	Legal Standard	Monetary unit	Value in U. S. money	Remarks	
Argentine Republic . . .	Gold	Peso	\$0 9648	Currency. Paper normally convertible at 44% of face value	
Austria	Gold	Schilling	1407		
Belgium	Gold	Belga	1390	1 belga equals 5 Belgian paper francs	
Bolivia	Gold	Boliviano	3650	Law of July 11, 1928 13½ bolivianos equal 1 pound sterling	
Brazil	Gold	Milreis	5462	Currency Government paper convertible at 4 567 paper milreis to the gold milreis (\$0 1196), by decree of May 23, 1928	
British Colonies in Australasia and Africa	Gold	Pound sterling	4 8665		
British Honduras	Gold	Dollar	1 0000		
Bulgaria	Gold	Lev	0072	By law of Nov 28, 1928	
Canada	Gold	Dollar	1 0000		
Chile	Gold	Peso	1217		
China	Silver	Tael	Amoy	5818	The tael is a unit of weight, not a coin The customs unit is the Haikwan tael The values of other taels are based on their relation to the value of the Haikwan tael
			Canton	5800	
			Chefoo	5584	
			Chin Kiang	5583	
			Fuchau	5381	
			Haikwan	5919	The Yuan silver dollar of 100 cents is the monetary unit of the Chinese Republic, it is equivalent to 637—of the Haikwan tael
			Hankow	5443	
			Kiaochow	5637	
			Nanking	5757	
			Nuchwang	5456	
			Ningpo	5593	Mexican silver pesos issued under Mexican decree of Nov 17, 1918, are of silver content approximately 41% less than the dollar here quoted, and those issued under decree of Oct 27, 1919, contain about 51% less silver
			Peiping	5671	
			Shanghai	5814	
			Swatow	5874	
			Takau	5854	
			Tientsin	5677	Dollar { Hong Kong } { British } { Mexican }
			Yuan	3770	
				3826	
Colombia	Gold	Peso	9738	Currency Government paper and silver	
Costa Rica	Gold	Colon	4653	Law establishing conversion office fixes ratio 4 colons (nongold) = \$1 U S	
Cuba	Gold	Peso	1 0000		
Denmark	Gold	Krone	2680		
Dominican Republic	Gold	Dollar	1 0000	U S money is principal circulating medium	
Ecuador	Gold	Sucre	2000	By law effective Mar 19, 1927	
Egypt	Gold	Pound (100 piasters)	4 9431		
Elmoria	Gold	Kroon	2680		
Finland	Gold	Markka	0252		
France	Gold	Franc	0392	By law of June 24, 1928	
Germany	Gold	Reichsmark	2382		
Great Britain	Gold	Pound sterling	4 8665		
Greece	Gold	Drachma	0130	By law effective May 14, 1928	
Guatemala	Gold	Quetzal	1 0000		
Haiti	Gold	Gourde	2000	Currency National bank notes redeemable on demand in American dollars	
Honduras	Gold	Lempira	5000	Legally established but not yet actually operative	
Hungary	Gold	Pengo	3650		
India (British)	Gold	Rupee	3650	By law effective April 1, 1927	
Indo China	Silver	Piaster	3832		
Italy	Gold	Lira	0526	By decree effective Dec 22, 1927	
Japan	Gold	Yen	4985		
Jugoslavia	Gold	Dinar	1930		
Latvia	Gold	Lai	1 0000	Currency Depreciated silver token coins	
Lithuania	Gold	Litas	1000	Currency Notes of Bank of Lithuania	
Mexico	Gold	Peso	4985		
Netherlands	Gold	Guilder (florin)	4020		
Newfoundland	Gold	Dollar	1 0000		
Nicaragua	Gold	Cordoba	1 0000		
Norway	Gold	Krone	2680		
Panama	Gold	Balboa	1 0000		
Paraguay	Gold	Peso (Argentine)	9648	Currency Depreciated Paraguayan paper currency	
Persia	Silver	Kran	0653	Currency Silver circulating above its metallic value Gold coin is a commodity only, normally worth double the silver of same denomination	
Peru	Gold	Libra	4 8665		
Philippine Islands	Gold	Peso	5000		
Poland	Gold	Zloty	3122	By decree effective Oct 18, 1927	
Portugal	Gold	Escudo	1 0805	Currency Inconvertible paper	
Rumania	Gold	Leu	0060	By law of Feb 7, 1929	
Russia	Gold	Ruble	5146	Pre war unit (One Soviet chervonets = 10 gold rubles)	
Salvador	Gold	Colon	5000		
Siam	Gold	Baht (Tical)	4424	By law of Apr 15, 1928.	
Spain	Gold	Peseta	1930	Valuation is for gold peseta, currency is notes of the Bank of Spain	
Straits Settlements	Gold	Dollar	5678		
Sweden	Gold	Krona	2680		
Switzerland	Gold	Franc	1930		
Turkey	Gold	Piaster	0440	(100 piasters equal to the Turkish £)	
Uruguay	Gold	Peso	1 0842	Currency Inconvertible paper	
Venezuela	Gold	Bolivar	1930		

was only 3048. The capital, Bogotá, had a population in 1918 of 143,944, and estimated in October, 1923, at 166,148. The country is divided into 14 departments, 3 intendencias, and 6 commissionerships. Other important towns with their populations in 1918 are Barranquilla, 64,543, estimated in 1923, 81,330; Medellín, 79,146, estimated in 1923, 86,641; Cartagena, 51,382; estimated in 1923, 68,119; Cali, 45,825, estimated in 1923, 68,777; and Manizales 43,203, estimated in 1923, 51,838. Manizales, which was destroyed by fire in 1925, has been rebuilt. By virtue of a law of Aug. 11, 1928, the taking of a general census of the Republic was authorized.

EDUCATION In 1927 there were 7531 primary and secondary schools in Colombia, with 449,111 registered pupils, 25 industrial schools, with 1392 students, and 6 art schools with 399 students. There were also 17 normal schools with 987 students. The oldest university is that at Bogotá (founded in 1572). This and the school of mines at Medellín are national institutions. The other universities are departmental.

PRODUCTION, MINERAL RESOURCES, ETC. Notwithstanding the increasing importance of petroleum production within the past few years, Colombia continues to be primarily an agricultural country. Coffee is the chief crop, amounting to 22 per cent of the total agricultural production. In coffee production, Colombia is exceeded only by Brazil. Favorable coffee prices and a good crop are quickly reflected in an active market and increased imports. Coffee production, in fact, is considered the most reliable national barometer. Prior to the World War, coffee represented but little more than 50 per cent of the total exports. By 1926 it constituted 80 per cent of all exports, but in 1928 the ratio dropped to 60 per cent. The United States takes about 90 per cent of the total coffee shipments.

Colombia was unusually prosperous in 1925, 1926, and 1927, but toward the latter part of 1927 a downward trend was noticeable. The year 1928, however, was one of unusual prosperity and stimulated the real estate speculation and inflation apparent since 1926. In 1928 signs of anxiety developed in the retail trade and wages rose to unprecedented levels due to the number of workers drawn from the coffee plantations to the oil fields and public works. The cost of living climbed steadily.

A succession of serious labor troubles in the banana districts hampered economic progress. The strike of banana-plantation laborers in 1928 causing a loss estimated at \$1,000,000. Business took a downward trend at the beginning of 1929 and in July the country was in the grip of a general depression with the credit situation serious. The exceptionally favorable conditions of the years 1925-28 inclusive were due primarily to excellent coffee crops marketed at high prices, and secondarily to the exploitation and exportation of petroleum, commencing with the opening of a pipe line from oil fields at Barranca Bermeja to the seaport of Cartagena in the summer of 1926. The depression of 1929 was attributed to the drop in the price of Colombian coffee on the New York market, the curtailment of public works, with the discharge of thousands of laborers, and the high cost of living.

The total value of agricultural products in 1927-28 was estimated at 628,000,000 gold pesos (1 gold peso equals \$0.97), of which maize represented 160,000,000, coffee 90,000,000, and cattle

56,000,000. Exports of coffee in 1928 totaled 2,795,000 bags (of 62½ kilos each), or 266,000 bags more than in 1927. Cotton production in the same year was 14,000,000 pounds. Cocoa, sugar, vegetable ivory, dyewoods, wheat, plantains, and rubber are other products.

Colombia is rich in minerals. Gold is found in nearly all the departments, the exports in 1927 totaling \$2,000,000. Other minerals more or less worked are copper, lead, mercury, cinnabar, manganese, emeralds, and platinum. Colombia produces one-half of the world's output of platinum, the remainder coming from Russia. Exports in 1927 were valued at \$3,500,000. The Government operates the emerald mines which produce 90 per cent of the world's supply, and controls the salt monopoly. Although only producing oil a comparatively short time, Colombia is already considered an important factor in making estimates of future world production. The completion of the work of looping the pipe line from the oil fields to the port of Cartagena increased the capacity of the line from 30,000 to 50,000 barrels per day. The production of crude oil in 1928 totaled 19,896,797 barrels (of 42 gallons), as compared with 15,014,474 barrels in 1927. Exports of crude oil were 18,101,435 barrels in 1928, valued at \$22,000,000, and 13,679,317 barrels in 1927. Coal mining is carried on almost exclusively in the Cali district, where production is estimated at about 100,000,000 tons annually. The extensive coal and iron deposits are largely undeveloped.

COMMERCE The total value of all exports in 1928 was \$116,602,745, of which \$94,500,000 went to the United States. The coffee exports in 1927, 151,730,000 kilos, valued at \$79,808,000, bananas, 196,624,000 kilos, valued at \$5,587,000, hides and skins, 7,229,000 kilos, valued at \$2,638,000. The platinum exported was valued at \$4,602,000. The value of 1928 imports, \$126,229,150. The United States supplied 43 per cent of 1927 imports, the United Kingdom, 15.4 per cent, and Germany, 12.7 per cent. Exports in 1928 totaled \$108,365,926 and imports \$107,369,910. Exports of crude petroleum in 1928 totaled 18,101,435 gallons, as compared with 13,679,317 barrels in 1927. Coffee exports totaled 2,795,000 bags in 1928 and 2,529,000 bags in 1927, the average price received on the New York market in 1928 being \$0.263 and in 1927, \$0.260. Colombian exports to the United States, amounting to about three-fourths of the total exports, increased slightly in 1928 owing to the higher coffee prices, and imports from the United States showed a decided increase over imports for the previous year. In 1929 imports from the United States fell below the 1928 level, but exports to that country continued to increase although retarded by low coffee prices. Besides petroleum and coffee, other leading exports in 1927 were cattle hides, \$3,076,672, bananas, \$5,310,991, alligator skins, gold bars, cotton, balsam, balatá, rubber, toquilla straw, cottonseed, leaf tobacco, ivory nuts, emeralds, and Panama hats. Exports in 1929 were officially estimated at \$120,625,000.

FINANCE Budget estimates for 1929 placed the revenue at 65,658,668 gold pesos and expenditures at 60,097,804 gold pesos (par value of peso is \$0.97). The 1928 budget provided for revenues of 51,944,056 gold pesos and expenditures of 45,158,061 gold pesos, the main items of estimated ordinary expenditure being government, 9,197,017 pesos, finance, 7,004,340 pesos, war, 6,927,293 pesos, public instruction and

health, 5,354,579 pesos, posts and telegraphs, 5,757,639 pesos. Main items of estimated revenue in 1928 were national properties, 8,385,418 pesos; national services, 2,585,261 pesos, taxes, 32,168,548 pesos, new revenues, 5,050,000 pesos. Extraordinary expenditures in 1928 were placed at 30,785,000 gold pesos.

Actual revenues in 1928 amounted to 80,000,000 pesos, or about 18,000,000 pesos more than in 1927, according to the Colombia press. Revenues were greater than the budget estimates during the first quarter of 1929, but in May the Government found it necessary to economize and the budget was reduced by about 9,000,000 pesos. In November, the Minister of Finance informed the Senate that there was no money in the Treasury and the year ended with a deficit. Preliminary figures for the 1930 budget estimated revenues at 62,000,000 pesos (about \$80,140,000) and expenditures at 53,000,000 pesos (about \$51,110,000), which would leave a surplus of 9,000,000 pesos to be applied on the 1929 deficit. This represented a proposed reduction of nearly \$30,000,000 in expenditures, the principal cuts being made in appropriations for the ministries of Public Works, Education, and War. The national debt on Dec 31, 1929, was approximately \$84,456,000, of which \$72,770,171 was held abroad.

In the four years preceding 1929, Colombia spent more than \$100,000,000 on railway and other construction and the departmental governments another \$50,000,000. Foreign loans floated by Colombia up to June 30, 1929, totaled 248,075,797 pesos, of which 94,948,852 was for the national Government, 69,914,250 for the departments, 26,221,725 for the municipalities, and 56,901,240 for the banks. The bonds outstanding on the same date amounted to 223,029,746 pesos. From 1923 to 1926, the total debt of Colombia was cut almost in half, but from the end of 1926 to the end of 1928 the external public debt increased by about \$58,000,000. A law passed on June 5, 1928, limited the borrowing capacity of departments and municipalities. The balance of the Bank of the Republic, on June 20, 1929, showed a decrease in the gold reserve of 7,110,866 pesos and an increase in rediscounts, as compared with the balance on the same date, 1928. Note circulation fell from 50,977,000 pesos on June 30, 1928, to 48,656,000 pesos a year later.

The mission of American financial experts engaged by the Ministry of Finance ended its work Aug. 25, 1929. It recommended the organization of a Bureau of the Budget, and the reorganization of the financial operations of the national Government and its administrative units.

COMMUNICATIONS In 1928 there were 1750 miles of railway in Colombia, 11 of the 14 lines being state owned and the remainder British owned. A 521-mile stretch of railroad to serve the Western section of the Republic is under construction between Bolombolo and Canadistula. In 1929 contracts were let for the construction of lines between Ibaguë and Armenia and between Velez and the Magdalena. The first will make possible direct railway communication between the capital and the Pacific and the second will connect eastern Colombia with the Magdalena River. Motor roads in use in 1928 totaled 2340 miles. A highway between Ibaguë and Armenia was opened in 1929, making it possible to reach Bogotá through the Pacific port of Buenaventura in three days by train and automobile. The former shortest route was from the Caribbean

coast and required nine days by boat and train. Improvement of the Magdalena River, which is the country's main traffic route, was being carried on. River transportation, without transshipment, was to be provided by a new company. The river ports and the port of Barranquilla on the Atlantic coast were badly congested during 1928 and this fact, with the high transportation charges, vitally affected the economic situation. In 1926, 2362 vessels of 2,849,386 gross tons entered Colombian ports and 2074 vessels of 1,895,140 gross tons cleared. Airplane lines connect Barranquilla, Buenaventura, and other cities. In 1929 a new all-service line was opened to Colon, Panama.

GOVERNMENT The executive power is vested in a president elected for four years by direct popular vote, and the legislative power in a congress of two houses: the senate of 34 members, elected indirectly for four years, and the house of representatives with 92 members, elected by direct popular vote for two years. President in 1929, Dr. Miguel Abadía Méndez, elected Feb. 14, 1926, for the term 1926-30.

HISTORY Internal politics were unusually turbulent during 1929, due in large measure to preparations for a presidential election, and in consequence Congress adjourned November 17 without acting upon a number of important bills. Chief among these were the proposed new oil law; the appropriations bill, measures for the reorganization of the National Council of Communications, the administration of the National Railways, and the establishment of a fiscal agency, the customs tariff, and the agrarian credits bill. The failure to pass the appropriations bill left the Government with the same budget as in 1929, although the business depression indicated that the revenues would show a considerable decrease.

President Abadía Méndez on November 19 appointed an advisory board to assist the Ministers of Finance and Public Works in dealing with their problems left unsolved by Congress. The advisory council submitted a new budget with reduced expenditures. The failure of the oil bill left foreign oil companies subject to the emergency oil law of 1927, protests against the law having been overruled by a decision of the Supreme Court in 1929. The cancellation, under the emergency law, of an oil concession held by an American company led to the diplomatic intervention of the United States in 1928. Because of the change in government in 1930, observers considered it improbable that legislation to replace the emergency law would be enacted before 1931.

In June, the dismissal of the Mayor of Bogotá by the national Government led to a boycott of Bogotá trainways, a student strike, and a huge street demonstration, which was charged by mounted police. Many were trampled upon and a student was killed. The mayor's dismissal followed his removal of the managers of the municipal aqueduct and trainways, one of whom was the brother-in-law of President Abadía Méndez. The latter was obliged to reorganize the Cabinet and the provincial and municipal administrations to prevent further demonstrations. Ignacio Rengifo, Minister of War, and Arturo Hernandez, Minister of Public Works, resigned from the Cabinet, being succeeded by Premier Gabriel Rodríguez Diago (provisionally) and Rafael Escalón, respectively.

The Abadía Méndez administration came in for violent criticism during the sessions of Congress in October. The Lower House, after debating for a week, appointed a committee to discover whether there were sufficient grounds for the House to impeach the President before the Senate. The specific complaint was that the President had violated the constitution by declaring martial law during labor troubles in the banana zone in 1928. The committee, on November 14, reported that there were no grounds for such action. These maneuvers were carried on in the face of appeals from Archbishop Perdomo, Primate of Colombia, and the two Presidential candidates, General Vasquez Cobo, and Dr. Guillermo Valencia, to cease political agitation and pass urgently needed legislation. Both candidates were Conservatives. The Liberals having presented no candidate the Liberals had abstained from voting since 1921 because of alleged election frauds, but agreed to participate in the 1930 election following the adoption of a law requiring every voter to present a certificate of identification.

Colombia's relations with the United States were injected into the campaign, Senor Valencia advocating more cordial relations with the northern republic in view of the increasingly close ties in trade and communications between the two countries.

His attitude was severely censured by former President Concha, then in Rome, who was influential in the Conservative party. The abolition of the death penalty was also an outstanding issue in the campaign.

In the elections for Congress held on May 6, the Conservatives, as was expected, won a majority of seats over their Liberal opponents. Disorders attributed to Communist propaganda occurred in the Province of Santander during July. Troops and police quelled the disturbance and arrested a number of leaders. Critics of the government attributed the revolt to unendurable labor conditions in the district.

On November 15, Congress ratified a treaty settling the only remaining boundary dispute between Colombia and Brazil through reciprocal free navigation of the Amazon, Caqueta, and Putumayo rivers. Liberal members of Congress opposed the treaty.

COLORADO. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 939,629. The estimated population on July 1, 1928, was 1,090,000. The capital is Denver.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Hay	1929	1,590,000	3,103,000 *	\$35,174,000
	1928	1,583,000	2,805,000 *	32,345,000
Wheat	1929	1,397,000	13,422,000	16,031,000
	1928	1,359,000	13,564,000	15,815,000
Sugar beets	1929	230,000	2,880,000 *	
	1928	179,000	2,394,000 *	16,687,000
Corn	1929	1,366,000	23,222,000	17,416,000
	1928	1,438,000	18,694,000	12,712,000
Potatoes	1929	88,000	12,320,000	13,552,000
	1928	110,000	13,422,000	6,039,000
Barley	1929	651,000	13,671,000	7,832,000
	1928	547,000	13,128,000	7,089,000
Dry beans	1929	294,000	1,911,000	5,160,000
	1928	309,000	1,890,000	4,725,000
Oats ...	1929	212,000	6,672,000	3,155,000
	1928	193,000	5,983,000	2,892,000

* Tons

MINERAL PRODUCTION. The coal production of the State, which contributes somewhat less than one-half of the entire annual value of its mineral industry, on the basis of recent years, was maintained in 1928 at about the same degree of activity as in 1927. There were produced in 1928, 9,847,707 short tons of coal, in 1927, 9,724,075. The production of 1928 attained the value of \$27,613,000, that of 1927 reached \$27,044,000, as against \$29,529,000 for 1926. The production of gold recovered only in small part from the sharp fall of 1927, the production of 1928 being \$5,304,876 and that of 1927, \$5,279,118 in value. The placer operations were reported to have contributed \$61,406 of the gold production of 1928. The silver produced attained 4,052,253 fine ounces, in value \$2,370,558 for 1928, for 1927, 3,784,005 fine ounces, or \$2,145,871. Copper was produced to the value of \$1,237,829 in 1928, a considerable gain over the \$742,846 of 1927. The lead production fell off, being 53,501,723 pounds for 1928, as against 66,772,557 for 1927; in value, \$3,103,100 for 1928 and \$4,206,671 for 1927. Zinc production, 71,462,000 pounds for 1928, was little changed from that of 71,729,000 pounds for 1927; the value, however, was lower, being \$4,359,182 for 1928, as against \$4,590,076 for 1927. The combined value of the product of the five metals was \$16,375,355 for 1928, for 1927, \$16,965,172. Petroleum production was about the same in quantity, 2,722,000 barrels for 1928, as against 2,831,000 for 1927, the value was lower, being \$2,400,000 for 1928 (estimated) to \$3,400,000 for 1927. Clay products for 1927, the latest reported year, attained \$2,998,486, but fell short of the \$3,381,770 of 1926, as well as of the value for 1925. The total mineral product of the State attained for 1927 the value of \$58,855,263, for 1926, \$65,597,487.

The estimated output of gold, silver, copper, lead, and zinc from Colorado mines in 1929 in terms of recovered and estimated recoverable metal was 211,381 fine ounces of gold, 4,323,387 ounces of silver, 8,352,000 pounds of copper, 49,751,000 pounds of lead, and 59,312,000 pounds of zinc, according to the U. S. Bureau of Mines. These figures are to be compared with 256,623 fine ounces of gold, 4,052,253 ounces of silver, 8,594,646 pounds of copper, 53,501,723 pounds of lead, and 71,462,000 pounds of zinc in 1928. Compared with 1928 figures, gold shows a decrease of \$935,244, silver an increase of 271,134 ounces, copper a decrease of 242,646 pounds, lead a decrease of 3,750,723 pounds, and zinc a decrease of 12,150,000 pounds. The gross estimated value of the output of metals in Colorado in 1929 is gold, \$4,369,632, silver, \$2,308,689, copper, \$1,495,008, lead, \$3,159,189, zinc, \$3,944,248, or a total of \$15,276,766, compared with \$16,375,355 in 1928.

The Cripple Creek district in 1929 produced \$2,595,928 in gold, as compared with \$3,050,181 in 1928. This decrease is approximately equal to the 1928 output of the Portland-Independence cyanidation-concentration mill at Victor, closed Dec. 1, 1928.

FINANCE. State expenditures in the year ended Nov. 30, 1928, as reported by the U. S. Department of Commerce, were for maintenance and operation of governmental departments, \$11,519,392 (of which \$838,110 was for local education), for interest on debt, \$557,468, for permanent improvements, \$5,454,989; total, \$17,531,849 (of which \$7,067,639 was for highways, \$2,148,055

being for maintenance and \$4,919,584 for construction). Revenues were \$18,808,280. Of these, property and special taxes furnished 37.9 per cent, departmental earnings and remuneration for officers' services, 11.2, license sales, 33.3 (including gasoline taxation of \$4,118,399). The State debt, \$10,124,206 net of sinking funds, included \$8,200,000 for highways. Property valuation was \$1,577,500,380, State taxation thereon, \$5,616,114.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 4982.82. There were built, in 1929, 5.25 miles of additional first track.

MANUFACTURES. According to the Federal biennial Census of Manufactures published by the U. S. Department of Commerce in 1929 and dealing with the operations of 1927, there were in the State, in 1927, 1463 manufacturing establishments. These employed 32,001 wage earners, whose wages for the year totaled \$43,193,765. Materials and supplies used in production cost \$173,277,399. Manufactured products attained the combined value of \$278,221,431.

POLITICAL AND OTHER EVENTS Permission was granted to the Denver & Salt Lake Railroad by the Interstate Commerce Commission on April 23 to build the projected line known as the Dotsero Cutoff, for the purpose of connecting Denver with Salt Lake by a short line utilizing the Moffat Tunnel. It was provided that the Denver & Rio Grande Western be permitted to operate through the tunnel. The fact that the payment of assessments upon property owners in the tunnel district was causing widespread hardship and that, under the existing lease, the railroad had to pay interest on two-thirds of but a portion of the bonds issued by the tunnel commission for construction afforded occasion for a move on the commission's part to demand higher payments of the railroad. The railroad applied for an injunction in the Federal District Court at Denver and the validity of the existing lease was sustained by a decision rendered September 20.

EDUCATION A general effort was made in the public schools in 1929 to concentrate the teaching effort on the development of character. To this end, the State Department of Education, as reported in the *Journal of the National Education Association*, gave out appropriate slogans for each county and formulated an outline of work. There were reported in the 63 counties of the State in 1928, 2032 school districts and 3183 schoolhouses in use. The number of children of school age (reckoned to be from 1 to 21 years) was estimated at 303,481. There were enrolled in the public schools 303,481 pupils and the number of teachers employed was 9647. Teachers' salaries ranged from \$179.23 a month for men and \$133.55 for women in high schools to \$106 for men and \$99.58 for women in one-teacher schools. The total expenditure of the year for public schools was \$25,410,608.

CHARITIES AND CORRECTIONS The State Department of Charities and Corrections consisted only of the Governor, as head, and a skeletal organization, concerned largely with applications for pardons and paroles, which lay within the sole disposal of the Governor, a former Pardon Board having been abolished. The correctional institutions and the insane hospital were directed by a single body, the Colorado Board of Corrections, composed of three members ap-

pointed under the civil service system. Eleemosynary institutions were under other boards. Among the institutions were State Penitentiary, Canon City; Reformatory, Buena Vista, State Hospital for the Insane, Pueblo, Homes for Mental Defectives, at Ridge and at Grand Junction, State Industrial School for Boys, Golden, State Industrial School for Girls, Denver, State Home for Dependent and Neglected Children, Denver. The penitentiary had, on November 30, 1108 inmates, the State hospital, 2890, the State Home for Dependent and Neglected Children, 198.

LEGISLATION The State Legislature convened on January 2 in its twenty-seventh biennial session, and adjourned on April 25. It changed the fiscal year of the State government to begin with July 1 and made necessary adjustment of the financial system of the State to the change. The proposal to call a constitutional convention was referred to popular vote. Jurisdiction over the Rocky Mountain National Park was ceded by the State to the Federal Government. A bill providing longer terms of imprisonment for the habitual criminals, somewhat after the model of the statutes of New York and several other States, was enacted, though weakened by amendments eliminating from the provisions of the act certain of the more common crimes. An enactment known as the Range Bill regulated the subjects that had caused long and bitter dispute between cattlemen and sheep owners over their respective claims to use of the open range for stock. Appropriations for the ensuing two years were made to the total of \$7,890,743. An increase of the salary of the governor to \$10,000 a year, from \$5000, and pay increases to the justices of the State Supreme Court were both vetoed by Governor Adams.

A measure for the control of predatory animals had attached to it a special tax levy on livestock. Life insurance policies in which another than the estate or the administrator of the estate of the deceased was named as beneficiary were exempted from the State inheritance tax. Debt incurred by the State in dealing with the coal strike of 1928 was validated by statute.

Former Judge Ben B. Lindsey, leader in the Colorado movement for the better control of juvenile offenders and nationally known as the advocate of companionate marriage, was disbarred from the practice of law in the courts of the State, by the order of the State Supreme Court, rendered on December 9. The charge leading to this action was that while on the bench Judge Lindsey had accepted money from Mrs. Helen Elwood Stokes for services rendered in her contest of the will of her former husband. The action against Lindsey was subsequent to a long conflict between him and his political opponents. The State penitentiary at Canon City was the scene, in the opening days of October, of one of the several sanguinary prison mutinies that marked the year in the United States. The mutineers seized a number of prison guards and used them as hostages in a demand for safe conduct to liberty. Their demand was refused and the mutineers were besieged and finally overcome on October 4. Four guards held as hostages were killed, as well as three other guards and five convicts. Colorado signed, with New Mexico and Texas, on February 12, a compact to maintain distribution of the waters of the Rio Grande River on the existing basis provisionally until 1935, when it was hoped that a permanent agree-

ment would have been attained. Construction on a \$5,000,000 city hall at Denver proceeded, with some delay due to the non-delivery of structural steel. The discovery of a turquoise field in the southern San Luis Valley was reported in April.

OFFICERS Governor, William H. Adams, Lieutenant-Governor, George M. Coilett, Secretary of State, Charles M. Armstrong, Treasurer, William D. MacGinnies, Auditor, Joseph P. Jackson, Attorney-General, Robert E. Winborn, Superintendent of Public Instruction, Katherine L. Craig.

JUDICIARY Supreme Court. Chief Justice, Greeley W. Whitford, Associate Justices, Haslett P. Burke, John Campbell, John H. Denson, John T. Adams, Charles C. Butler, Julian H. Moore.

COLORADO, UNIVERSITY OF A coeducational, State institution of higher learning in Boulder, Colo., founded in 1876. The number of students enrolled for the autumn of 1929 was 2983, the summer session enrollment was 3681. There were 288 faculty members, exclusive of assistants. The total income for general maintenance from State tax fees, tuition, etc., was estimated at \$1,011,590, while \$420,729 was received for the operation of hospitals, including fees, and \$37,692 for new buildings. The library contained 209,076 volumes, 17,600 pamphlets, and 2550 maps. The gift of \$2000 annually was received by the Denson Memorial (Medical) Library from the Denson Foundation. President, George Norlin, Ph.D., LL.D.

COLORADO STATE PENITENTIARY.

See CRIME.

COLORED METHODISTS See METHODISTS, COLORED.

COLUMBIA UNIVERSITY A nonsectarian institution for the higher education of men and women in New York City, founded in 1754. At Morningside Heights, Broadway and 116th Street, are located Columbia College (for undergraduate men), Barnard College (for undergraduate women), Teachers College, including the departments of education and practical arts, the professional schools of law, engineering, architecture, journalism, business, library service, and optometry, and the non-professional graduate faculties of political science, philosophy, and pure science. The College of Physicians and Surgeons and the School of Dental and Oral Surgery are on West 168th Street, the College of Pharmacy on West 68th Street, Seth Low Junior College in Brooklyn, N. Y., and St. Stephen's College at Amundale-on-Hudson, N. Y. In addition, through university extension classes and the summer session, courses are offered for resident students at Morningside Heights, and other courses are offered at Camp Columbia, as well as at several extramural centers.

On the basis of the enrollment on Nov. 1, 1929, the total number of resident students for the year was estimated at 37,898, distributed as follows: Undergraduates, 3715, of whom 1950 were in Columbia College, 1100 in Barnard College, 390 in Seth Low Junior College, 135 in St. Stephen's College, and 140 in other schools. Graduate and professional students, as follows: Graduate faculties, 3080; law, 600, medicine, 434, engineering, 221, architecture, 109, journalism, 177, business, 472, dental and oral surgery, 279; pharmacy, 800, optometry, 23, library service, 240; Teachers College, 6620. University classes, 10,006, unclassified, 305. Of 13,700 non-

resident students, 10,800 were registered in home-study courses and 2900 in special and extramural courses. There were 13,817 students registered for the summer session of 1929. The grand total is exclusive of 300 duplicate registrations.

The faculty and officers of administration in 1929 numbered 2785, of whom all but 37 were in active service. This number was distributed as follows: Professors, 319; associate professors, 123, assistant professors, 220, associates, 97, instructors, 383, lecturers, 73, assistants, 207, curators, 3, associates, instructors, lecturers, and assistants in Teachers College, 216, instructors and lecturers in the College of Pharmacy, 25, instructors in extension and home study, not included above, 503, instructors in summer session, not included above, 516, officers of administration, 63.

Among the professorial appointees for the year 1929-30 were Elliott E. Cheatham (law), Armin K. Lobeck (geology), Thomas Thornton Read (mining engineering), Robert P. Hamilton, Jr. (law), Eric Randolph Jette (metallurgy), J. Thomas Hopkins (education), Claus W. Jungelut (bacteriology), Grayson N. Kefauver (education), Ewing C. McBeath (dentistry), Lois H. Meek (education), William R. Torgerson (tropical medicine), Leon A. Tulin (law), Clifford L. Brownell (physical education), Philip B. Buckley (mining), Hans Smetana (pathology), Douglas M. Whitaker (zoology), Oskar Wintersteiner (biological chemistry), Eleanor M. Whitmer (education), and Carl Garabedian (mathematics, St. Stephen's College). The visiting professors appointed for the year 1929-30 were Samuel Angus of the University of Sydney, Thomas E. Beiner, former chancellor of the University of Porto Rico, Ellwood P. Cubberley of Stanford University, Miles A. Dressell of State Teachers College, San José, Calif., Alfons Hlilka of the University of Göttingen, Ernest Horn of the University of Iowa, Vittorio Macchioro of the University of Naples, Antoine Meillet of the Collège de France, E. Allison Peers of the University of Liverpool, Giuseppe Piezzolini, Italian representative of the Bureau of Intellectual Cooperation of the League of Nations, and Henry Suzzallo, former president of the University of Washington.

Important events of the year 1928-29 included the dedication of the new Medical Centre, the opening of the Casa Italiana and of the Deutsches Haus, the establishment of the university medal, the dispatch of an anatomical expedition to Central Africa, the celebration of the one hundredth anniversary of the founding of the College of Pharmacy, the affiliation of Greenwich Settlement House with the university, the reorganization of the department of Romance languages, the change in title of the faculty of applied sciences to that of the faculty of engineering, with revision of the curriculum in the school of engineering, the conference of major industries, and the religious conference of representatives of the Jewish, Roman Catholic, and Protestant churches.

The one hundred and seventy-fifth anniversary of the founding of the university was celebrated during the week ending October 31. By gifts from many sources, the committee in charge financed the painting of 47 portraits, 27 of which were of officers and alumni identified with Columbia in the eighteenth and nineteenth centuries. On this occasion, the university medal, established by the trustees to reward outstanding achievement by

Columbia alumni, was awarded for the first time to 47 graduates of foreign birth who had returned to conspicuous public service in their native countries; honorary degrees were bestowed on 49 distinguished alumni and 74 members of the faculties.

On November 4, the trustees announced nine new professorships named in honor of scholars who had contributed to the building of the university, the Moore Professorship of Philosophy, named in honor of Presidents Benjamin Moore and Nathaniel F. Moore and held by Prof. J. J. Coss, the Stevens Professorship of Mechanical Engineering, named for John Stevens and held by Prof. I. Lucke, the Hosack Professorship in the Faculty of Medicine, in memory of David Hosack and held by Prof. C. C. Lieb, the Renwick Professorship of Civil Engineering named for James Renwick and held by Prof. I. K. Finch, the Da Ponte Professorship of Italian, commemorating Lorenzo Da Ponte and held by Prof. D. Bigongiari, the Newberry Professorship of Geology, in memory of John S. Newberry and held by Prof. C. P. Berkey, the Vinton Professorship of Mining Engineering, in memory of Francis E. Vinton and held by Prof. T. T. Read, the Brander Matthews Professorship of Dramatic Literature, held by Prof. G. C. D. Odell, and the Burgess Professorship in the Faculty of Political Science, in honor of John W. Burgess and held by Prof. L. Rogers.

The capital endowment in 1929, excluding value of plant (including Barnard College, Teachers College, College of Pharmacy, and St. Stephen's College), was \$73,543,073, the estimated total resources, as of June 30, 1929 (including Barnard College, Teachers College, and the College of Pharmacy), were \$131,088,851, and the annual budget for 1929-30 (including Barnard College, Teachers College, College of Pharmacy, and St. Stephen's College) was \$15,703,074. During 1928-29 the university received gifts in money representing a total of \$3,017,928. The principal additions to general endowment were payment made on account on estates still in course of administration. The chief additions to special endowments were the gift by Mrs. Nathan J. Miller of \$250,000 to establish the Miller Endowment Fund to maintain a chair of Jewish history, literature, and institutions, and various large gifts to the endowment fund of the School of Dental and Oral Surgery, including \$30,000 from Dr. Henry W. Gillett. In addition, \$525,000 was received from Edward S. Harkness for the purchase of a site for a residence hall for the medical school and an anonymous gift of \$175,000 toward the cost of erecting this hall. Gifts to income totaled \$1,044,354. The library contained 1,166,600 volumes. President, Nicholas Murray Butler, Ph.D., Hon.D., LL.D., Litt.D.

COMETS. See **ASTRONOMY**

COMMISSION PLAN. See **MUNICIPAL GOVERNMENT**

COMMODITY PRICES. See **BUSINESS REVIEW, FINANCIAL REVIEW**

COMMUNISM. **COMMUNISTS** See **GERMANY, under History, SOCIALISM**

COMORO ISLANDS. See **MAOISTE AND COMORO ISLANDS**

COMPENSATION LAWS. See **WORKMEN'S COMPENSATION**

CONCERTS. See **MUSIC**

CONCILIATION, INTERNATIONAL. See **ABSTRACTION, INTERNATIONAL**

CONGO, BELGIAN. A Belgian colony in Central Africa, formerly the Congo Free State, which was annexed to Belgium in 1908. The boundaries were defined by declarations of August, 1885, and December, 1894, and by treaties with Germany, France, Great Britain, and Portugal. Area, estimated at 918,000 square miles, the native population is placed at 8,500,000 (Bantu). On Jan. 1, 1928, the white population numbered 20,702, of whom 14,147 were Belgians. The chief city and former capital is Boma, by a royal decree of 1923, the capital was transferred to Kinshasha, which was renamed Leopoldville. Other important towns are Elizabethville, Stanleyville, and Kookilhatville. Catholic and Protestant bodies carry on missionary work, the number of Catholic missionaries in 1927 being 1181 and of Protestant, 592. In co-operation with the Government, they supply means of education, and there are several educational institutions under direct government control, at the more important towns. In 1928 the government grant for education to the missionaries amounted to 9,184,600 francs, while the total expenditure on education was 23,428,434 francs.

COMMERCE, FINANCE, ETC. Total imports for consumption during 1927 reached 649,585 metric tons valued at \$41,599,000, as compared with 631,584 tons valued at \$42,158,000 for the preceding year. Exports rose from 203,078 metric tons valued at \$23,775,000 in 1926 to 223,266 tons valued at \$29,336,000 in 1927.

The budget for 1928 provided revenues of 521,563,585 francs and expenditures of 521,241,955 francs. The debt on Dec. 31, 1927, was 1,893,050,983 francs, of which 1,770,411,383 francs were consolidated debt and 122,639,600 francs floating debt. Steamers belonging to the Government ply on the Congo in its navigable section from its mouth to Matadi, a distance of 95 miles, and government and private companies supply a transport service on the upper Congo and its tributaries. There are over 1000 miles of navigable water between Stanley Pool and Stanley Falls, and above Stanley Falls there is another section navigable for about 585 miles. On Jan. 1, 1928 there were 2187 miles of railroad open to traffic and 9375 miles of road partly suitable for motor traffic. The extension of the Benguela Railway to the western Katanga mines was expected to be completed by August, 1930. Copper production of these mines was about 338,626,000 pounds annually and it is estimated that the output will increase to 500,000,000 pounds with the advent of the railroad. A motor road linking the Nile and Congo rivers was completed in 1929, running from Stanleyville on the Congo to Rejaf, the Nile terminus of navigation from Khartum.

Governor-General in 1929, Lieutenant-General Tilkens, appointed Dec. 27, 1927.

CONGO, FRENCH. See **FRENCH EQUATORIAL AFRICA**

CONGO FREE STATE. See **CONGO, BELGIAN**

CONGREGATIONALISM. A religious denomination founded in the United States by the Pilgrims in Plymouth, Mass., in 1620 under the leadership of Brewster, Bradford, and Winslow. The origin of this movement lay in the Separatist activity in England. The Puritans of Massachusetts Bay followed a similar tendency and, as a result, the essential elements of Separatism and Puritanism were combined in Congregation-

alism. In this denomination, each church holds the right to frame its own statement of belief, and the policy of the denomination, as a whole, represents adaptation to conditions rather than accord with a theory of church government. The national council, by which the administrative affairs of the church are carried on, has no ecclesiastical authority, but includes ministerial and lay delegates elected by the State conferences and district associations.

The national council meets biennially, the session in 1929 having been held May 22-June 3 in Detroit, Mich. The principal feature of this meeting was the approval by the council of a plan of union with the Christian Church, which in turn was concurred in by the convention of the Christian Church on Oct. 25, 1929, in Piqua, Ohio. See CHRISTIAN CHURCH. The plan provides that the membership of the National Council of Congregational Churches and the membership of the General Convention of the Christian Church shall constitute the voting membership of the General Council of the Congregational and Christian Churches, in which body the two denominations shall merge such interests as do not require the legal attention of either of the separate bodies, each of which will maintain its existence for necessary separate action for the time being. Provision also is made for the common administration of all benevolent activities, including home and foreign missions, religious education, and the like. Both bodies throughout their histories have been democratic in organization, and the plan of union provides for full local autonomy in the local church and in groups of churches associated together.

Statistics of the denomination for Jan. 1, 1929, showed 5497 churches, 5648 ministers, and a church membership of 939,130. There were 3059 young people's societies, with a membership of 149,887. The Sunday-school enrollment was 727,088. The total raised for all benevolences was \$4,166,952, and the home expenses of the church were \$21,713,328. The national benevolence societies of the denomination include the American Board of Commissioners for Foreign Missions and the Congregational Home Boards, consisting of the following corporations unified in their operations by the election of an identical board of directors for all American Missionary Association, Congregational Home Missionary Society, Congregational Church Building Society, Congregational Board of Ministerial Relief, Congregational Sunday School Extension Society, and the Congregational Publishing Society. The Annuity Fund for Congregational Ministers provides a participating plan of retiring ministers.

The American Board of Commissioners for Foreign Missions is the oldest foreign-missionary society in America, having been organized June 29, 1810. On Jan. 1, 1929, there were 17 missions under 12 different flags, the stations connected with these missions numbered 104 and the out-stations, 1525. The missionaries holding life appointments numbered 628 and included 147 ordained men, 67 unordained men, 201 wives, and 213 single women. There were also 90 associates serving for shorter periods, bringing the total number of missionaries up to 718, native workers numbered 5755. Religious services were carried on in 2560 places, the organized churches numbered 809, with 98,841 communicants. The total church constituency numbered 306,920, Sunday schools, 1285; theological seminaries and

training schools, 24, with an attendance of 1351 students; colleges, 11, with 3882 students, secondary schools, 96, and primary and elementary schools, 1149, with a total enrollment of 85,377. There were 27 hospitals and 51 dispensaries, with a staff of 44 physicians and 24 foreign nurses. Total expenditures of the board for the year ending Aug. 31, 1928, were \$2,120,935.

The field of the American Missionary Association included Negroes, Indians, and mountaineers in the South and Southwest, Orientals and Indians in the West, Porto Ricans, Mexicans, and Hawaiians. Statistics of the association show that in 1927-28 there were 200 churches with 10,559 members and 31 schools with an enrollment of 7211 pupils. Expenditures during the same period amounted to \$1,413,782. The Congregational Home Missionary Society with its

Congregational Sunday School Extension Society, organizes schools and churches and assists in the commissioning and support of pastors in four-fifths of the territory of the United States. In the remainder of the country, similar work is done by independent State conferences. In 1928 these societies helped to maintain 684 churches and preaching stations, having a total membership of 38,175, and received 3306 persons into church membership, 462 home missionaries were enrolled. Expenditures amounted to \$519,376 and total receipts, to \$516,764.

The Annuity Fund for Congregational Ministers was reported to have assets totaling \$8,518,489, the membership was 2472, and annuity payments amounted to \$164,070. The Congregational Church Building Society received \$320,951 in 1928 for current use and voted 208 church grants and loans and 37 parsonage loans amounting to \$533,543. The society also paid \$589,902 toward 121 new churches and 39 parsonages, leaving 139 applications for grants, church loans, parsonage loans, etc., which could not be provided for because of lack of funds.

CONGREGATIONAL CHURCHES AND MEMBERS

Countries	Churches Chapels and Stations	Members of Churches	Members of Sunday Schools
Africa *	946	51,098	26,444
Australia and New Zealand	529	22,764	32,648
Brazil	163	3,589	7,178
British Guiana	47	3,472	2,248
Bulgaria *	49	1,284	1,950
Canada *	7,750	637,359	619,778
China *	885	39,924	10,073
Czechoslovakia *	202	3,591	982
England and Wales	4,417	453,814	581,489
India and Ceylon *	1,713	54,768	54,559
Ireland	52	2,148	3,711
Jamaica	34	8,289	4,014
Japan *	306	27,839	26,421
Madagascar *	894	30,050	38,464
Mexico *	31	698	909
Micronesia *	82	3,374	3,911
Newfoundland *	4	225	330
Papua *	47	4,302	6,037
Philippines *	79	3,397	3,200
Scotland	167	27,839	26,421
South Seas *	292	19,529	18,929
Spain *	13	349	370
Turkey, Greece and Syria	74	3,049	5,998
United States	5,497	939,130	727,088
Totals	24,275	2,389,590	2,197,430

* United Church Comprises Presbyterian, Methodist, and Congregational churches.

* Includes reports of London Missionary Society and American Board.

* Repeated from last *Congregational Year Book*.

Among the 10 theological seminaries with which the denomination was affiliated were: Chicago Theological Seminary; Yale Divinity School, Hartford School of Religious Pedagogy; Oberlin College, and Pacific University. In addition, there were 41 colleges which have had some historical relation to Congregationalism, although a number of them are now undenominational. The table on page 210, reprinted from the *Congregational Year Book* for 1928, gives statistics of international Congregationalism.

The headquarters of the national council are at 287 Fourth Avenue, New York City. The officers for 1928-30 included Moderator, Dr. Fred B. Smith, New York; Associate Moderator, Franklin Warner, White Plains, N. Y., Secretary, the Rev. Charles E. Burton, and Treasurer, William T. Boulton, both of New York. The Congregational Publishing Society maintains branches at 14 Beacon Street, Boston, and at 19 South LaSalle Street, Chicago.

CONGRESS. See UNITED STATES.

CONGRESS, INTERNATIONAL. See INTERNATIONALISM.

CONNECTICUT. POPULATION. According to the Fourteenth Census the population of the State on Jan. 1, 1920, was 1,380,631. The estimated population on July 1, 1928, was 1,667,000. The capital is Hartford.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod.	Bu.	Value
Hay	1929	364,000	527,000	•	\$10,000,000
	1928	364,000	583,000	•	10,942,000
Tobacco	1929	21,000	27,636,000	•	13,901,000
	1928	25,000	29,756,000	•	11,067,000
Corn	1929	55,000	2,366,000	•	2,609,000
	1928	55,000	2,310,000	•	3,004,000
Potatoes	1929	16,000	2,080,000	•	3,744,000
	1928	17,000	2,210,000	•	1,989,000
Apples	1929		990,000	•	1,782,000
	1928		1,500,000	•	1,950,000

• Tons • Pounds

MINERAL PRODUCTION. The native mineral industries of the State, which form but a minor source of its wealth, continued in 1927 to derive the chief part of their yearly product from stone and clay products. Stone production was active in 1927, attaining 2,295,360 short tons, in value \$3,202,040, as against 2,069,920 tons, or \$2,680,849, in 1926. The clay products of 1927 reached the value of \$2,652,640 for 1927, for 1926, of \$3,291,298. Lame production, 53,304 short tons, in value \$608,550 for 1927, fell off to an estimated 48,000 tons, or \$505,000, for 1928. The aggregate value of the State's mineral product for 1927 was \$7,299,100, for the year 1926, it was \$7,695,341.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the United States Department of Commerce, were for maintenance and operation of governmental departments, \$19,319,797 (of which \$1,769,774 was for local education), for interest on debt, \$656,865, for permanent improvements, \$15,537,410, total, \$35,514,072 (of which \$15,753,695 was for highways, \$3,278,168 being for maintenance and \$12,475,527, for construction). Revenues were \$33,796,159. Of these, property and special taxes furnished 27.5 per cent, departmental earnings and remuneration for officials' services, 7.8, license sales, 55.3 per cent (including gasoline taxation of \$3,098,686). The State debt totaled

\$16,291,100, net of sinking funds, it was \$2,522,603. On a property valuation of \$2,636,322,911 were levied State taxes of \$1,859,495.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 968.33. There were built, in 1929, 1.01 miles of additional fourth track.

MANUFACTURES. According to the biennial Census of Manufactures published in 1929 by the U. S. Department of Commerce, there were in the State, in 1927, 2877 manufacturing establishments. These employed 240,806 wage earners, whose wages for the year totaled \$304,503,907. Materials and supplies used in manufacture cost \$590,014,077. The manufactured products of the year attained the combined value of \$1,284,738,563.

EDUCATION. The policy of the State in public-school education was directed to putting trade and vocational education in closer relation with industries and to increasing the provisions for the training of teachers in the trades and industries. The school population of the State in September, 1928, was estimated to be 380,662. There were enrolled in the public schools, in the academic year 1928-29, 310,445 pupils, of whom 264,931 were in elementary, and 45,514 in high school, grades. Current expenditures of the year for public schools in the State were \$26,878,079. The salaries of teachers averaged \$1698.

CHARITIES AND CORRECTIONS. The chief central body in 1929 with regard to the control of institutions for the care or custody of persons was the Department of Public Welfare, created in 1921, with a statutory board of five 4-year appointees. The department chief executive officers were a secretary and a commissioner of child welfare. It included boards of child welfare and of adult welfare. Operating separately were boards for education of the blind, for pardons, and the State Tuberculosis Commission. The department was charged with supervision of penal and reformatory institutions, those for the insane, the feeble-minded, and epileptics, public hospitals, State tuberculosis sanatoria, almshouses, homes for the aged, and institutions for child care. The State institutions and their populations of June 30, 1928, were: State Hospital (insane), Middletown 2882, State Hospital (insane), Norwich 2336, State Prison, Wethersfield, 579, State Farm for Women, Niantic, 63, Connecticut School for Boys, Meriden, 454, Long Lane Farm (industrial school for girls), 244, Reformatory, Cheshire, 275, Mansfield State Training School and Hospital (epileptics and feeble-minded), 755, State tuberculosis sanatoria at Cedarcrest, Meriden, Norwich, Laurel Heights, and Niantic.

LEGISLATION. The State General Assembly held its regular biennial session, January 14 to May 8. There was passed the Fraud Law, which in its provisions to the "blue-sky" law of many other States, and providing protection for the public against the sellers of fraudulent securities. By statute, it was required that the insurance ratings of the owners and operators of motor vehicles be placed on the basis of merit. Provision was made for more uniform regulation of traffic in the State by police departments. Amateur athletic activities were placed under the control of the State Athletic Commissioner. The Legislature provided for the establishment of a State prison for women at the location of the existing State farm for women, and required that all women prisoners be removed from the State prison

at Wethersfield to the new location. A law was passed to make highway expenditures dependent on the receipts of the motor vehicle department. By resolution the Governor was directed to seek to have the flagship of Admiral Farragut, the USS *Hartford*, transferred to New London. The teaching of the flag code and the observance of flag day in the public schools were required by law. Among the numerous bills that failed of enactment were one for permitting the teaching of methods of birth control, supported by a strong following of clergymen, a bill to terminate gambling at Savin Rock, and a measure to authorize the expenditure of \$1,000,000 for the State improvement of earth roads. A bill for State rehabilitation of disabled workers was passed.

The constitutional provision limiting the time allowance of the Governor for signing bills to three days had long been neglected. Governor Baldwin having been the only executive of recent years to comply with it. Governor Trumbull having signed numerous bills after the end of the time specified in the Constitution, the State Supreme Court of Errors on July 25 rendered a decision invalidating an act of the Legislature of 1929 on the ground that it had not been signed within three days after the Legislature's adjournment, and was therefore dead. On advice of the Attorney-General that the decision affected the validity of some 1500 acts of the last and of previous legislatures, Governor Trumbull summoned a special session, which met on August 6. This session immediately passed a series of six bills reenacting the laws affected and, declaring that all enactments would thereafter be presumed, it signed, to have complied with the constitutional time requirement.

POLITICAL AND OTHER EVENTS The chief judicial event of the year was the invalidation, on July 25, by opinion of the State Supreme Court of Errors of a legislative act of the 1929 session of the Legislature. The reason that the Governor had signed it after the expiration of the three-day limit for such action, imposed by the State Constitution. By inference this action of the court invalidated in all 1493 ostensibly existing laws that had been signed under like circumstances at various times by successive Governors. Of recent executives of the State the late Governor Baldwin alone was found to have signed all measures that he approved within the three-day period. The act to which the court's action immediately pertained was one to assist the State in acquiring for a tuberculosis sanatorium a part of the McCook estate at East Lyme. Invalidated laws were reenacted in mass by a special legislative session. See *Legislation*.

Some uneasiness on the score of the State's industrial prosperity was occasioned when the United States Rubber Company announced on August 19 its decision to close permanently and to remove to Detroit its establishment at Hartford for the manufacture of automobile tires. The removal deprived some 1400 wage earners of work and terminated a pay roll of about \$2,500,000 a year. It led to agitation for such reform of State taxation as would render the State more attractive as an industrial location. The annual State Fair, a long-established institution, was discontinued. A commission appointed by the Governor began on June 24 the preparation of its plans for a celebration of the coming tercentenary of the founding of Connecticut.

The plan to create a metropolitan district to include with the city of Hartford the communities of West Hartford, Windsor, Bloomfield, Wethersfield and Newington was put to a vote on October 8 in all the territory affected except Hartford itself, which cast its vote in November. With the exception of West Hartford, the adjacent towns voted in favor of the plan. The latter town, however, which was the most necessary of all to the combination, voted adversely by nearly two to one. The former Hartford home of Mark Twain at 351 Farmington Avenue was acquired on June 1 by a commission chartered by the Legislature for its preservation as a memorial. The city of New Haven purchased at Morris Cove and East Haven lands for the site of an airport and authorized the issue of \$325,000 in bonds for its development. The city finances of Waterbury were examined by the Charter Commission created by the Legislature. Waterbury made an effort to preserve its city market as a place for the direct exchange of farm products from grower to consumer, by enforcing an order against all sales save by the growers. The building of a dam at Woodville to store water from the Shepaug River for the municipal supply of Waterbury was carried toward completion.

OFFICERS Governor, John H. Trumbull, Secretary of State, William L. Higgins, Treasurer, Samuel R. Spencer, Comptroller, F. M. Salmon, Attorney-General, Benjamin W. Alling.

JUDICIARY Supreme Court of Errors: Chief Justice, G. W. Wheeler, Associate Justices, W. M. Maltbie, F. D. Maines, G. E. Hinman, John W. Banks.

CONNECTICUT COLLEGE A liberal college of arts and sciences for the higher education of women in New London, Conn., chartered in 1911 by the State of Connecticut. The enrollment for the autumn of 1929 was 563, distributed as follows: Freshmen, 174, sophomores, 141, juniors, 142; seniors, 106. The faculty numbered 65 members. The productive funds amounted to \$1,100,000, and the budget for the year, not including building operations, was more than \$500,000. There were 41,000 volumes in the library. During 1929 a new administrative building, Fanning Hall, was erected at a cost of \$290,000. President, Katherine Blunt, Ph.D., who succeeded Benjamin T. Marshall, D.D., as president in 1929.

CONNERS, WILLIAM JAMES American capitalist, publisher, and politician, died Oct. 5, 1929, in Buffalo, N. Y. His common-school education ended at the age of 13, when he started to work on a steamboat. He had been a freight contractor since 1885 and in 1888 he entered the asphalt and stone-paving business. In 1916 he organized the Great Lakes Transit Corporation and bought all the railroad-operated steamships on the Great Lakes. In 1918 he bought and reclaimed 7000 acres of the Everglades in Florida and in 1924 built the Connors' Highway through them from the Atlantic to the gulf. His interest in publishing began when he became proprietor of the *Buffalo Enquirer* in 1895 and of the *Buffalo Courier* in 1897. He was a political leader in the Democratic party of New York, holding the chairmanship of the Democratic State Committee from 1906 to 1910. Mr. Connors was also a philanthropist, establishing in 1925 the Connors' Foundation, a fund of \$1,000,000 for the relief of the poor in the city of Buffalo.

CONSERVATION. See **FORESTRY**.
CONSTANTINOPLE. See **TURKEY**.

CONSUMERS' SOCIETIES. See COOPERATION.

COOPER, HENRY ERNEST American lawyer and statesman, died May 15, 1929, in Long Beach, Calif. He was born in New Albany, Ind., Aug. 28, 1857, and was graduated from Boston University. In 1878 he was admitted to the bar in Suffolk Co., Mass., and in 1890 established practice in Honolulu. He was chairman of the committee of safety during the Hawaiian Revolution, Jan. 14-17, 1893, and on January 17 read a proclamation abrogating monarchical government and establishing provisional government in the Hawaiian Islands. From January to March, 1893, he was a member of the advisory council of the provisional government. He was judge of the first circuit court, 1893-95, Minister of Foreign Affairs, 1895-99, and in 1898, acting President of the Republic of Hawaii. He was also Minister of Public Instruction from June, 1896-March, 1899, Attorney-General of Hawaii, 1899-1900, when he also was president of the board of health. He was appointed the first Secretary of the Hawaiian Territory in 1900, when he practiced law after his retirement from public life.

COÖPERATION. The outstanding event in the cooperative movement in the United States during the year was the creation of the Federal Farm Board as a result of the campaign pledges made by President Hoover in the presidential election contest of 1928. Before the year was over, the Federal Farm Board had already succeeded in organizing centralizing agencies in three of the great agricultural staples of the country, viz., wheat, wool, and cotton. Accordingly, there is presented in detail the plans of the Federal Farm Board, and also an outline of the proposed functions of the three agricultural corporations. Other matters discussed are the international status of cooperatives, the credit union and building and loan association movements in the United States, and the cooperative situation in Great Britain and Canada.

FEDERAL FARM BOARD. The special spring session of the Seventy-first Congress created a Federal Farm Board for the following purposes: To promote the merchandising of agricultural commodities in interstate and foreign commerce, to protect and control the processes of the marketing of agricultural commodities through the minimizing of speculation and the checking of wasteful methods of distribution, and to encourage the creation of producers' associations, or cooperatives, by controlling surpluses in agricultural commodities, through orderly production and distribution. Among its other major functions were the following: The Board was to be concerned with the promotion of education in the principles and practices of cooperative marketing, and also with the investigating of conditions of overproduction, especially with an eye toward checking such.

The act created a revolving fund of \$500,000,000 with which the Board was authorized to make loans to cooperative associations for the purpose of assisting them in the merchandising of their commodities, for the construction, purchase, or listing of marketing facilities, or preparing, handling, and storing agricultural commodities, for the formation of clearing house associations, and for educating the producers in the use of cooperative marketing. No loan might be granted for an amount of more than 80 per cent of the value of the facilities to be constructed

or purchased. Such loans were to be repaid over a period of not more than 20 years. The Board, too, might enter into agreements for the purpose of insuring cooperative associations against loss as a result of a decline in prices. Another important provision of the law was that the Board might recognize the creation of "stabilization corporations" if marketing conditions required it.

Chairman Alexander Legge, former president of the International Harvester Company, who was appointed by President Hoover to the head of the Federal Farm Board, in a speech before the American Institute of Coöperation at Baton Rouge, La., July 30, declared that the major policy of his Board would be the expansion and strengthening of the cooperative movement. He refused to consider that the purpose of his agency was the handling of merchandise purely. Rather, its function lay in the creation of a long-time constructive programme with the end in view of stabilizing agricultural production and distribution. Another policy was to be the formation of large-scale central cooperative organizations. Chairman Legge assured the farmers that these large organizations would in no way endanger the existence of the smaller local associations. He said: "On the contrary, such agencies would help to build up and improve the condition of each and every cooperative organization now in existence."

The first loan made by the Federal Farm Board was one of \$300,000 to the Florida United Growers for the purpose of equipping certain citrus-packing plants with heating facilities, in order that these producers might meet government regulations in controlling the Mediterranean fruit-fly pest. This loan was regarded as an emergency measure.

As a result of the Federal Farm Board's encouragement, there was formed in October the Farmers' National Grain Corporation, a wheat-growers' cooperative group with facilities for the lending of \$100,000,000 to State cooperatives to help the wheat growers of the country in the orderly marketing of their crops. The method of operation of the corporation was succinctly summarized by Mr. Legge in the following statement:

There is a grain cooperative in every wheat state. It is open to the membership of every wheat farmer. The farmer may join, ship his wheat to a designated concentration point, where it will be graded and cleansed, and draw his advance. The cooperative will market the wheat in an orderly fashion through the year and will settle with the farmer on the basis of the final price obtained.

The Board is confident that, considering the soundness of underlying conditions which affect the price of wheat, the plan described above furnishes a completely safe basis for making loans from the Board's revolving fund. The Board places no limit on the amount available for the purpose and, if necessary, the Board will also ask Congress to appropriate more.

Requests for facility loans should be taken up through the Farmers' National Grain Corporation.

The second such corporation created was the National Wool Marketing Association, with a capitalization of \$1,000,000. The association was to be owned and controlled by the stockholding member agencies throughout the United States. Money was to be loaned on unsold wool and mohair, new marketing associations were to be set up in those districts not being served by growers' cooperatives, a sales agency was to be created for the purpose of making direct sales to the mills, research and publicity were to be carried on in the interests of the ranchers.

In December, the third such agency was announced by the Federal Farm Board. This was to

be the American Cotton Growers' Exchange, capitalized at \$30,000,000. It was expected that this would be the largest cooperative group in the world and that it would, in time, market the whole cotton crop of the country. The corporation will be empowered to provide central marketing facilities and sales services, to buy cotton from its stockholders (the cooperatives) and from outsiders, to deal in cottonseed; to manufacture cotton products; to lease, buy, or construct warehouses and gins where such facilities cannot be reasonably provided by local associations; to conduct research, publicity, and educational work in the interests of and among the cotton growers of the country. Other administrative plans will provide for the establishment of two marketing branches for short and long staple cotton. The cotton belt is to be divided into four grand divisions: the Southeast, made up of North Carolina, South Carolina, Georgia, and Alabama, the Mississippi Valley, made up of Mississippi, Louisiana, Arkansas, Missouri, and Tennessee, the Southwest, made up of Oklahoma and East Texas, the Far West, made up of West Texas (irrigated portion), New Mexico, Arizona, and California.

AMERICAN INSTITUTE OF COOPERATION At the meeting of the American Institute of Cooperation, held at Baton Rouge, La., July 29 to August 6, the chief measure discussed was the creation of a Chamber of Agricultural Cooperatives for the purpose of combining the members of all agricultural cooperatives into a single body. This movement had been under way for more than a year, when a committee was appointed to study the feasibility of such a national organization. According to the chairman of the Institute, it was planned that the central organization should be comparable to the United States Chamber of Commerce and to the American Federation of Labor. One of its chief functions would be co-

operation with the Federal Farm Board and with the Cooperative Marketing division of the Department of Agriculture. At the conclusion of the sessions of the Institute, it was declared that the National Chamber was going to start with an initial membership of 2,000,000 farmers and that there was every reason to expect another 2,000,000 members in the near future. Leaders in the movement saw in the creation of this national chamber the launching of the greatest cooperative movement in the history of agricultural production in the United States.

INTERNATIONAL STATUS *The Monthly Labor Review* for October, 1929, published an important summary of the status of consumers' cooperatives in 28 countries of the world. As indicated in the accompanying table, in a total population of more than 611,000,000 persons, there were to be found 34,000,000 members of cooperative societies, making a ratio of 5.56 per cent. The largest number of societies was to be found in Russia where almost 16,000,000 persons, or 11 per cent of the total population, were members of cooperative societies. Cooperative sales of more than \$100,000,000 annually are reached in France, Germany, and Great Britain. In Russia, it was reported that the total sales by the cooperative societies was \$2,810,000,000. In Finland, almost one-eighth of the population belonged to cooperative societies. In Great Britain, Hungary, Russia, and Switzerland, cooperative membership made up 10 per cent of the total population. It is to be noted, on the other hand, that in Australia, Canada, Spain, United States, and Yugoslavia, cooperators numbered less than 1 per cent. With respect to the figures cited for the United States, a correction must, however, be made. The 77,826 persons listed as belonging to cooperative societies include only membership in those organizations affiliated with the Central Educational Union. An independent survey made

MEMBERSHIP AND SALES OF CONSUMERS' COÖPERATIVE SOCIETIES IN VARIOUS COUNTRIES
IN 1928

[Conversions into U. S. currency on basis of Swiss franc = 19.3 cents]

Country	Population of country	Number of consumers' cooperative societies	Cooperative membership		Annual sales	
			Number of members	Per cent of total population	Amount	Average per member
Australia	6,540,738	55	55,752	0.85	\$ 18,208,032	\$327
Austria	6,584,481	175	342,069	5.23	22,241,154	67
Belgium	7,465,782	110	420,282	5.63	26,253,556	82
Bulgaria	5,489,125	69	61,767	1.13	3,252,762	58
Canada	9,364,200	25	2,814	0.10	4,456,032	503
Czechoslovakia	13,512,006	1,058	775,617	5.70	55,075,005	71
Denmark	3,434,555	1,785	321,500	9.36	68,806,003	214
Estonia	1,107,059	267	69,064	6.24	7,453,370	108
Finland	3,264,807	545	411,716	12.24	71,341,765	178
France	40,743,851	3,368	2,212,132	5.43	129,862,940	59
Germany	68,180,619	1,361	3,685,545	5.33	250,294,284	68
Great Britain and Ireland	47,148,834	1,367	5,579,038	11.83	973,786,451	175
Hungary	7,984,558	1,763	855,744	10.72	24,777,104	29
Iceland	94,690	38	7,082	7.48	2,866,891	405
Italy	38,755,576	3,383	826,845	2.13	84,875,561	103
Jugoslavia	11,996,791	175	86,256	7.2	6,159,813	71
Latvia	1,844,805	302	54,475	2.95	4,537,433	83
Lithuania	2,115,566	318	37,641	1.78	2,050,317	54
Netherlands	6,865,314	227	302,064	2.96	22,485,276	111
Norway	3,649,775	439	100,438	3.79	26,580,084	265
Poland	27,176,717	2,658	671,807	2.47	25,792,695	38
Portugal	5,621,977	180	85,572	1.52	5,297,445	62
Rumania	16,262,177	2,570	304,427	1.87	10,627,004	35
Russia	145,493,000	28,618	15,991,000	10.99	2,810,733,884	176
Spain	21,388,381	188	26,821	1.3	5,600,215	209
Sweden	5,904,468	824	865,894	6.20	76,891,377	210
Switzerland	3,380,890	826	875,207	11.10	61,062,418	163
United States	105,710,620	155	77,826	.07	15,025,629	193
Total	611,174,813	52,707	34,013,395	5.56	\$4,816,424,500	\$142

by the Bureau of Labor Statistics in 1925 estimated that membership in consumers' coöperatives in this country had reached a total of 500,000 persons.

CREDIT-UNION MOVEMENT. The YEAR BOOK has referred before to the important rôle played by the credit-union movement in the history of the coöperatives in the United States. During the year 1928, 368 new credit unions made their appearance. These were located by States as follows:

	Number		Number
Alabama	41	Nebraska	4
Arkansas	1	New Hampshire	3
California	12	New Jersey	7
District of Columbia	1	New York	14
Georgia	30	North Carolina	23
Illinois	30	Ohio	2
Indiana	16	Oklahoma	1
Iowa	17	Oregon	3
Kentucky	4	Rhode Island	3
Louisiana	3	Tennessee	8
Maine	1	Utah	1
Massachusetts	35	"	17
Michigan	23	"	4
Minnesota	31	Wisconsin	7
Missouri	24	Total	368

As a result of the activities of the National Extension Bureau, the National Service Release Council of the Post Office Department and the Brotherhood of Railroad Clerks, the credit movement has become a permanent fixture in cooperative-society history. From Oct. 1, 1927, to Dec. 31, 1928, the number of credit unions among employees in the postal service increased from 83 to 190, a gain of 107. During the same period, the membership rose from 16,257 to 25,397, the assets increasing from \$1,001,535 to \$1,770,932, and the loans granted nearly doubling from \$3,183,890 to \$6,329,736.

BUILDING AND LOAN ASSOCIATIONS. The United States League of Local Building and Loan Associations reported that the year 1928 showed an increase in the number of associations created, size of membership, and amount of business transacted. For the previous five years, it was stated that the building and loan associations of the country had been maintaining an annual increase in assets of more than \$800,000,000. In 1928 there were 12,666 associations in the country with a total membership of 11,995,905. This was an increase of 639,644 members over the year 1927. Assets in 1928 totaled \$8,016,034,327, an increase of \$850,827,788 over the previous year. In 1928 mortgage loans totaled \$7,336,124,154, an increase of \$711,305,735 over 1927. States in which building and loan associations had assets of more than a quarter billion dollars in 1928 were the following: California (\$297,000,000), Illinois (\$420,000,000); Indiana (\$298,000,000), Massachusetts (\$516,000,000); New Jersey (\$1,032,000,000), New York (\$401,000,000), Ohio (\$1,237,000,000), Pennsylvania (\$1,340,000,000), Wisconsin (\$251,000,000).

FARMERS' COÖPERATIVES. A study made by the U. S. Department of Labor showed that in 1925 nearly one-half of the 10,803 farmers' organizations in the country were doing cooperative purchasing for their members. The classes of articles purchased included fuel, containers, seeds, fertilizers, building materials, implements, and hardware. In 1927 farmers' coöperatives purchased for their members goods valued at \$300,000,000.

Eight such associations were doing an annual cooperative purchasing business of more than \$1,000,000 each, and two of them handled annually \$10,000,000 worth of business apiece.

FINLAND. This country, which is largely agricultural in its activity, in 1929 was probably more closely organized on cooperative lines than any other nation in the world. Membership in cooperative societies totals 600,000 persons, or approximately one coöperator for every six inhabitants of the country. In more than one-half of the Finnish Communes, one family out of every two, and in 10 per cent of the Communes, all the families belong to cooperative societies. The largest coöperatives' groups are the consumers organizations, the dairies, and the agricultural credit societies. Other societies include corn mills, sawmills, electric power societies, pent societies, fishing societies, livestock groups, bakeries, construction firms, farms' supply association, telephone companies, cafés and restaurants. The consumers' organizations are the most important single group in the country having five times as many members as the credit groups. They have a total of a million and a half coöperators.

GREAT BRITAIN. This country, which continues to be the seat of one of the greatest cooperative movements in the world, reported considerable progress. The figures collected by the Ministry of Labor for the year 1927 show an increase in membership of 392,000, or 7.66 per cent, an increase in capital of £7,794,000, or 5 per cent, and an increase in business of £28,300,000, or 10 per cent. During the years 1925-26-27, the consumers' cooperative movement gained nearly 900,000 members. This increase is attributed largely to intensive membership campaigns, advertising, and the adoption of coöperatives by many of the societies. The table that follows shows comparative data for 1926 and 1927.

GROWTH OF COÖPERATION, GREAT BRITAIN 1926-27

	1926	1927
Retail societies		
Number	1,318	1,314
Membership	5,129,000	5,520,000
Sales	\$894,560,648	\$964,408,178
Capital	\$531,958,535	\$561,978,687
Value of goods manufactured	\$160,353,837	\$184,475,160
Dividends on sales		\$87,499,670
Wholesale societies		
Number	2	2
Affiliated societies	2,014	2,007
Sales	\$447,806,478	\$509,096,410
Capital	\$210,816,780	\$216,802,575
Value of goods manufactured	\$165,522,688	\$174,855,369
Workers' societies		
Number	87	89
Membership	29,293	29,658
Sales	\$15,572,800	\$17,509,667
Capital	\$7,445,745	\$9,976,325
Value of goods manufactured	\$14,017,306	\$16,646,493
All types		
Number	1,473	1,472
Membership	5,177,000	5,569,000
Sales	\$1,378,192,800	\$1,515,914,800
Net surplus	\$112,805,470	\$128,120,346

It is interesting to record the progress of the cooperative movement in Great Britain in the period following the War. In 1913 there were 2,878,648 members of cooperative societies, in 1926, there were 5,186,728 members. Cooperative members and their families form from 40 to 45 per cent of the total population of Great Britain and from 45 to 50 per cent of the Scottish popu-

lation During the post-war period, there was a marked tendency toward the creation of larger societies. In 1914 the largest retail society (Leeds) had a membership of 47,967. By the end of 1928, the largest society (London) had 177,339 members. The Royal Arsenal at Woolwich and the Birmingham Society had 140,988 and 106,993 members, respectively. The trading operations of the retail societies are not confined to the distribution trades purely. There are societies that are engaged in hair-dressing, painting, as well as productive enterprise. It is to be noted, however, that 80 per cent of the total business of the British coöperatives is to be found in the sale of foodstuffs. The sale of coal by 1926, however, already amounted to 78 per cent of the total. Experts noted a decline in the average sales per member since 1913. In the earlier year, the average sale was (at 1913 values) \$141.62, while in 1926 it was \$103.17. The following explanations were advanced: the decreased purchasing power of the membership, due to unemployment and underemployment, the establishment of membership on the basis of families, the development of service departments; and increased competition from private enterprise. These columns have referred before to the operations of the wholesale societies. There are three such organizations, viz. the (English) Coöperative Wholesale Society, the Scottish Coöperative Wholesale Society, and the Irish Agricultural Wholesale Society. The wide range of the English Society's activities is plainly indicated by the following: It distributes food, clothing, and furniture on a very large scale, it has increased steadily its business with agricultural coöperative societies in the supply of agricultural products, it operates a very large number of factories, mills, and workshops, and controls the marketing of its own manufactured products; it owns and operates a coal mine, it operates a number of farms, it controls its own banking department, it has a large service department for the purpose of selling services to the coöperative movement, e.g., auditing, health insurance, architectural service, building, solicitors' department, etc. The productive enterprises of the English Society include 2 biscuit works, 5 preserve works, 3 soap works, 10 flour mills, 1 tobacco factory, 1 lard refinery, 1 margarine works, 1 oil and cake mill, 4 printing works, 1 rope mill, 1 colliery, 3 flannel mills, 1 hosiery factory, 2 corset factories, 4 shirt factories, 3 underclothing factories, 4 woolen factories, 4 weaving sheds, 6 clothing factories, 10 boot and shoe works, 1 cannery, 4 cabinet factories, 1 brush works, 1 iron works, 1 bucket and fender works, 1 tin-plate works, 1 paint and varnish works, 1 pottery, a cycle and jewelry establishment, and several farms.

CANADA There were 30 coöperative societies affiliated with the Coöperative Union of Canada, an increase from 7 since 1923. In the earlier year, the membership was 4646 and by 1928 had grown to 10,366. Sales had increased from \$2,250,000 to \$5,397,000. These societies include nearly all the largest and most successful consumers' societies in the country. Their chief activities are the sale of groceries, hardware, dry goods, and The ages of the societies range from 1 year and 2 months to 22 years and 6 months, the average being 10 years and 6 months. These 30 societies had a share capital of \$589,571 and showed a net profit for the year of \$342,750, of which patronage dividends

totalled \$252,976. None of the societies reported a loss on the trading for the year 1928.

RUSSIA The consumers' coöperative movement in this country in 1929 set up a fund for the purpose of carrying on a programme among women and children and for the instruction of mothers in child care. The money is raised on the basis of a deduction made from net profits and a certain percentage of the sales. With this fund, nurseries, kindergartens, and playgrounds were being established, as well as traveling health centres.

CANADIAN WHEAT POOL The Canadian wheat pool, organized in 1923, was based upon the creation of an association among a group of Alberta wheat growers who pledged themselves to deliver to the pool all their wheat crops for the next five years. In two weeks after the creation of the association, 25,000 farmers had joined the pool, their combined acreage representing 45 per cent of the entire wheat acreage of the province. Before 1924 was over, similar pools had been formed in Manitoba and Saskatchewan, these three being the prairie provinces of the Dominion. On July 28, 1924, the three pools formed a central selling agency, the Canadian Coöperative Wheat Producers, Ltd. In 1929 the pool included 132,800 of the wheat growers of the three prairie provinces and 12,000 farmers in the province of Ontario, the total acreage served covering 16,100,000 acres. In 1928 the pool had a gross turnover of \$323,000,000 and the members of the pool delivered 51.5 per cent of all the wheat marketed in Western Canada. As a result of the two cents' toll paid by each farmer in the pool, the organization was able to purchase a large number of elevators. In 1929 it owned 1417 of the 4692 elevators in the three prairie provinces. The significance of this pool can be understood when it is appreciated that, though Canada produces only 12 per cent of the world's wheat supply, it exports nearly twice as much wheat as any other country. In 1928, for example, Canadian wheat contributed 40 per cent of all the wheat entering into international trade. Of this, the pool controls not less than half. In 1928 international trade in wheat totalled 828,000,000 bushels, of which the pool's total landings were 222,000,000.

See AGRICULTURE, HORTICULTURE, 101 Coöperative Association of Fruit Growers.

COOPERITE. See MINERALOGY.

COPPER The American copper industry in 1929, according to the U. S. Bureau of Mines, broke many records. Domestic withdrawals which had assumed record breaking proportions in the fall of 1928 continued at a high rate, and for the year 1929 were higher than ever before, even than during the war years. Copper prices rose from a monthly average of 13.9 cents a pound in January, 1928, to 15.9 cents in December, and continued the rapid advance to a high of 23.775 cents a pound, at refinery, Mar. 23, 1929, where it held until April 5. From April 5 to April 15, the price dropped to 17.775 cents a pound, where it remained up to the end of the year. Heavy demand followed by increased prices brought forth the highest smelter and refinery production on record. The unusual demand in the fall of 1928 drew heavily on stocks of refined copper and at the end of the year only 114,000,000 pounds were in stock, while the largely increased production during that period made itself apparent in blister stocks which were larger than at the end of 1927. Production was sufficiently ahead of withdrawals in 1929 for stocks of refined copper to much more

than double during the year. Curtailed production at the mines and smelters during the last quarter of 1929 was apparent first in blister stocks again and these were estimated by producers to have increased only about 5 per cent. The estimated smelter production from domestic ores for December, 1929, as reported by the smelters, was 146,000,000 pounds, 25,000,000 pounds lower than the average for the 11 months preceding.

Stabilization was the confessed goal of the copper industry, or at least that part of it represented by the large American-controlled copper-mining companies that produce about 70 per cent of the world output from mines in the United States, Chile, Canada, and Mexico. For the five years previous to 1929, the average price of copper had been about 14 cents, and only the tremendous consuming demand that was evident in the last months of 1928 and the first half of 1929 made so comparatively high a price as 18 cents possible.

Students of the market were divided on the cause of the slump in buying, but it seemed fairly certain that either the comparatively high price or the impending approach of the "industrial depression," was responsible for it. The curtailment that the big producers put into practice was not attempted by smaller independent mines, which were only too glad to seize the opportunity to sell their product at 18 cents a pound. As a result, the percentage of the total produced by the large mines was declining at the end of the year, although the trend was not marked.

Approximate production in 1928 and in 1929, by short tons, for the several important countries is given herewith. Estimates are based on figures published by the American Bureau of Metal Statistics and *Engineering and Mining Journal*.

WORLD PRODUCTION OF COPPER

Country	1928	1929
United States	896,000	1,011,000
Chile	319,500	350,000
Africa	141,000	150,000
Canada	96,500	120,000
Japan	73,000	82,000
Mexico	72,000	88,000
Peru	58,000	59,000
Others	227,000	276,000
Total	1,883,600	2,136,000

The smelter production of copper from domestic ores in 1929, as determined by the Bureau of Mines from reports of the smelters showing actual production for 11 months and estimated production for December, was 2,030,000,000 pounds, compared with 1,826,000,000 pounds in 1928. The 1929 production was 11 per cent higher than that of 1928, and was the largest production on record. The estimated smelter production from domestic ores for December, as reported by the smelters, was 146,000,000 pounds, which is 25,000,000 pounds lower than the average for the 11 months preceding and compared with an estimate of 179,000,000 pounds for December, 1928.

The production of new refined copper from domestic sources, determined in the same manner as smelter production, was about 2,022,000,000 pounds, compared with 1,792,000,000 pounds in 1928. In 1929 the production of new refined copper from domestic and foreign sources

amounted to about 2,772,000,000 pounds, compared with 2,488,000,000 pounds in 1928, an increase of 284,000,000 pounds, or 11 per cent. The production of secondary copper by primary refineries increased from 232,000,000 pounds to about 308,000,000 pounds in 1929, or 76,000,000 pounds, so that the total primary and secondary output of copper by the refineries was 13 per cent higher in 1929 than in 1928, being about 3,080,000,000 pounds, compared with 2,720,000,000 pounds.

COPPER PRODUCTION IN UNITED STATES [Short tons]

	1928	1929 *
Eastern States	14,780	16,600
Southeastern Missouri		
Michigan	89,221	92,500
Western States		
Arizona	366,138	416,800
California	12,575	16,600
Colorado	4,297	4,200
Idaho	1,036	2,400
Montana	124,141	149,800
Nevada	79,438	66,000
New Mexico	44,927	50,000
Oregon	179	400
Texas	224	200
Utah	146,618	160,100
Washington	589	600
Wyoming		
Alaska	20,711	20,200
Total	901,898	995,900

* Estimated.

* Figures obtained from the Geological Survey, Department of the Interior.

The imports of unmanufactured copper during 1929, according to the Bureau of Foreign and Domestic Commerce, amounted to 974,232,305 pounds, a monthly rate of 81,000,000, compared with 787,083,840 for 1928, a monthly rate of 66,000,000. The total increase of approximately 187,000,000 pounds is equivalent to about 25 per cent.

Exports of metallic copper during 1929 amounted to 992,894,019 pounds, compared with 1,121,186,640 in 1928. Exports for the last two months averaged about 57,000,000, as compared with an average of about 88,000,000 pounds for the first 10 months. Of the individual countries, the United Kingdom received about 194,671,328 pounds of refined copper in ingots, bars, rods, and other forms, during the first 11 months. Germany was next, with 168,531,023 pounds during the same period, and France was third, with 11,488,031 pounds. As can be seen by comparing the imports with exports, for the first time in many years, the United States had only a small exportable surplus and, in fact, during the last few months of the year, that country was actually importing more unmanufactured copper than it was exporting refined copper. As is shown in the table on page 218, domestic production was only 173,000,000 pounds greater than domestic consumption. Inasmuch as during the year about 151,000,000 pounds were added to the refinery stocks, the exportable surplus of domestic copper amounted to only 22,000,000 pounds.

Refineries report that at the end of 1929 approximately 265,000,000 pounds of refined copper would be in stock, considerably more than double the 114,000,000 pounds at the end of 1928. It was estimated that stocks of blister copper at the smelters, in transit to refineries, and at refineries, and materials in process of refining would be about 443,000,000 pounds in December 31, compared with 423,000,000 pounds at the end of

NEW REFINED COPPER WITHDRAWN FROM
TOTAL YEAR'S SUPPLY ON DOMESTIC AC-
COUNT, 1928-1929, IN POUNDS

	1928	1929
Refinery production of new copper from domestic sources	1,792,000,000	2,022,000,000
Refinery production of new copper from foreign sources	696,000,000	750,000,000
Imports of refined copper (December, 1929, estimated)	85,000,000	128,000,000
Stocks of new refined copper on January 1	171,000,000	114,000,000
	2,744,000,000	3,014,000,000
Exports of refined copper (ingots, bars, rods, or other forms) (December, 1929, estimated)	1,021,000,000	900,000,000
Stocks December 31	114,000,000	285,000,000
	1,135,000,000	1,165,000,000
Total withdrawn on domestic account	1,609,000,000	1,849,000,000

1928, an increase of 20,000 pounds. Therefore, an increase of 171,000,000 pounds in total smelter and refinery stocks was indicated.

The quantity of new refined copper withdrawn on domestic account during the year was about 1,849,000,000 pounds, compared with 1,609,000,000 pounds in 1928, an increase of 240,000,000 pounds, or nearly 15 per cent, and was the highest ever recorded. The method of calculating domestic withdrawals is shown in the accompanying table.

For several years, although its copper production had been increasing, the relative importance of United States mines was decreasing. In 1924 the United States mines produced 55 per cent of the world total, in 1928 only 45 per cent, although actual production was 60,000 tons higher. The growing importance of the large American-owned mines in Chile, the Belgian Congo Company, Katanga, and scattered producers in Canada and Europe had tended to push the American properties into the background. It was extremely interesting to note, therefore, that United States mines increased their production of copper 115,000 tons, and their share of the world total, 1 per cent to 46 per cent in 1929. A continuation of this upward trend appeared unlikely, however. Not only had the Chilean mines a vast excess capacity, but, in addition, within four years, drilling had indicated the existence of six large copper mines in Northern Rhodesia. The grade of the ore was comparatively high, about 4 per cent copper on the average, compared with about 1.5 per cent at the large American mines, and the tonnages available are enormous. About 600,000,000 tons of ore had been indicated by the end of 1929.

Production from the first of these mines was to start in 1931. By 1935 they were expected to be producing 350,000 tons of copper annually. But, although South America and Africa probably would supply the increases in future demand, the mines of the United States were far from exhaustion and their importance, though diminished, will be considerable for many generations to come.

See also METALLURGY.

COPYRIGHT. Registrations for the fiscal year 1928-29, according to the report of the United States Register of Copyrights, numbered 161,959, as compared with 193,914 for the pre-

ceding year. Of these, 57,614 were classed as books, but included pamphlets, leaflets, and contributions to periodicals, those printed in the United States numbering 52,280, those printed abroad in a foreign language, 3868, while the remainder, 1466, were English books registered for *ad interim* copyright. The chief classes of the remaining registrations, in the order of numerical importance, were Periodicals, 44,101 numbers, musical compositions, 27,023, prints and pictorial illustrations, 9873, photographs, 4850; dramatic or dramatico-musical compositions, 4594, works of art, including models or designs, 2840, maps, 2232, drawings or plastic works of a scientific or technical character, 1511, motion-picture photoplays 1087, and motion pictures not photoplays, 1232. The renewals numbered 4948, as compared with 5447 in the preceding year. The fees paid during the year amounted to \$308,993. The total number of articles deposited during the fiscal year ended June 30, 1929, was 264,204.

The gross receipts of the Register's office for the fiscal year were \$322,135, the total expenditure for salaries, \$224,905, and for supplies, \$1611. The year's business showed a substantial increase over that of 1928, which was the largest in the history of the office up to that time.

Copyright legislation was enacted, May, 23, 1928, to increase the copyright fee for registration of all published works to \$2. This fee was formerly \$1. The fee for an unpublished work remains at \$1. Fees for most other copyright services have been correspondingly increased. One copyright proclamation was issued for the year, namely, in behalf of citizens of the United States, Dec. 15, 1928, including protection with respect to the mechanical reproduction of music, under Sec. 1 (c) of the Copyright Act of 1909.

CORINTH, EXCAVATIONS ACT. See ARCHAEOLOGY.

CORN. The production of corn in 1929 of 15 countries reporting to the International Institute of Agriculture, Rome, was estimated at 3,267,911,000 bushels, as compared with 3,196,189,000 bushels in 1928. This yield was only slightly under the average yield for the five years 1923-27. The total corn area for these countries in 1929 was reported as 127,000,000 acres, which was only 0.4 per cent below the area in 1928 and 0.8 per cent above the average for the five year period. The 1929 production in the more important corn producing countries, not including the United States, was reported as follows: Rumania, 240,148,000 bushels, Yugoslavia, 160,742,000 bushels, Italy, approximately 85,000,000 bushels, Hungary, 76,610,000 bushels, Bulgaria, 36,069,000 bushels, and Spain, 25,190,000 bushels. The Soviet Republics in 1927, the last year for which data are available, produced 148,834,000 bushels. Owing to a favorable ripening and harvesting season, the European crop was reported as generally good in quality. Reports for the crop year 1928-29 placed the production of Argentina at 232,000,000 bushels and of the Union of South Africa at 65,941,000 bushels.

For the five years 1921-25, the average annual yield of Brazil was 177,338,000 bushels, of Mexico, 84,406,000 bushels, and of Egypt, 69,096,000 bushels. Canada in 1929, according to estimates, produced 5,053,000 bushels on 152,000 acres, which represented a recovery of more than 9 per cent in acreage over the preceding year but still left the production only a little over half

of what it was before the coming of the corn borer.

In the United States the production of corn for all purposes in 1929, as estimated by the Department of Agriculture, was 2,622,189,000 bushels, which was 7 per cent less than the crop of 2,818,901,000 bushels in 1928 and 4.6 per cent below the average production of 2,747,000,000 bushels for five years 1923-27. The 1929 area in corn, 98,618,000 acres, was 2.6 per cent less than in 1929 and 2.8 per cent less than the average acreage from 1923 to 1927. The average yield per acre in 1929, 26.8 bushels, was 4.3 per cent below the 1928 yield of 28 bushels and 3.6 per cent below the ten-year average yield of 27.8 bushels.

The December 1 farm price was estimated at 78.1 cents per bushel as compared with 75.2 cents per bushel on Dec. 1, 1928. On this basis the total farm value of the 1929 crop was \$2,048,134,000 or about 3 per cent less than the value of the 1928 crop of \$2,119,046,000. In 1929 the corn crop of the East North Central States was 14 per cent smaller than in 1928, while the West North Central States showed a reduction of 8.4 per cent and the North Atlantic States of about 6 per cent. Production in the Southern States indicated an increase of 4.7 per cent and in the Western States of 9 per cent over that of the preceding year. The leading corn-growing States and the crops produced in 1929 were as follows in bushels: Iowa, 447,760,000 bushels, Illinois, 311,500,000, Nebraska, 237,744,000, Minnesota, 148,855,000, Indiana, 131,968,000, Ohio, 128,407,000, Missouri, 126,524,000, South Dakota, 112,085,000, and Kansas, 106,802,000. No other States reported yields of more than 100,000,000 bushels. The largest areas devoted to the crop were reported by the following States: Iowa, 11,202,000 acres, Illinois, 9,570,000, Nebraska, 8,937,000, Kansas, 6,634,000, Missouri, 6,260,000, Texas, 4,722,000, Indiana, 4,483,000, South Dakota, 4,469,000, and Minnesota, 4,089,000. The average yield per acre ranged from 12 bushels in Montana to 40 bushels in Iowa and Wisconsin, but the New England States reported an average yield of 41.1 bushels. The average farm price per bushel on Dec. 1, 1929, was 78.1 cents in South Dakota to \$1.30 in Arizona. This price was a dollar or more in only sixteen states.

A study made by the Department of Agriculture and based on reports from 3790 farms indicated that the average cost of producing ear corn in the United States in 1928 was 73 cents per bushel. Production costs reported for the six years 1923 to 1928 showed the annual cost of producing an acre of corn varied from \$22.65 in 1928 to \$24.95 in 1927 and the cost per bushel from 68 cents in 1923 to 82 cents in 1924. For the country as a whole, the average bushel costs in 1926 and 1927 were 3 cents less than in 1928. In the South Central States, the corn yields in 1928 were relatively low and the cost of 92 cents per bushel was 11 cents higher than in 1927. In the West North Central States, the bushel cost in 1928 was 56 cents, in the East North Central States, 63 cents, and in the Western, South Atlantic, and North Atlantic States, it was 82, 87, and 88 cents, respectively.

According to a report also made by the Department of Agriculture, the production of corn silage in 1929 was estimated at 29,908,000 tons, or 5.3 per cent less than the 31,579,000 tons produced in 1928. The area cut for silage in 1929 was 4,304,000 acres, as compared with 4,251,000

acres in 1928 and 4,539,000 acres in 1927. The average yield of corn silage was placed at 6.95 tons per acre in 1929, 7.43 tons in 1928, and 6.94 tons in 1927. The corn area utilized for hogging off, grazing, and forage in 1929 was 11,113,000 acres, in 1928, 10,974,000 acres, and in 1927, 11,016,000 acres. Wisconsin in 1929 ranked first in silage production, with 7,118,000 tons, followed by New York, with 3,018,000 tons, Minnesota, with 2,814,000 tons, and Illinois, with 2,443,000 tons. California and the New England States reported the highest average yield of 11.1 tons per acre for the year.

The stocks of corn on farms of the United States on Nov. 1, 1929, were reported at 76,863,000 bushels, or 2.7 per cent of the total crop. During the fiscal year ended June 30, 1929, the United States exported 18,831,000 bushels of corn, 283,000 barrels of corn meal, 231,667,000 pounds of cornstarch and corn flour, 115,677,000 pounds of corn sirup, and 323,000 pounds of corn oil. The imports during the same period amounted to 490,000 bushels, as against 5,463,000 bushels during the preceding fiscal year.

No important changes in the European corn-borer situation were recorded during the year and the natural spread of the insect by flight from 20 to 30 miles was normal. Several outlying points of infestation were cleaned up in accordance with established practice (see *European corn borer*, under ENTOMOLOGY, ECONOMIC). The National Corn Huskers contest of 1929 was held at Platte City, Mo., November 15 and Walter Olson of Illinois, who won the championship last year, again led the field by husking 25.27 bushels in 80 minutes. The results of the contest were broadcasted and motion pictures of it were taken. A prize of \$1000 donated by L. E. Phillips of Oklahoma was announced for the 1930 contest.

CORN BORER. See ENTOMOLOGY, ECONOMIC.

CORNELL UNIVERSITY. A nonsectarian institution for the higher education of men and women in Ithaca, N. Y., founded in 1865. There were 5500 students enrolled in the autumn session of 1929, distributed as follows: Graduate school, 653; college of arts and sciences, 1959; law, 202; medicine, 244; architecture, 179; engineering, 959; veterinary medicine, 179; agriculture, 701; home economics, 550. Of these students, 1378 were women. For the summer session, the registration was 2415. The faculty, composed of 1160 members, had 287 professors, 204 assistant professors, 10 lecturers, 419 instructors, and 240 assistants. The productive funds on June 30, 1929, were \$22,998,528. The income applicable to current expenses of the fiscal year was approximately \$8,000,000, including \$2,075,000 of State, and \$382,500 of Federal, appropriations. Gifts amounting to \$4,427,172 were received in the year 1928-29. The lands and buildings were valued at \$10,581,000 and the equipment at \$4,064,000. The library contained 785,000 volumes.

Gifts received during the year included \$1,500,000 from Myron C. Taylor for a new law school building, \$2,786,000 from the estate of Payne Whitney for endowment of the medical college, and \$68,000 from the estate of John McMullen for scholarships in agriculture. A bequest was made that the General Alumni Board had offered substantial aid toward the establishment of a centre of research in biology designed to coordinate the work of investigators in the physical and biological sciences. An anonymous gift of \$200,000 as the beginning of a \$1,000,000

pension fund was also received, conditional on the raising of \$800,000 from other sources

Additions to the staff of professors included Henry W. Edgerton and Gustavus H. Robinson in law, R. R. Rosborough in classics, and Paul J. Weaver in music. The faculty lost by death A. C. Beal, professor of floriculture, and G. R. Chamberlain, professor of drawing, and by retirement Dr. V. A. Moore, dean of the veterinary college. Prof. Edward L. Thorndike of Teachers College, Columbia University, gave the Messenger lectures in the history of civilization. The visiting lecturers in chemistry on the George Fisher Baker foundation were Prof. F. M. Jaeger of the University of Groningen and Prof. George P. Thomson of the University of Aberdeen.

The Balch Halls for Women were completed at a cost of \$1,700,000, providing living quarters for 318 students. A war memorial consisting of two 90-foot towers and a connecting cloister, all of them incorporated in the men's dormitory system, was brought almost to completion, together with three additional dormitory units affording quarters for 101 students. Progress was made on a new building for which the State had appropriated \$1,100,000 to house the departments of plant science at the college of agriculture. A new water-storage and filter system was installed for the supply of the campus. Announcement was made in March that the Lying-In Hospital had joined the New York Hospital-Cornell Medical College Association, and in June ground was broken for the association's new medical center at 68th Street and York Avenue, New York City. President, Livingston Farrand, M.D., LL.D.

CORN PRODUCTS. See **CHEMISTRY, INDUSTRIAL.**

COSMIC RAYS. See **PHYSICS**

COSMOGONY. See **ASTRONOMY**

COSTA RICA, *kō'stā rēk'ā.* A republic of Central America lying between Nicaragua and Panama, and bounded by the Caribbean Sea on the east and the Pacific Ocean on the west. Capital, San José.

AREA and POPULATION. The area is estimated at 23,000 square miles. The population was 471,524 at the 1927 census, as compared with 243,205 at the census of 1892. The estimated population on Jan. 1, 1928, was 480,326.

In 1927 the movement of population was: Births, 22,588, deaths, 10,687, marriages, 3769. In the same year, the immigrants numbered 7975 and the emigrants, 7274. The populations of the larger cities in 1928 were as follows: San José, 51,459; Alajuela, 8611; Cartago, 16,261; Heredia, 10,763; Liberia, 7473, Limón, 15,600, and Puntarenas, 7848.

EDUCATION. Primary instruction is free and compulsory, and the elementary schools are under local councils, but subvented by the central government. In 1927 there were 494 elementary schools open, with 1685 teachers and 46,248 pupils enrolled. The average attendance was 42,309. For secondary instruction, there are at San José a lyceum for boys with 556 pupils and a college for girls with 478 pupils. The normal school at Heredia had 343 students. There are two colleges located at Cartago and Alajuela. There are also professional schools of pharmacy, law, medicine, and dentistry. Expenditure on education in 1927 was 3,684,967 colones.

PRODUCTION. The chief occupation in the country is agriculture, although there are large areas not yet cleared that contain valuable cabinet

woods. Coffee and bananas are the principal agricultural products and normally comprise 50 per cent and 33 per cent, respectively, of the country's exports. Coffee is the predominant factor in Costa Rican economy. Coffee crops and prices were good in 1926 and 1927, normal in 1928, and depressed in 1929. The 1929-30 crop, it is estimated, will show a 15 per cent increase over that for 1928-29. Coffee produced in 1927 totaled 10,154 metric tons valued at \$10,634,000, and bananas, 7,869,175 stems, valued at \$5,891,202. The volume of banana exports reached its peak in 1913 and has steadily decreased since that time, owing to the Panama disease and the abandonment of exhausted lands. Cacao production is rapidly expanding, the value of exports in 1928 being nearly double those for the previous year. Sugar, once of considerable value, is playing an ever decreasing rôle. Gold and silver mining also are important industries of the country, being carried on on the Pacific coast. There are also deposits of manganese ore near the Pacific.

COMMERCE. The total foreign trade of Costa Rica for 1928 amounted to \$37,528,550, of which \$17,892,709 represented imports and \$19,635,841 exports. The favorable balance of trade was \$1,743,132. The 1927 total trade was \$34,369,117, of which \$16,310,784 represented imports and \$18,058,333, exports. Imports in 1928 increased by \$1,581,925 over the previous year and exports, by \$1,577,508.

More than half of the total imports into Costa Rica in 1928, or \$8,978,924, came from the United States, with Germany and the United Kingdom next. Imports to the value of \$2,858,866, or 17.5 per cent, respectively. In the same year, the United Kingdom was Costa Rica's leading customer, taking more than half (\$10,540,690) of the total exports. Exports to the United States, mostly bananas, were valued at \$6,028,558, and to Germany, at \$1,885,468. The principal exports in 1928 were bananas, \$5,492,611, coffee, \$12,379,558 (\$10,611,179 in 1927), cacao, \$1,024,544, and gold and silver, \$207,855. Principal imports in the same year were automobiles and accessories, cotton, silk, and wool manufactures, cattle, cement, food products, leather, petroleum, and zinc.

FINANCE. The revenues for 1928 totaled 33,318,699 colones, which was 2,734,576 colones, or 11 per cent, above the 1927 revenues and 5,818,699 colones above the amount estimated in the budget. (One colon equals \$0.25.) Total expenditures amounted to 28,400,443 colones, leaving a balance of 4,930,575 colones. Of the balance, 2,878,392 represented the amount unspent of 3,000,000 colones entrusted to the Mortgage Credit Bank for the promotion of economic progress. The expenditures were distributed as follows: Education, 22 per cent, department of promotion, 18.3 per cent, treasury department, 14.6 per cent, public safety, 9.54 per cent including 2 per cent for actual military purposes. The circulation of currency issued by the International Bank and the *Caja de Conversión*, a credit fund, diminished from a total of 2,000,000 colones on Apr. 27, 1928, to 22,025,450 colones on Apr. 22, 1929. The public debt on Jan. 1, 1929, stood at 83,605,000 colones (\$20,901,000), of which \$7,743,000 represented the American debt, \$1,658,090, the British debt; and 6,648,000 French francs, the French debt. The sum of \$1,080,000 in bonds was held abroad for the electrification of the Pacific Railroad.

COMMUNICATIONS. In 1927 there entered the ports of the Republic 686 ships of 1,321,637 tons, and 698 ships of 1,320,497 tons cleared. The length of railways was 413 miles, of which 81 miles were State owned. Electrification of the state-owned lines was expected to be completed in January, 1930. Air-mail service between Guatemala and Costa Rica was inaugurated Sept. 15, 1929. In 1926 there were 2174 miles of roads partially suitable for motor traffic. In 1927 there were 2740 miles of telegraph wire and in 1925 2173 telephone instruments were in use. In 1927 there were 1480 automobiles registered.

GOVERNMENT. The executive power is vested in the President who is elected for four years and who carries on his administration through seven secretaries of state appointed by him and responsible to him, legislative power is in a chamber of representatives, called the Constitutional Congress, with 43 deputies, elected for four years, one-half retiring every two years. Voting for President, deputies, and municipal officers is secret, direct, and free. President in 1929, González Viquez, who was elected on Feb. 12, 1928, for the term 1928-32.

HISTORY. The year 1929 was comparatively uneventful in Costa Rica. Ravages of the banana blight, a new law passed August 12 increasing the export tax on bananas and restricting their cultivation, and the growing competition of new plantations in Panama combined to depress further the banana industry. On April 7, President Viquez announced that Roberto Smith had been appointed Foreign Minister, . . . Rafael Castro Quesada, who became . . . the Interior. At the same time, the congressional president, Arturo Volo, was named Minister of Agriculture. The Government indorsed the proposal of the President of Nicaragua that the joint interests of the five Central American republics be represented in each South American capital by a single plenipotentiary. Diplomatic relations with Panama, which were resumed in October, 1928, after being severed for seven years, furthered during 1929 the reconciliation of these formerly estranged neighbors.

COST OF LIVING. See STATISTICS

COTTON. The cotton crop of the United States for 1929 was estimated by the Crop Reporting Board of the United States Department of Agriculture on Dec. 9, 1929, at 14,919,000 bales of 500 pounds gross weight, compared with 14,478,000 in 1928, 12,955,000 in 1927, and 17,977,000 in 1926. The yield of lint per acre was estimated to average at 155.3 pounds, as compared with 151.8 in 1928 and 154.5 in 1927. Of 47,569,000 acres in cultivation July 1, 3.3 per cent was abandoned, leaving 45,981,000 for harvest. The estimated farm value of the lint was \$1,225,032,000 and of the cottonseed, \$201,096,000, or a total of \$1,426,128,700 for the crop. The 1928 values were \$1,301,796,000 for the lint and \$233,447,000 for the seed.

The world's supply of American cotton beginning the 1929-30 season was approximately the same as at the start of the previous season. An increase of slightly more than 400,000 bales in production was offset by a decrease of about 600,000 bales in the carry-over, leaving a total supply of about 19,400,000 bales, compared with 19,600,000 bales in the 1928-29 season.

The areas planted to cotton in 1929 in the important cotton-producing countries of the world, excluding China, totaled 73,431,000 acres, or 0.3

per cent more than in 1928. Estimated production in 1929 in important countries were: United States, 14,919,000 bales; Egypt, 1,042,000; U. S. S. R. (Russia), 1,325,000; Mexico, 235,000; Peru, 210,000; Anglo-Egyptian Sudan, 171,000, and Chosen (Korea), 145,000. *The World's Cotton Situation*, an annual review by John A. Todd, estimated (September, 1929) the United States 1929-30 crop at 15,000,000 bales, or 55 per cent of the world's total, India, 5,750,000, Egypt, 1,700,000, U. S. S. R. (Russia), 1,500,000, China, 1,750,000, and other countries, 2,300,000, totaling 29,200,000 bales, compared with a similar estimate of 27,890,000 for 1928-29.

The world's production of commercial cotton in 1928 was estimated by the U. S. Bureau of the Census at about 25,611,000 bales. The International Institute of Agriculture reported the principal cotton countries and their crops to include the United States, with 14,478,000 bales, India (census estimate), 4,718,000, Egypt, 1,628,000, and U. S. S. R. (Russia), 1,208,000. Other countries with noteworthy production were Mexico, 239,000, Peru, 200,000, Anglo-Egyptian Sudan, 142,000, and Chosen (Korea), 150,000 bales. The Bureau of the Census reported the 1928 crop of the United States to be 14,297,000 bales, China 1,550,000, and Brazil 520,000 bales.

The cotton crop of the United States for 1928, as reported by the Bureau of the Census, the estimated crop for 1929, and the quantity reported ginned to Dec. 13, 1929, are shown in the accompanying table.

UNITED STATES COTTON CROP 1928-29

States	Crop 1928	Estimated Crop 1929	Reported Ginned
			December 13, 1929
	500 lb bales	500 lb bales	Running bales
United States	14,296,549	14,919,000	13,461,630
Alabama	1,096,624	1,335,000	1,237,093
Arizona	145,731	156,000	117,718
Arkansas	1,216,241	1,490,000	1,287,594
California	171,042	242,000	208,086
Florida	20,051	29,000	29,745
Georgia	1,053,205	1,345,000	1,226,644
Louisiana	685,868	810,000	788,471
Mississippi	1,462,021	1,915,000	1,746,175
Missouri	146,921	215,000	172,087
New Mexico	82,177	84,000	74,154
North Carolina	869,248	735,000	657,034
Oklahoma	1,187,042	1,200,000	1,046,730
South Carolina	744,390	845,000	750,064
Tennessee	423,471	515,000	420,865
Texas	4,941,545	3,950,000	3,638,605
Virginia	44,764	46,000	39,579
All others	6,206	7,000	6,006

The table includes, for 1929, under the ginning report, 520,072 round bales, counted as half-bales, and also 20,701 bales of American-Egyptian cotton, practically all grown in Arizona. The estimated crop of Arizona for 1929 includes 34,000 bales of American-Egyptian cotton. The crop of Lower California, usually marketed through California, is estimated at 80,000 bales, not included in the totals.

During the cotton year ended July 31, 1929, oil mills in the United States crushed 5,061,055 tons of cottonseed. The products derived from the seed included 1,085,766 bales of linters, 1,368,279 tons of hulls, 2,281,576 tons of cake and oil meal, and 1,604,131,038 pounds of oil. Approximately 174,100 tons of cottonseed meal was used as fertilizer in the period, compared with 250,-

000 tons and 444,000 tons, respectively, in the two preceding cotton years.

Exports of cotton and lint for the year ended July 31, 1929, amounted to 8,043,588 bales of cotton and 186,211 bales of lint, or a total of 8,229,799. Mills in the United States consumed in this period 7,098,946 bales. The principal exports were to the United Kingdom, 1,830,588; Germany, 1,796,798; France, 774,574; Italy, 716,802; other European countries, 1,092,588; and Japan, 1,309,183 bales. Of a total of 457,804 bales imported during the same period, Egypt supplied 296,286; Peru, 17,353; China, 34,857; Mexico, 52,009; and British India 54,424 bales. Mills in the cotton growing States continued to consume the greater part of the cotton used in American mills, 5,400,890 bales, compared with 1,446,093 in New England and 251,363 in other States. Of 34,585,304 spindles in place Dec 31, 1929, 29,069,510 were active during December, of which 17,063,774 were located in cotton States, 9,845,686 in New England States, and 1,260,050 in other States. The percentage of idle spindles was greatest and the average number of hours per spindle was lowest in New England.

Middling cotton at 10 spot markets averaged 18.67 cents a pound during the year ended July 31, 1929, or about one cent less than the previous year. Prices were mostly within a range of 1½ cents. Fluctuations occurred thereafter due to acreage, drought, and weevil damage, and then a sharp drop took place in October to the low of 1929, 16.55 cents, in sympathy with stocks. Recovery of one cent or more on favorable loan terms of the Federal Farm Board was temporary, since price trends were downward during the rest of the year, closing on December 31 at 17.25 cents. New York, 17.01; New Orleans, and 17.30; Galveston. The New York Cotton Exchange began to trade exclusively on a new contract providing for Southern delivery, but until December 15 no deliveries had been made in the South largely because of a substantial stock in New York. A Congressional investigation of the influence of market speculation on cotton prices commenced in December.

The 1929 cotton-growing season was featured by greatly reduced yields in Oklahoma and Texas because of drought, and about average yields in the eastern part of the cotton belt where threatened boll-weevil damage was checked by severe drought, which also seriously interfered with production. Increased production was reported from the Mississippi Valley States.

Cotton production in the United States has continued to move westward and northward and has been meeting increasing foreign competition. The shift has been due in part to the fact that the boll weevil has done less damage along the northern and western borders than in the central and southern parts of the Cotton Belt. The increasing cost of labor has encouraged the use of more machinery and this has tended to discourage cotton production in the eastern States of the Cotton Belt. Conditions in the Great Plains regions and in the alluvial cotton lands along the Mississippi have been more suitable for expansion than in the eastern States. Foreign competition has been increasing not only in volume of cotton production but also by improvement in quality in some foreign countries, particularly India.

The pink bollworm outbreak in 1927 in west Texas, with scattered infestation of nearly 400,

000 acres in seven counties, was practically suppressed by intensive clean-up methods and conditions in the 1927-28 winter unfavorable to hibernating larvae. Weather also served to keep down the pest in parts of Arizona and New Mexico and in the El Paso Valley of Texas. Quarantine restrictions in these sections apparently prevented the spread of pink bollworm to new areas. The cotton leaf worm also caused damage in the Southwestern States. The boll weevil, cotton flea hopper, and cotton bollworm received the usual attention from control agencies. Cotton-root rot continued to be of importance in the Southwest. Cotton investigators of the U. S. Department of Agriculture and of the Texas Experiment Station studied the life history and habits of the disease. See ENTOMOLOGY, ECONOMIC.

Cotton of the 1929 crop ginned prior to December 1 was rather low in grade and short in staple, according to a report based on the 12,840,992 bales of American upland cotton reported by the Census Bureau as ginned up to that date. About 8,930,900 bales, or 69.6 per cent, were white in color and middling or better in grade; strict low and low middling, 16.4 per cent; below low middling, 112,500 bales, spotted and yellow tinged, 10.1 per cent, and stained, 7700 bales. Of a total of 10,040,000 bales, or 78.2 per cent, tenderable, 8,644,200 bales ranged in staple from ¾ inch to 1½ inches, inclusive, and 1,395,800 bales were over 1½ inches in staple.

The International Universal Cotton Standards Conference held its third biennial session in Washington in March, 1929, and approved copies of the standards for American cotton for the use of the U. S. Department of Agriculture and European organizations during the two-year period beginning Aug. 1, 1929. Issuance of tentative types illustrating preparation of long-staple cotton of strict middling, middling, and strict low middling for permissive use during the year 1929 was agreed to and the international organizations as parties to the Universal Standards agreement was considered. The conference also urged the improvement of ginning methods of American ginners which result in deterioration in the quality of spinnable cotton, declaring that poor ginning is detrimental to the interests of the grower, merchant, and spinner.

Other cotton-growing and consuming countries in the world continued to promote cotton production wherever practicable. The Empire Cotton Growing Corporation and the British Cotton Growing Association were active within the British Empire. The corporation maintained or supported experimental farms in Queensland, Union of South Africa, Swaziland, Southern Rhodesia, Anglo-Egyptian Sudan, Nyasaland, Nigeria, and Fiji. The British Cotton Committee continued to finance agricultural research and technology of manufacture, giving especial attention to its institute in Indore and its technological laboratory at Bombay. Dominion and provincial departments of agriculture and other agencies also were engaged in cotton production and marketing. The crop of 1927-28 in the British Empire, including India, amounted to 355,038 bales, or 1.1 per cent more than the previous year. The principal producing countries in 1927-28 were Anglo-Egyptian Sudan, 120,115; Uganda, 138,496; Tanganyika, 32,065; Nigeria, 20,930,

Union of South Africa, 11,013; Queensland, 10,266; Iraq, 5200; West Indies, 4485; Nyassaland, 4470, and Cyprus, 2146 bales. In India, 4,718,000 bales were reported in 1928-29, and 4,680,000 in 1927-28, about 61 per cent of the two crops stapling under $\frac{1}{2}$ inch.

The Egyptian crop was estimated by the International Institute of Agriculture at 1,641,900 bales, compared with 1,628,000 in 1928. Of this, the production of Sakellaridis was estimated to be 530,400 in 1929, and 526,000 the previous year. Up to Dec 1, 1929, 807,082 bales, of which 225,995 were Sakellaridis, had been ginned. Growers of lower Egypt have been turning from Sakellaridis to higher yielding varieties. Damage by bollworms and pink bollworm was about normal.

The U S S R (Russia) continued their programme of expanding cotton acreage in northern Caucasus, in Crimea, and in Asiatic Russia along the Siberia-Turkestan railway being constructed, the plans calling for 29,950 acres, compared with 5050 sown in 1928. About 2,559,000 acres, or 6 per cent less than the 1929 sowing-plan, were planted in cotton in Russia as a whole, compared with 2,289,000 in 1928. The 1929 production was estimated at 1,325,000 bales, 117,000 more than in 1928.

COTTON BOLL WEEVIL See COTTON

COTTON GROWERS' EXCHANGE, AMERICAN

See COOPERATION

COTTONSEED See COTTON

COUNCIL-MANAGER GOVERNMENT

See MUNICIPAL GOVERNMENT

COURT TENNIS. See RACQUETS

COVENTRY, ENGLAND, ANNIVERSARY See CELEBRATIONS

COWS See DAIRYING, LIVESTOCK

CREAM See DAIRYING

CREDIT. See BANKS AND BANKING, BUSINESS REVIEW, FINANCIAL REVIEW

CREDIT-UNION MOVEMENT See CO-OPERATIVES

CRETE An island in the Mediterranean Sea, ceded to Greece after Aug 10, 1913. Area, 3327 square miles, population at the census of 1928, 386,427. Capital, Candia, with a population of 26,604 in 1928.

CRICKET. The annual competitions of the New York and New Jersey Cricket Associations and the Metropolitan District Cricket League served to keep the British game of cricket alive in the United States for 1929. A great help to the furthering of the game was again afforded by the tour of the Bermuda cricketers, who played 18 games, of which they won 13 and drew five. The Brooklyn Cricket Club won the Metropolitan League championship, with the Fordham team in second place by a slim margin. The English team sent to Australia for the test matches was very successful, winning four matches out of the five played. The team played to a total of 785,000 spectators in these games. After the crushing defeat, the Antipodeans traveled to England with the victors. A South African team in England drew two matches out of five, while losing the other three.

CRIME. THE NATIONAL LAW ENFORCEMENT COMMISSION. In May, 1929, President Hoover announced the appointment of his long-heralded National Law Enforcement Commission. It will be recalled that, during the presidential election of the previous year, Mr. Hoover in his campaign address had stressed the necessity for the enforce-

ment of law as one of the major issues before the American people, and that, if elected president, he would appoint a commission to investigate the reasons for the breakdown of the law enforcement machinery. The appointment of the commission was the fulfillment of the pledge made then. George W. Wickersham of New York was appointed the chairman of the commission. Its other members were Frank J. Loesch, lawyer, of Chicago, Kenneth R. Mackintosh, lawyer and former judge, of Seattle, Henry W. Anderson, lawyer, of Virginia; William S. Kenyon, Federal judge, of Iowa; Ada L. Comstock, president of Radcliffe College; Paul J. McCormick, Federal judge, of Los Angeles, Newton D. Baker, lawyer and former Secretary of War, of Cleveland; Roscoe Pound, dean of the Harvard Law School; William I. Grubb, Federal judge, of Birmingham, Ala.; Monte M. Lemann, lawyer, of New Orleans.

All sections of the country were represented and three members—Baker, Grubb, and Lemann—were Democrats. In view of the fact that the commission, among the problems to be considered, was to give serious attention to Prohibition, it was interesting to note the wet or dry sentiments of the appointees. Charles Michelson of the New York *World* classified the following as dry: Kenyon, Loesch, Grubb, Mackintosh, McCormick, Anderson, the following as wet: Wickersham, Baker, Pound, and Lemann, Miss Comstock was put down as doubtful.

It was generally agreed by all groups that the commission was an exceedingly capable one. Up to October, the commission spent its time in the organization and appointment of committees and experts for the conduct of its investigations. The initial step was the division of the commission into a group of subcommittees under whose aegis the various inquiries were to be made and the reports written. There were created 11 subcommittees as follows: Subcommittee on Prohibition, with Mr. Wickersham as chairman; subcommittee on statistics of crime and criminal justice, with Dean Roscoe Pound as chairman, subcommittee on causes of crime, with Henry W. Anderson as chairman, subcommittee on police, with Frank J. Loesch as chairman, subcommittee on prosecution, with Mr. Monte M. Lemann as chairman; subcommittee on courts, with Judge William I. Grubb as chairman, subcommittee on penal institutions and parole, with Judge Mackintosh as chairman, subcommittee on juvenile delinquency, with Miss Ada L. Comstock as chairman, subcommittee on criminal justice and the foreign-born, with Newton D. Baker as chairman, subcommittee on lawlessness by government law-enforcing officers, with Judge William S. Kenyon as chairman, subcommittee on the causes of crime, with Judge Paul J. McCormick as chairman.

The plan called for the holding of open hearings by these subcommittees and the preparation of data and statistics by experts to be either employed or drafted for these tasks. Among experts already engaged before the October meeting were August Vollmer, former chief of police of Berkeley, Calif., expert on police, Prof. S. B. Warner, expert on statistics of crime and criminals, Alfred Betterman, Cincinnati, Ohio, expert in prosecution matters, Judge Joseph C. Hutcheson of Texas, expert on the operation of Federal Courts, Herman Adler, State criminologist for Illinois, expert in medical science relating to criminality, Prof. Edith Abbott of the University of Chi-

cago, expert on criminal justice among the foreign born; Walter M. Pollak of New York City and Prof. Zechariah Chafee of Harvard, to conduct studies in lawlessness by government law-enforcement officials.

While no formal reports were made during the year, the early announcement of Mr. Wickersham that the Federal Government might shift part of the Prohibition burden to the States was considered at large as being one of the important suggestions to be incorporated in the report of the subcommittee on prohibition enforcement. See PROHIBITION.

HOMICIDE RATES. The important researches of Dr. F. L. Hoffman of the Prudential Insurance Company have been cited before in these columns. Dr. Hoffman has carefully collected the number of homicides from the police officials in a large number of cities of the United States. His researches disclose that the murder rate per hundred thousand of population has doubled in the United States since 1900. The murder record for 1928 is approximately the same as in 1927, except that Detroit had moved into first place among the larger cities. The following were the homicide rates per hundred thousand of population among the greater cities of the country: Detroit, 16.5; Chicago, 15.8; Cleveland, 13.3; Philadelphia, 8.8; New York, 6.7; Los Angeles, 4.7. The composite rate for the six largest cities in the country was only 10 per hundred thousand against an average of 38.6 per hundred thousand for 10 Southern cities of considerably smaller size. Dr. Hoffman attributed the rising rate in Detroit to the increasing Negro population of that city. Chicago's homicide rate increased from 14.1 in 1927 to 15.8 in 1928. Thus, murders in Chicago are about 50 per cent in excess of the average for the country as a whole. They are, however, relatively less common in proportion to the population than in 80 cities.

The rates for the 10 Southern cities spoken of show an interesting contrast. In Memphis, the rate was 60.5 per hundred thousand, in Birmingham, it was 54.0. Jacksonville, 52.6; Atlanta, 45.1; Little Rock, 37.9; Macon, 35.9; Savannah, 31.0; Nashville, 27.9; Houston, 26.2; New Orleans, 25.9. The composite rate for these 10 cities was 38.6.

Dr. Hoffman is firmly convinced that the death penalty for murder is no deterrent. In fact, the 10 Southern cities all are located in States in which the death penalty is enforced rigorously. On the other hand, in these States, the carrying of firearms is common. Dr. Hoffman suggests the abolition of the death penalty and the creation of drastic regulations in the traffic of firearms. Of the death penalty, Dr. Hoffman writes: "The death penalty rather than the contrary acts as a deterrent to swift and adequate justice, imposes heavy burdens upon the taxpayers as the result of long trials, fosters sensationalism of the worst possible type, and stains the civilization of those who enforce it."

SUICIDE RATE. Dr. F. L. Hoffman, quoted above, also has made an analysis of the suicide rate in a number of the important cities of the country. His researches indicate that the suicide rate in 1928 was the highest on record since 1916. The rate in 1916 for 100 cities was 18 per hundred thousand, while for 96 cities in 1928, it was 17.5. It is interesting to note that in 1908 the rate was 21.5. Dr. Hoffman ventures the prediction that the suicide rate is tending upward. He says on

this score: "There are reasons for believing that in many respects present-day life is thoroughly unwholesome in all sections of the population which find it difficult to maintain a standard of life presupposing incessant anxiety and toil."

The 10 leading cities in the order of their importance as regards suicidal frequency in 1928 were the following: San Diego, 43.4 suicides per 100,000; San Francisco, 41.7; Tacoma, Wash., 34.4; Atlantic City, 32.9; Oakland, Calif., 32.8; Sacramento, 31.7; Seattle, 30.5; Terre Haute, Ind., 29.9; Denver, 23.9; Portland, Ore., 26.5. The following were the rates for the six largest cities in the country. Manhattan and the Bronx (N. Y.) 25.9; Los Angeles, 19.0; Chicago, 18.1; Detroit, 16.4; Philadelphia, 14.7; and Brooklyn, N. Y., 14.2.

Dr. Hoffman contrasts the American situation with those existing in a number of foreign countries. His report shows that Jamaica and the Irish Free State have the lowest rate of suicide per 100,000 persons of the population. The former has a rate of 1.5 and the latter a rate of 2.7. Austria has a rate of 21.2; Germany, 21.4; Switzerland, 22.6; Hungary, 22.8. The rate for the whole United States is 11.7. (The above figures were for the years 1924 and 1925.) In 1928, there were 5561 suicides in 97 American cities with a total population of 31,719,000, or a suicide rate for every 100,000 persons of 17.5.

COST OF CRIME. It was estimated by Wade H. Ellis of the American Bar Association's Crime Commission that crime costs the American people \$13,000,000,000 a year, that 12,000 murders were committed in America annually, and that 30,000 criminals were at large in New York and 10,000 in Chicago. Mr. Ellis' estimate of \$13,000,000,000 was based on losses sustained from robberies, costs of insurance, and the maintenance of penal institutions in the country. Mr. Ellis indicated the following outstanding causes for the great increase in crime in the country since the War: (1) The extraordinary growth in wealth which has made for wastefulness and extravagance. (2) The stupid increase of the number of laws. (3) The great increase in physical facilities which has made the commission of crimes and getaways more expeditious. Among such inventions have been the automobile, the automatic pistol, the machine gun, the smoke screen, and the airplane. (4) The increase in urban population. (5) The inefficiency of the judicial system in the matter of prompt and effective punishment of lawbreakers. (6) The lack of interest displayed by the public at large, which has been more concerned with the amassing of wealth and the creation of leisure-time activities.

Insurance experts sought to analyze a portion of the crime cost of the country from a study of surety company figures. According to one authority, burglary and theft cost the country \$215,000,000; forgery and fraud took an annual toll of \$125,000,000; and embezzlement cost \$125,000,000. This total of \$500,000,000 for these types of crime, represented both insured and uninsured losses. The public was paying annually \$85,000,000 for crime insurance, representing protection on more than \$15,000,000,000.

AMERICAN BAR ASSOCIATION. At its annual meeting in October in Memphis, Tenn., this organization accepted the report of its "Section on Criminal Law." In conjunction with this report, the following resolutions were adopted: (1) That there be available to every juvenile and

criminal court a psychiatric service (2) That no criminal be sentenced for any felony in any case where the judge has any discretion as to the sentence until a psychiatric report be filed. (3) That a psychiatric report be made on every prisoner before released (4) That each State establish a system of administrative transfer and parole and that no decision of a parole or transfer be made without a psychiatric report.

NEW YORK STATE. The Subcommittee of the New York State Commission on Causes of Crime continued during the year to issue a number of reports on juvenile delinquency, largely the work of Samuel Schulman, its director. One of the important reports of the year was an analysis of truancy, by an examination of the home status, housing, and educational abilities of 251 adolescent truants. The study shows that in the cases examined chronic truancy was in many instances the first step in a criminal career. It prefaces its conclusions with the following statement: "There is no doubt that present methods of dealing with crime among the youth of the city are wasteful of money and of careers. There is no doubt that the time to institute modern methods of child guidance is during childhood. There is no doubt that the school system is the place to begin the method." The report recommends the creation of psychiatric and habit clinics in the public schools. In such units should be attached psychiatrists, psychologists, physicians, vocational guidance experts, visiting teachers, and social workers, for the purposes of correlating school work with the educational and functional problems evidenced by backward students.

Continued experience with the Baumes Laws (to which reference has been made in previous YEAR BOOKS) has created a decided opinion in favor of radical modifications. Thus, Dr. Walter N. Thayer, Superintendent of the Institution for Defective Delinquents at Naponach, N. Y., before the October meeting of the State Crime Commission, urged the elimination of the arbitrary life sentence imposed on fourth offenders. In the opinion of Dr. Thayer, a criminal was not being deterred by the sentence that had no definite termination. In describing the work of his own institution, Dr. Thayer declared that Naponach was being overtaxed. This plant had a capacity for only 490 and at the time of the meeting was harboring 737 inmates. The low class of mental defectives was increasing at Naponach with constructive rehabilitation work among the higher type of prisoners. A concrete suggestion made was the creation of a central receiving institution for all types of criminals, both mental defectives and delinquents, where a sorting process might be made for distribution of the offenders to proper institutions.

Schemes for the segregation of defectives from criminals were before the public attention a number of times during the year, particularly in New York City, where definite thought was being given to the establishment of crime clinics. Richard C. Patterson, Jr., Commissioner of Correction, in his annual report, called for the making of a study for two years on a budget of \$150,000 to investigate 2000 offenders for the purpose of singling out those mental defectives who needed medical care, rather than incarceration in penal institutions. Mr. Patterson's report cited the fact that there were 10,809 prisoners committed to the city penitentiary on Welfare Island during 1928-29, of whom 3443 were second offend-

ers; 1587 third offenders, 872 fourth offenders; and 525 fifth offenders. It appeared that the city was being burdened particularly with short-term offenders upon whom imprisonment evidently made no impression. It was estimated by the Department of Correction that annually 15,000 men and women go to jail in New York for 10 days or less and 10,000 for 3 days or less.

The problem of the mental defective is probably more serious than is that of the habitual offender whose delinquencies can be handled more expeditiously and effectively than by short jail sentences. Mr. Patterson declared that, of the 10,890 prisoners at the penitentiary on Welfare Island in 1928, 6245 were physically or mentally defective. Mr. Patterson's report states: "It has been the practice of many years' standing to use the penal institutions of the department as dumping grounds for the physically and mentally unfit. Many of these, through motives of humanity, not to mention the practical side, should have been sent to hospitals or to some other institution where they can have custodial care more suited to their needs which of course a penal institution cannot supply." The proposed crime clinic in New York was to attempt to separate exactly such offenders. The situation can best be treated by medical and hospital care, rather than confinement in penal institutions.

NEW YORK CITY. Police Commissioner Grover A. Whalen of New York City, in a report of his department for the six months ending June 30, 1929, indicated that there had been sizable reductions in crime in New York City, as compared with the same six-months' interval for 1928. Crimes of violence, i. e., murder, robbery, felonious assault, and burglary had been reduced 8½ per cent, felonies had been reduced 12½ per cent, burglary and robberies had been reduced 70 per cent. In 1928 insurance companies had paid losses for 2250 burglaries and robberies, as compared with 928 for the same period in 1929. In the analysis of murder and manslaughter cases, the commissioner showed that 92 of the total of 160 of these crimes were crimes of passion and therefore, as far as police action is concerned, not preventable. The commissioner's report contained the following statement, which is generally conceded to be true by experts of crime: "It is a remarkable tribute to the efficiency of our police that there is no commercialized prostitution and the uncontradicted statement may be made that New York City has less open vice than any other large city in the world. Professional gambling is at a minimum in the city. Virtually, the only games of chance that operate are forms of gambling that may run a few hours nightly in cellars or other obscure places in the city. The persons conducting such games are compelled to secure new locations daily, due to the vigilance of the Police Department." The commissioner's report further disclosed that, during the first six months of the year, there had been 20,386 complaints of crime made to the police. A total of 7193 arrests had been made in these cases up to the time of the compiling of the report. During the same period, the estimated value of thefts, excluding stolen automobiles, was \$4,411,098, and, of this amount, 22.8 per cent had been recovered by the defectives. The number of automobiles lost or stolen was 5150, of which the police regained 4081. Of the 180 homicides, arrests were made in the cases of 105. As was said, 92 homicides were due to family troubles or unfortunate love affairs, 9 were com-

mitted during the commission of felonies, 7 were gangster killings, and 5 were as the result of gambling disputes. Of the 105 arrests for homicide, convictions had been obtained in the cases of 13, and in the corresponding period for 1928 convictions were obtained in 33 of the 108 cases where persons had been arrested for murder. Homicides, listed officially as unsolved, numbered 25 in 1929, as against 36 for the same six-months' period in 1928.

ILLINOIS. There was published during the year the results of the Illinois Crime Survey, made for the most part in Cook County by a group of experts under the direction of the Illinois Association for Criminal Justice. The report indicated that the large number of homicides occurring in Chicago was due to gang warfare resulting from attempts by well-organized gangs to create monopoly districts for the control of the liquor and gambling privileges. In 1926 and 1927 in Cook County (in which Chicago is located), there were 130 gang murders and for these not one man was punished. The largest percentage of the Chicago killings was committed in those districts inhabited by Negroes and Italians. Although the Negro population of Chicago is only 5 per cent of the whole, approximately 28 per cent of the murder victims were colored and 30 per cent of all persons killed by the police were colored. In the Italian districts were committed 74 of the gang killings, a percentage far out of proportion to the ratio of population.

The chapters devoted to organized crime, written by John Landesco, trace the careers of important gang leaders and the evolution of gang activities. The report detailed at length the character of the truces declared by the gangs to map out the city for the peddling of bootleg whiskey, the extent of the organization of one of the major syndicates with its annual income of \$2,000,000, the technique of bombing, etc. Another chapter of the survey, made by Chief of Police Vollmer, of Berkeley, Calif., indicated that there were vital defects in police administration and that the police force's demoralization was to a large extent due to lack of support by prosecuting officers and attorneys and the shifting of administrative officials at recurrent elections.

Analyses of criminal prosecution were made by William D. Knight, John J. Healy, and Raymond Moley. According to one of these experts, responsibility for failure to convict the guilty lies 10 per cent with the courts, 20 per cent with the police, and 70 per cent with the prosecution. Mr. Moley, in presenting his two hypotheses that too many innocent persons are being arrested or that too many guilty persons are escaping punishment, cited the following figures: Out of the total number of robbery charges in the year 1926 brought to trial, 1788 cases were discharged without punishment, 719 were reduced to lesser offenses, 30 were still pending, 1 was declared insane, and only 151 were convicted of robbery. Of the 12,543 felony cases in Chicago in 1926, only 2449 were found guilty of any offense and, of this number, only 594 were convicted of the offense charged. Mr. Moley makes the recommendation in this portion of the survey that judges must be taken out of politics.

Throughout all the chapters of the survey are to be found constant references to the effect of political control on the administration of justice, of the work of the "fixer," of the especially privileged, and of the incompetency and corruption of

public officials. Other experts who contributed sections to the report were C. E. Gehlke, "The Disposition of Felony Cases"; Bruce Smith, "Rural Police Protection"; Arthur V. Lasky, "Homicide"; and Albert J. Tarno, "The Supreme Court in Felony Cases."

PRISON OUTBREAKS. The year witnessed a series of five desperate outbreaks on the part of prisoners in New York, Colorado, and Kansas jails that resulted in bloodshed and death. The first took place on July 22 at the Clinton Prison at Dannemora, N. Y., where 1300 prisoners set fire to a lumber shed, a carpenter shop and a weaving shop. After a battle of five hours, the rioting prisoners were subdued by guards. Three convicts were slain. The second mutiny took place at Auburn prison, also in New York State, on July 28. Here, the prisoners seized riot and machine guns from the guards, shot down four of them, and fired most of the workshops in the prison walls. Four of the leaders of the riot escaped in automobiles, two were killed and eleven were wounded. When 1929 closed, two of the escaped convicts were still at large. The Auburn rioters had hoped to effect a general release by setting fire to the prison, and when local fire companies appeared on the scene the prisoners attempted to interfere by hacking the fire hose with axes. The mutinying convicts did not surrender until the appearance of State troopers with machine guns.

Early in October, in the Colorado State Penitentiary at Canyon City, Colo., there occurred a riot that lasted for seventeen hours and that did not end until seven guards and six convicts were slain. The mutiny began when a band of five convicts produced revolvers and captured fourteen of their guards, whom they held as hostages to guarantee safe conduct through the prison. Four guards were slain and their bodies hurled into the prison yard, when the warden of the jail refused to comply with the prisoners' ultimatum. The cell block, in which the rioters had taken refuge, was finally exposed to machine-gun fire as the result of the explosion of a charge of dynamite placed by the prison priest. The leader of the mutineers, realizing the hopelessness of the situation, then coolly lined up his followers, and, having shot them, killed himself.

On August 1, the 3700 convicts in the Federal jail at Leavenworth, Kan., broke out into mutiny. In this outbreak, none of the jailers was killed, but one of the prisoners was fatally wounded.

The most desperate mutiny of them all occurred at Auburn, N. Y., December 11. Here, a band of fifty convicts, held in solitary confinement for their part in the earlier riot of the summer, made a mad bid for freedom while they were being marched to the prison yard for their morning's exercise. As in the Colorado jail, the convicts seized the warden and a group of guards to be held as hostages. For six hours, the band of mutineers terrorized the prison. They did not surrender until they were charged by State troopers and militiamen, who used gas bombs and gunfire. The warden and five of the captive guards were rescued as they fell, overcome by the gas fumes. The dead included the principal keeper of the prison and eight of the convicts. The injured included six guards and three convicts. In all these bloody efforts on the part of the prisoners to gain their freedom, observers were able to discern the following causes at work. (1) The prisons were overcrowded. (2) The food was bad. (3) The prisoners did not have enough work to do.

(4) The new rigorous laws, making for long terms and for the slowing down of the machinery of parole, had destroyed hope among the prisoners that good conduct might lead to a lightening of their sentences.

That there was considerable justice in the demands of the rioting prisoners was indicated when President Hoover, in August, following the outbreak at Leavenworth, announced that he had decided to ask for an additional \$5,000,000 from Congress to enlarge the four existing government penal institutions and for the erection of a new prison in one of the northeastern States. The President's statement declared that overcrowding had led to a state of "infinite demoralization" that in many instances had caused "trouble and outbreaks" among the inmates. The President showed that Atlanta was 120 per cent over capacity and Leavenworth 87 per cent. There were to be found similar conditions of overcrowding in the prison at Chillicothe, Ohio, and at McNeill Island Prison (State of Washington).

CRITICISM. See LITERATURE, ENGLISH AND AMERICAN, FRENCH LITERATURE, GERMAN LITERATURE, ITALIAN LITERATURE, SCANDINAVIAN LITERATURE, SPANISH LITERATURE, ETC.

CROATIA (krô-â'shl-a) **AND SLAVONIA.** Since 1918 a province of the new State of Yugoslavia, formerly a crownland of the Austro-Hungarian Empire, extending from the Adriatic Sea to the Danube River. Area, Jan 31, 1921, 16,920 square miles, population on the same date, 2,739,593. Capital, Zagreb or Agram, with a population in 1921 of 108,338 (estimated in 1927, 130,000).

CROATS. See YUGOSLAVIA

CROPS. See AGRICULTURE and articles on various crops such as CORN, OATS, TOBACCO, WHEAT, ETC.

CROSS-COUNTRY RUNNING. The national cross-country championship of the United States was won for the second time in succession in 1929 by Gus Moore, Pittsburgh University student, running under the colors of the Brooklyn Harriers Association. The national team title was garnered by the Dorchester, Mass., Club James McDade of New York City captured the national ten-mile race on Thanksgiving Day, while the marathon event was taken handily by John C. Miles of Hamilton, Ont.

The Pennsylvania University team gained the Eastern Intercollegiate honors, usurping the laurels held by Penn State College for three years. The individual eastern college championship was taken by two runners from the University of Maine, Harry Richardson and Francis Landau, who finished in a dead heat for first place in the event at Van Cortlandt Park, New York City. In the Western Conference, Orval Maitin captured the individual honors for Purdue, while Indiana gained the team honors.

CRUISERS. See VESSELS, NAVAL.

CUBA. A republic of the West Indies consisting of the large island of the same name, the Isle of Pines, and small adjacent islands. Capital, Havana.

AREA AND POPULATION. The area is 44,164 square miles of which 41,634 are for the island of Cuba, 1180 for the Isle of Pines, and 2350 for the other islands. According to figures furnished by the Director of the Census Bureau, the population of Cuba on June 30, 1928, was 3,579,507 (including 82,297 immigrants), distributed by provinces as follows.

Provinces	Inhabitants
Pinar del Rio	301,001
Havana	1,081,514
Matanzas	347,552
Santa Clara	755,027
Camaguey	258,712
Oriente	885,697

In 1928 there were 17,469 marriages, 58,387 births, 6008 still-births, and 41,751 deaths.

The city of Havana had 581,076 inhabitants in 1928, being the only city in the Republic whose population was over 100,000. Other important cities and the populations, including suburbs, are Cienfuegos, 72,919, Camaguey, 92,073, Manzanillo, 60,544, Santiago de Cuba, 73,800, Quantánamo, 62,598, Santa Clara, 69,200, and Sancti Spiritus, 86,418. There is a large transitory immigration yearly consisting largely of Spanish laborers who return to Spain after the harvest season.

EDUCATION. Primary instruction is free and compulsory between the ages of 6 and 18. The public-school system was developed under American supervision after the passage of the Education Act of 1899. According to statistics compiled by the Division of statistics, there were, in the year ending June 30, 1928, 449,478 children enrolled in the 6952 elementary schools, which had 7350 teachers. There were also 70 traveling teachers who taught 3324 pupils, 84 night schools for working people with 8377 pupils. There were also 525 private schools with 1668 teachers and 31,949 pupils. There is a special institute for advanced instruction in each province, and annexed to each is a normal school for the training of teachers. University instruction is provided by the University of Havana, which was founded in 1721 and had 4148 students in 1927-28.

PRODUCTION. The economic condition of Cuba is dominated by the price of sugar, which, with its by-products, comprises over 80 per cent of the total exports. The island is the world's largest sugar producer. Tobacco and its products account for about 12 per cent of the exports. The country is essentially agricultural, other products being cacao, cereals, coffee, potatoes, and fruits. The dominant position of sugar dates from 1914 when the dislocation of the European beet industry during the World War and the resultant heavy demand for sugar caused a rapid increase in the Cuban output, accompanied by heavy investments in railroad and other facilities necessary to this expansion. Commerce and industry grew correspondingly until the severe depression of 1921. The industry did not recover from this slump. Although exports were greater in 1925 and 1926 than in 1920, the price and total value of exports steadily declined after 1924, except for a temporary improvement in 1927.

With the progressive restoration of the beet industry in Europe and the continued growth of production in Cuba and other countries, the industry was faced with surplus supplies which accounted for the low prices of recent years. Cuba's production of sugar nearly doubled since 1912, while production in other sugar-producing areas increased even faster, so that Cuba's share of the total world production declined from a high point of over 25 per cent in 1918-19 to less than 16 per cent in 1928. Consumption in the United States, Cuba's chief market, did not keep pace with the supply, the imports from Cuba increas-

ing only from 1,925,000 long tons in 1913 to 3,259,000 tons in 1927. Government restrictions on production, which reduced the output from 5,126,000 tons in 1924-25 to 4,500,000 tons in 1926-27, and 4,000,000 tons in 1927-28, did not result in the hoped-for increase in prices. In 1928-29 government control was withdrawn and sugar production established a new record of 5,135,000 tons, but prices dropped lower than for years and the income from the crop was much less than that received from other previous crops of much lower tonnage.

The 1929-30 sugar-grinding season opened Dec 15, 1929, with an estimated crop of 4,545,480 long tons to dispose of. A cooperative export agency was created in 1929 to market the entire crop and was given authority to restrict all sales in an effort to stabilize prices.

The depression in the sugar industry is reflected in the general business conditions in Cuba, which have been badly depressed since 1924. In 1927 the Government adopted a drastic protective tariff policy and in the following year inaugurated a national movement for the expansion and diversification of agriculture and industry. By the end of 1929, the expansion of coffee, coin, and rice culture, and the increased production of dried beef, dairy products, and of leather, garment, wood, and metal manufactures were reported by observers as the fruits of these measures. The export trade in tobacco has been steady in quantity but values have been higher in recent years. In 1928, 46,020,000 pounds, valued at \$27,840,000, were exported, of which the United States took \$20,086,000 worth. Exports in 1927, \$25,556,000, to the United States, \$20,377,000. Livestock in the country in 1929 included 4,752,307 cattle, 642,194 horses, 82,273 sheep and goats, and 3233 mules.

Cuba's forest lands, 1,250,000 acres of which belong to the state, contain valuable cabinet woods. Considerable mahogany is exported. Iron ore, copper, manganese, and gold are mined.

Cuban fisheries made a notable advance in 1928, their production reaching 12,405,574 pounds, valued at \$1,927,208, or an increase of \$601,992 over the preceding year. Imports of salt fish dropped in proportion.

COMMERCE Cuba's foreign trade continued its downward trend in 1928, the value of combined imports and exports dropping to \$489,988,027, the lowest level since 1915, according to preliminary figures of the Cuban Treasury Department. This represented a decrease of \$91,763,741, or 16 per cent, from the 1927 total. Exports for 1928 were valued at \$278,069,689, as compared with \$324,367,706 in 1927, a decrease of 14 per cent. The total value of imports was \$211,918,338, a drop of \$45,405,724, or 18 per cent, from 1927. The fluctuations in Cuba's foreign trade from 1913 to 1928 are shown in the accompanying table.

Cuban exports to the United States in 1928 decreased by \$53,607,532 and represented 73 per cent of the total exports, as compared with 79 per cent in 1927. Imports from the United States dropped \$29,117,546 and constituted 60.8 per cent of the total, or about 1 per cent less than in 1927. Exports to the United Kingdom were \$45,325,499 in 1928, recording a substantial increase for the third consecutive year. Spain, France, and Germany also increased their purchases from Cuba. Imports from all the major countries were less than in 1927. In 1928 the

CUBA'S FOREIGN TRADE, 1913-28
[In thousands of dollars]

	Imports		Exports	
	Total	From United States	Total	To United States
1913 .	\$140,132	\$ 75,288	\$161,611	\$131,572
1914 ..	118,202	65,623	174,041	145,881
1915 .	140,884	90,463	236,229	195,289
1916 ..	215,962	153,030	321,790	242,038
1917 .	256,085	199,875	356,428	255,275
1918 .	294,632	219,272	407,288	289,090
1919 .	356,631	271,506	573,019	439,935
1920 ..	557,017	404,386	794,009	626,859
1921 .	354,403	263,516	278,061	222,963
1922 .	180,305	120,259	325,478	260,609
1923 .	268,850	181,616	421,075	307,846
1924 .	289,880	191,571	434,865	302,265
1925 .	297,324	187,224	358,984	264,200
1926 .	260,826	160,051	301,708	242,882
1927 .	257,384	159,682	324,368	256,143
1928 .	211,918	128,938	278,070	202,635

United Kingdom supplied 4.6 per cent of Cuba's imports, Germany, 3.1 per cent, and France, 4.5 per cent. The rapid growth of the United States export trade with Cuba from 1913 to 1920 and its equally rapid decline since that date can be attributed almost entirely to the rise and fall in the value of Cuban exports of sugar. In 1929 both imports from the United States and exports to that country moved upward in a mild reaction from the low levels of 1928, although in the last quarter of the year trade with the United States fell off as compared with the previous year. Total exports of sugar in 1929 amounted to 4,771,211 tons (4,011,698 tons in 1928), of which 3,070,455 tons went to the United States (2,902,552 in 1928). The price of raw Cuban sugar on the New York market averaged 2 cents per pound in 1929, as compared with 2.46 cents in 1928, 2.95 in 1927, and 5.24 in 1923. Exports of tobacco in 1929 were valued at \$37,878,705.

FINANCE The financial operations of the Cuban government reflected the economic depression. Revenues were increased from \$80,345,000 in 1927 to \$81,972,000 in 1928 largely through increases in the import duties, the progressive extension of internal taxes by administrative means and decrees, and a drive for overdue taxes. Despite higher duties, customs receipts in 1928 were only \$38,713,873, or \$3,564,863 less than in the previous year. Including the expenditure of borrowed money, it was estimated that the national Government, the provinces, and the municipalities spent upward of \$150,000,000 during 1928. Much of this went toward public improvements. By January, 1929, the Government had borrowed \$20,000,000 by special arrangement with New York bankers for the more rapid construction of public works. This programme was designed to counteract the effects of the business depression.

The final budget for 1929-30 estimated receipts at 85,450,000 pesos (1 peso equals \$1 at par) and the ordinary administrative expenditures at 67,686,881 pesos. Payment from the fixed budget of an additional 17,705,289 pesos for the services of the foreign and internal debts and certain administrative charges brings the total estimated expenditures to 85,392,151 pesos.

The chief items under ordinary administrative expenditures were Department of State, 1,850,722 pesos; Government, 4,733,045 pesos; Treasury, 8,776,978 pesos; Agriculture, Commerce, and Labor, 1,190,038 pesos; Public Works, 4,227,777 pesos; Public Instruction and Fine Art, 15,737,281 pesos; Sanitation and Charity, 5,649,947

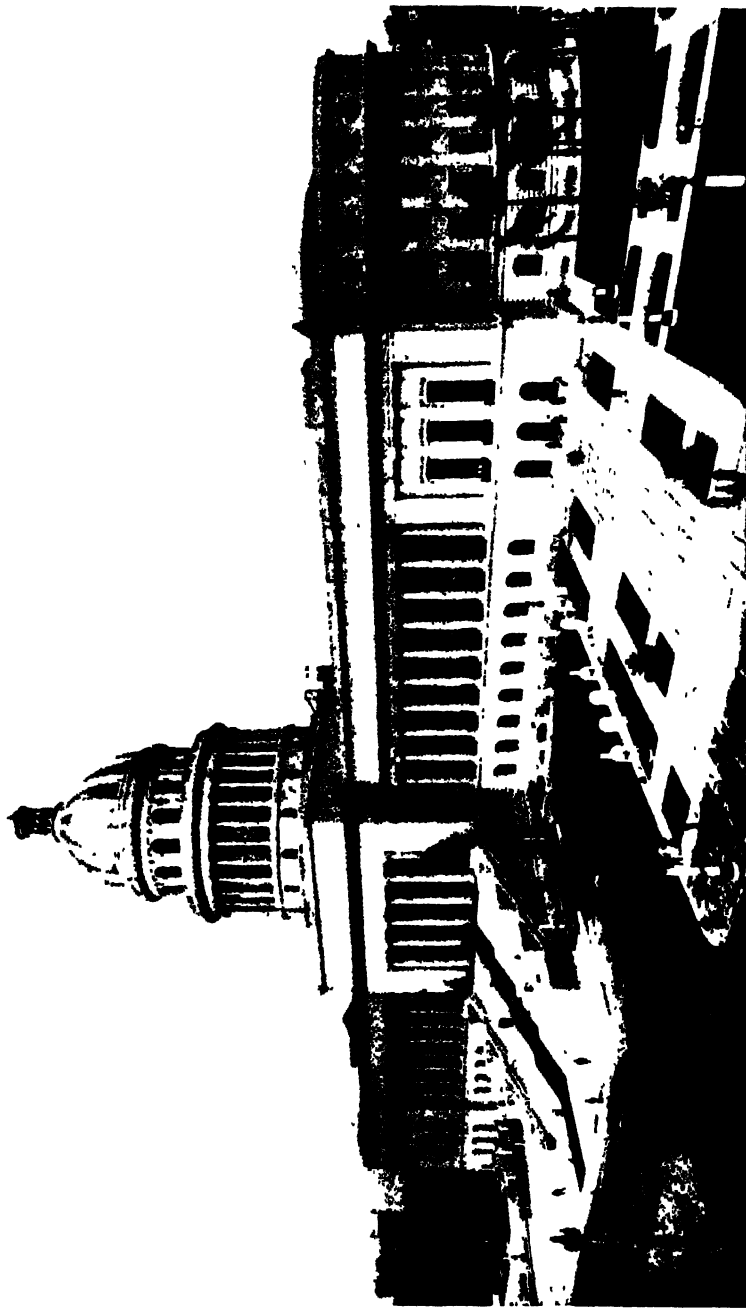


Photo by Ewing Galloway, New York

THE NEW CAPITOL OF THE REPUBLIC OF CUBA, HAVANA

pesos; War and Navy, 12,734,324 pesos, Communications, 5,355,880 pesos; special veterans' fund, 7,336,360 pesos. Chief revenue items were customs, 41,128,000 pesos; land taxes, 28,431,500 pesos; loan taxes, 5,600,000 pesos; national lottery, 4,250,000 pesos; transportation taxes, 2,690,500 pesos. The total funded debt stood at about \$110,000,000 in February, 1929, as compared with \$93,000,000 in February, 1928.

Tourists were estimated to have expended \$20,000,000 in Cuba during the winter of 1928-29, an increase of \$4,000,000 over the previous season.

COMMUNICATIONS. In 1928 Cuba had 2462 miles of railroad line, exclusive of some 3000 miles of private railways owned by sugar companies. In the same year, there were 1739 miles of highway. Additional provision for the more rapid construction of Cuba's extensive public-works programme was made in 1929 when a contract for financing the work to the amount of \$60,000,000 was made with an American bank. The programme includes the completion of the Cuban Central Highway, said to be the most important road-construction project in the world. It extends 702 miles from Pinar del Rio on the west to Santiago in the east and connects Havana with most of the important cities of the island. The total cost is estimated at \$76,000,000. In September, 1929, the highway was 40 per cent completed.

In 1927 there were 12,231 miles of telegraph wire and 65,216 telephones in use. An air-mail and passenger service between the United States and Cuba was inaugurated in January, 1929. During 1928, 6500 vessels, with a total tonnage of 21,486,978, anchored in Cuban ports.

GOVERNMENT. Executive power is vested in a president and cabinet, and legislative power in a congress of two houses, viz., a senate with 24 members and a house of representatives with 118 members. President in 1929, General Gerardo Machado y Morales, inaugurated May 20, 1929, for his second term, which expires May 20, 1935.

HISTORY. Critics of the Machado régime for alleged violation of the constitutional rights of the President's political opponents and of foreigners resident in Cuba found repeated expression in both Cuba and the United States during 1929. In the United States, the discussion centered in the case of Joseph E. Barlow, an American citizen, who had made a claim for \$9,000,000 against the Cuban government for the alleged confiscation of his property. On August 27, he was arrested and imprisoned in Havana on a charge of grand larceny. Securing his release on bail the next day, he submitted the matter of his arrest to Secretary of State Stimson. His financial claims against the Cuban government had been filed with the United States State Department more than a year before. The evidence in this case as presented before the subcommittee of the Foreign Relations Committee on May 14, 1928, was made public in Washington Sept. 2, 1929. The testimony revealed that Daniel Dunning, counsel for Barlow, had charged President Machado before the committee with cabling the Cuban Ambassador at Washington on May 7, 1928, "asking him to use \$500,000, or any sum of money, to control the press so that there would be no adverse reports," on the Senate committee's inquiry into the Barlow case. On September 5, Mr. Barlow filed an affidavit with the State Department, giving a harrowing account of his alleged treatment by Cuban prison officials. On

September 25, Secretary of State Stimson and other officials of the State Department discussed the claims of American citizens against the Cuban Government before the Senate Foreign Relations Committee.

These events followed the publication in mid-April by the Foreign Policy Association in the United States of a survey of alleged repressive methods adopted by the Cuban government. Special reference was made to the responsibilities of the United States under the Platt Amendment. The Cuban Ambassador at Washington, on April 16, issued a statement declaring that a "campaign of defamation" was being conducted against Cuba in the United States.

Four Associated Press newspapers in Havana came to the defense of President Machado in a joint statement issued in New York September 19. They asserted that the Cuban press was free, the country making rapid progress, that life and property were safe, and that "far from maintaining a dictatorship, President Machado has won the esteem of the Cuban people."

Dr. Rafael Iturralde, former Governor of the Cuban province of Matanzas, issued a statement in reply in New York, on September 21, denying that freedom of the press existed in Cuba, he named four editors whom he said had been assassinated "under mysterious circumstances after campaigns unfavorable to the government."

"No one can deny," Dr. Iturralde said, "that Machado reelected himself without opposition, that no election has been held for Congressmen now holding office, and that hundreds of citizens have been murdered while widespread terrorism prevails. The reports of the American Federation of Labor and the Foreign Policy Association are definitely conclusive on these points."

Cuban officials arrested 10 men in Havana February 27 and charged them with plotting to assassinate President Machado and bring about the intervention of the United States. On October 18, four arrests were made in connection with an alleged conspiracy against the Government and 14 other persons, including several former Senators and cabinet members, were said by the police to have been implicated. Col. Carlos Mendieta, a former Deputy of the Nacionalista party, who was leader of the group, said after his release on bail that he and his associates would continue to oppose the Machado régime "until total restoration of public liberties, with all the legal arms provided." In connection with the campaign of the Cuban police against aliens who cause unrest, 23 Asiatics were deported under a decree signed by President Machado on November 16.

In December, President Machado's name was brought into the investigation which the United States Senate conducted into lobbying activities of the Cuba Company, an American company with large sugar holdings in Cuba, in connection with its efforts to prevent a proposed increase in the American tariff on Cuban sugar. In a letter to Herbert C. Lakin, president of the Cuba Company, which was read into the record, President Machado was quoted as saying that the proposed tariff increase would destroy the economic power of the island and reduce it to the condition in which it was when Cuban independence was first obtained.

CULIN, (ROBERT) STEWART. An American anthropologist and museum curator, died in Brooklyn, Apr. 8, 1929. Born in Philadelphia,

Pa., July 13, 1858, he attended Nazareth Hall Academy, Nazareth, Pa. He traveled extensively in the Orient, in India, and among American Indians, often living with the natives in order to study their dialects and customs. After directing the department of archaeology of the University of Pennsylvania, 1892-99, he became curator of the section of American and general ethnology of the Free Museum of Science and Art, 1899-1903. Appointed ethnologist of the Museum of Brooklyn Institute of Arts and Sciences in the latter year, he remained with that institution until his death, always trying to reconstruct for the visitors the daily activities of the ancient peoples whom his curios represented. Making an especial study of the games and sports of various civilizations, Mr. Culin wrote extensively on these and other subjects from an anthropological point of view. His books include *Korcan Games* (1896), *Chess and Playing Cards*, and *American Indian Games* (1905).

CULTURE, ANCIENT See ANTHROPOLOGY
CUMBERLAND PRESBYTERIAN CHURCH. A branch of the Presbyterian Church, originally the Cumberland Presbytery of Kentucky. It was formed in 1810, when the so-called anti-revival party of the church objected to the admission into the ministry of men who were not up to the usual literary and theological standards and to the doctrine of fatality as taught in the third and tenth chapters of the Westminster Confession of Faith. Its chief strength was in the Southern States, in consequence of which it was barely saved from disunion during the slavery dispute at the time of the Civil War. This situation led to the establishment of the Colored Cumberland Presbyterian Church. A general assembly which meets annually is the supreme judiciary. In 1929 the denomination comprised 10 synods and 61 presbyteries, and there were 1189 churches, reporting 736 ministers, and a church membership of 64,767. The Sunday-school enrollment was approximately 52,250. The property of the church was valued at \$3,968,868, not including \$500,000 endowment for education.

Missionary work was carried on among the Indians in the United States and churches were maintained in China, where there was an organized presbytery in Canton with nine churches in South China. During the year, mission work was opened up in South America. The denomination carried on educational work under the direction of the board of education and maintained Bethel College and the Cumberland Presbyterian Theological Seminary, both in McKenzie, Tenn. *The Cumberland Presbyterian*, published in Nashville, Tenn., is the official organ of the church. The 1929 national meeting was held in Princeton, Ky., and the 1930 meeting was announced for May 15-21 in Olney, Tex. The Rev. H. C. Walton, M. A., B. D., Birmingham, Ala., was moderator of the general assembly, and the Rev. D. W. Hooks, Paducah, Ky., was stated clerk and treasurer.

CUMBERLAND PRESBYTERIAN CHURCH. COLORED A branch of the Cumberland Presbyterian Church which was legally set apart as a separate unit in 1869. The membership of 178 churches of the denomination for which figures were given in the United States census of religious bodies of 1926 was 10,868, as compared with 136 churches and 13,077 mem-

bers in 1916. In 152 churches reporting Sunday schools, there were over 5000 pupils and 840 officers and teachers, as against 7471 pupils and 928 teachers and officers in 1916. The total expenditures of 167 churches in 1926 amounted to \$80,304, of which \$70,437 was for current expenses and improvement and \$9867 for benevolences, missions, etc., while 127 churches reported total expenditures of \$39,497. The value of church edifices, including furniture and equipment, as reported by 162 churches, was \$353,825 in 1926, as compared with \$230,426 reported by 130 churches in 1916. Of the 178 churches reporting in 1926, 60 were in urban communities and 118 in rural districts.

CURACAÛ, koo'ra-sü'a A Dutch colony in the West Indies consisting of two groups of islands about 600 miles apart, one of them comprising the islands of Curacao, Bonaire, and Aruba, and the other consisting of the southern part of St. Martin (the northern part belongs to France), St. Eustache, and Saba. Area, 403 square miles, population, Dec. 31, 1927, 61,479, of whom 41,014 were on the Island of Curacao. The capital is Willemstad, on the Island of Curacao, with a population of 19,061. In 1927 there were 54,200 Roman Catholics, 6351 Protestants, and 569 Jews. The registered movement of population in 1927 was: Births, 1849, deaths, 1057, marriages, 516. In the same year, there were 41 schools with 9064 pupils. The chief products of the colony are maize, beans, pulse, cattle, salt, and phosphate of lime. The chief industry is oil-refining. The crude oil is imported from Venezuela and Mexico. In 1927, the imports were valued at 142,238,750 guilders and the exports, 134,583,894 guilders, 8645 vessels of 25,148,479 tons entered the ports of the colony in 1927. In 1929 the budget revenue was estimated at 5,464,500 guilders and the expenditure at 5,363,689 guilders. The colony is administered by a governor aided by a council and a colonial council, the members of both being nominated by the sovereign. Governor during the greater part of 1929, K. L. A. Fruvter, appointed Oct. 27, 1928. He resigned following a raid made by Venezuelan insurgents on the Governor's palace at Willemstad June 9, 1929, in which he was made prisoner. The insurgents then forced the commander of the American ship *Maracaibo* to take them and their hostages to Coro, on the Venezuelan coast. On Dec. 2, 1929, Major Van Slohbe of the general staff of the Dutch Army was named to succeed Fruvter. See VENEZUELA.

CURLING. Canada regained possession of the Gordon International Medal in 1929 when the Canadian teams decisively defeated the United States representatives on the Montreal ice, 405 to 372. The Dominion thus took the trophy for the fourth time in five years, the Americans having triumphed in 1928 at Utica, N. Y.

CURRENCY. See COINS, VALUE OF FOREIGN, FINANCIAL REVIEW, MONEY, UNITED STATES.

CURTISS, RALPH HAMILTON American astronomer, died in Ann Arbor, Mich., Dec. 25, 1929. He was born in Derby, Conn., Feb. 8, 1880, and was graduated from the University of California in 1901, receiving the degree of Ph.D. there in 1905. He was assistant astronomer at the University of California Observatory in 1900, and in 1901 was a member of the Luck Observatory Eclipse Expedition to Sumatra. During 1901-04 he was a fellow of the Luck Observatory and a Carnegie assistant there in 1904-05.

After two years (1905-07) as astronomer in the Allegheny Observatory, he entered the University of Michigan as assistant professor of astronomy (1907-11), and was promoted to associate professor in 1911, and after 1918 to professor. In 1927 he became also director of the Detroit Observatory. Professor Curtiss's principal field of investigation was the properties of stars having bright-line spectra in Classes B to A of the Draper classification. He wrote many scientific papers, especially in stellar spectroscopy.

CUSACH-SMITH, SIR BERRY British Consul, died in Hove, Sussex, July 7, 1929. He was born Feb. 16, 1859, in Dublin, Ireland, and was educated at Eton. He became a barrister at the Middle Temple in 1884, and in 1890 was sent as British consul to Samoa and deputy-commissioner for the Western Pacific. In 1892 he was deputy-commissioner for the Tokelau Islands and acting British resident, and in 1893 special judicial commissioner. With the consuls of Germany and the United States, he acted as adviser to the King of Samoa, and from 1893 to 1897, he was receiver and custodian of the revenues of Samoa and president of the municipality of Apia. He was consul general in 1900-02 and consul general in 1908. He was chargé d'affaires in 1900-02 and consul general in 1908. With the rank of colonel, he commanded the Territorial Field Artillery in India and Mesopotamia during the World War, from which he was invalided home in 1917.

CUST, SIR LIONEL English author and art critic, died in Windsor, England, Oct. 12, 1929. He was born in London, Jan. 25, 1859, and was educated at Eton and Trinity College, Cambridge. In 1882 he entered the War Office, but two years later became assistant in the department of prints and drawings of the British Museum. From 1895 to 1909, he was director of the National Portrait Gallery, and after 1909 director of the National Gallery. He was also surveyor of the King's pictures and works of art from 1909 to 1927, and joint editor and director of the *Burlington Magazine* from 1909 to 1919. He was made a Knight Commander of the Royal Victorian Order in 1927. Sir Lionel was better known as an art historian than as a critic. His books include *Indoor of Artists Represented in Department of Prints and Drawings in the British Museum* (part 1, 1893, part 2, 1896), *Albrecht Dürer: A Study of His Life and Art* (1897), *The Masters "E.S." and the "Ars Moriendi"* (1898), *A History of Eton College* (1899), *Van Dyck's "Chalworth" Sketch Book* (1901), *Anthony Van Dyck* (1903), *Angelo Bastiani: A Story of Modern Venice* (1904), *The Bridgegate House Gallery* (1904), *The Royal Collection of Paintings, Buckingham Palace* (1905), *Eton College Portraits* (1909), *Notes on Pictures in the Royal Collections* (1911), *History of the Society of Dilettanti* (1898, 1914), *Jerusalem* (1924), *Memoir of Sir John Cusack, Bt., Speaker of the House of Commons* (1927).

CYCLING In 1929, by far the most active season in the history of the sport, Franco Georgetti, the little Italian star, was the outstanding cyclist. Georgetti was not only the motor-paced champion of America, but also won three six-day races, those in New York in March and December, and that in November at Chicago. His victory in the motor-paced event was his third in as many years.

For the sixth consecutive year, Cecil Walker of Australia won the all-around championship of America, besides winning more races than any other rider in the United States. Freddie Spencer captured the American sprint championship for the second successive season, while Lucien Richards of France conquered a fine field to win the world's sprint title for the third time in a row. George Paillard, also of France, won the motor-paced crown, while Anton Mazurac of Holland was awarded the amateur championship of the world. Sergio Mattioli of New York took the amateur road title, as well as the amateur track championship.

CYCLONES. See METEOROLOGY

CYPRUS A British island, situated 40 miles from the coast of Asia Minor and 60 from the coast of Syria, the third largest island in the Mediterranean Sea. Area, 3,584 square miles, population according to the census of 1921, 310,709, of whom 61,422 were Mohammedans. In 1927 births registered numbered 8,586, deaths, 5,328. Capital, Nicosia, with a population of 18,579. In 1927 there were 908 elementary schools with 1295 teachers and an enrollment of 46,677, of whom 36,384 were Greek Christians. With about one-third of the arable land under cultivation, agriculture forms the chief occupation of the people of the island. Forestry and the cultivation of the vine are rapidly taking an important place in the production of wealth on the island. Among the principal products are wheat, barley, oats, wine, olive oil, cotton, animal products, and fruit. Asbestos and iron are mined and exported in considerable quantities.

The merchandise imported in 1927 was valued at £1,585,306, exported £1,542,870. The revenue for the same year was £655,997 and the expenditure, £615,029. The total shipping which entered and cleared amounted to 1,746,757 tons in 1927. The island was administered under a convention with Turkey by Great Britain after June 4, 1878, and was annexed by Great Britain at the outbreak of the war with Turkey on Nov. 5, 1914. It is under a high commissioner having the usual powers of a colonial governor, aided by an executive council and a legislative council of 24 members of whom 9 are office-holders and the remainder elected for five years: 12 of them by non-Mohammedan voters and 3 by Mohammedan voters. On May 1, 1925, the island was given the status of a colony. Governor during 1929, Sir Ronald Storrs. See ARCHÆOLOGY.

CYRENAICA A colony belonging to Italy on the north coast of Africa, until 1919 it formed a part of Libya in that year for administrative and military purposes, Libya was divided into Cyrenaica and Tripolitania (See TRIPOLITANIA). The area is estimated at about 285,640 square miles including the hinterland zone of Cufia, population, according to the census of 1926, about 185,000 natives, and 10,000 Europeans. Benghazi is the principal town with a population of 30,056 in 1927. The chief occupation of the people is agriculture, although there are vast possibilities for cattle raising. Barley and wheat are the chief products. The former is the chief food of the people. In 1927 the imports were 178,238,195 lbs and the exports 14,908,800 lbs. The principal imports are cotton goods and sugar and the principal exports, sponges and barley. The internal commerce consists mainly of caravan trade between

Benghazi and Wadi For 1928-29 the revenues were estimated at Colonial revenue, 46,400,000 lire; State contribution, 159,096,250 lire, total, 205,496,250 lire Civil expenditure was estimated at 59,237,000 lire and military expenditure at 146,259,250 lire Governor during 1929, General Pietro Badoglio, appointed December, 1928, with headquarters in Tripolitania; Lieutenant-Governor, Colonel Domenico Siciliani, appointed December, 1928

CYTOPLASM. See Zoology

CZECHOSLOVAKIA, *čchko-slovákia* An eastern European republic, formed Oct 28, 1918, out of the Slav regions of the old Austro-Hungarian Empire, formally dedicated a republic Nov 14, 1918; comprising the former Austro-Hungarian provinces of Bohemia, Moravia, Silesia, Slovakia, and Ruthenia, together with the portion of the Teschen district assigned to Czechoslovakia at the Ambassadors' Conference July 28, 1920, Capital, Prague

AREA AND POPULATION The total area of Czechoslovakia is 54,207 square miles The population at the census of Feb 15, 1921, was 13,613,172 By race, it was distributed as follows Czechoslovaks, 8,760,937 (65.5 per cent); Germans, 3,123,568 (23.3 per cent), Magyars, 745,431 (5.5 per cent), Ruthenians, 461,849 (3.4 per cent), Jews, 180,855 (1.3 per cent), Poles, 75,853 (0.5 per cent), others, 25,871 (0.2 per cent) There were also 238,808 aliens The Czechoslovaks and Germans made up almost exclusively the population of Bohemia and Moravia, and the Czechoslovaks about half of Silesia and more than two-thirds of Slovakia The largest cities with their populations in 1921 are Prague, 676,657, Brno, 221,758; Ostrava, 113,709, and Bratislava, 93,189 The majority of the people are Roman Catholics, who numbered 10,383,833 in 1921 An official estimate of the population on Dec 31, 1926, placed it at 14,356,000

EDUCATION Primary education is compulsory between the ages of 6 and 14 In 1927 there were 14,333 public and private elementary schools, with 721,292 boys and 730,344 girls and 1781 public and private higher grade schools with 148,860 boys and 128,681 girls There were also 356 secondary Latin and technical schools with 102,366 students There are four universities as follows Prague (Czech) with 8225 students, Prague (German), 3651; Brno (Czech), 2107; Bratislava (Slovak), 1417

PRODUCTION. One of the richest of all European countries in natural resources, Czechoslovakia finds itself in the enviable position of being almost self-supporting so far as food is concerned Within its borders are to be found practically all of the former Austro-Hungarian Empire's . . . area, 60 per cent of the breweries, 50 per cent of the alcohol distilleries, nearly two-thirds of the iron production, and four-fifths of the textile industry Other industries were included in like or greater proportion in the new country, such as the famous Bohemian glass industry and the China industry

The soil of Czechoslovakia is naturally fertile, especially in the lower part of the country, where beets, wheat, barley, rye, and oats are extensively cultivated The area under the principal crops with their yield in metric tons during 1927 were as follows Wheat, 1,585,552 acres, 1,099,103 tons; rye, 2,029,843 and 1,252,195, barley, 1,759,426 and 1,284,853, oats, 2,113,312 and 1,457,637; potatoes, 1,608,249 and 9,109,263, sugar beet,

727,074 and 8,123,807; maize, 391,704 and 298,578. Preliminary estimates for crop areas in 1929 were wheat, 1,892,020 acres; rye, 2,484,820, oats, 2,087,150, corn, 323,000. The total value of the wheat, rye, barley, and oats crops in 1929 was estimated at 24 per cent less than in 1928 In 1926-27 there were 163 sugar factories in the country, which produced 1,045,819 metric tons of sugar Sugar production in 1928 was 1,057,000 tons, and in 1929, 1,030,000 tons The 875 distilleries produced 515,857 hectolitres of spirits The livestock on Jan 1, 1927, included Cattle, 4,691,320, horses, 740,202, pigs, 2,539,201, sheep, 861,128, and goats, 1,244,701.

The mineral production comprises both soft and hard coal, iron, graphite, garnets, gold, silver, copper, and lead The 271 coal-mining companies in operation during the year, employing 94,420 workers, produced 15,171,403 metric tons of hard coal and 20,709,558 metric tons of lignite, both figures representing increases over the 1927 output Coke production increased 16 per cent during the year and the output of briquets showed a marked expansion In other lines of industry also conditions were unusually favorable during 1928, a situation which continued into 1929. In December, 1929, there was a distinct slackening of activity The 1928 output of iron ore was 1,779,000 metric tons, valued at 110,878,000 crowns (\$3,300,000), as compared with 1,590,527 tons, valued at 98,516,000 crowns (\$2,900,000) in 1927 Net imports brought the total consumption in 1928 to 3,194,899 tons, as compared with 2,372,208 tons in 1927

The output of pig iron in 1927 was 1,313,925 metric tons, raw steel, 1,689,000 tons, wrought steel, 1,499,000 tons In 1928 there were 11,622 factories in the country, of which 1990 were textile factories, 2093 glass works and stone factories, constituting one of the oldest industries of the country, 846 machine factories, and 875 metal factories Leather working also is extensively carried on

COMMERCE The country's foreign trade in 1928 reached the largest volume since 1921 Exports increased from 20,135,438,000 crowns in 1927 to 21,227,610,000 crowns in 1928 and imports from 17,961,632,000 in 1927 to 19,193,590,000 in 1928 (1 crown equals \$0.0206). The principal items of import and export are shown in the accompanying table from the *Statesman's Year Book* for 1929.

COMMODITIES ENTERING CZECHOSLOVAKIA'S TRADE

Item	1927	1928
	1000 Crown	1000 Crown
IMPORTS		
Cereals	2,172,000	1,921,000
Cottons	2,661,000	2,605,000
Woolen goods	2,040,000	2,081,000
Fats and oils	826,000	570,000
Iron goods	519,000	632,000
Machinery	473,000	702,000
EXPORTS		
Woolen Goods	2,086,000	2,185,000
Cottons	3,071,000	3,023,000
Wood, coal, and peat	2,038,000	1,788,000
Glass	1,144,000	1,269,000
Sugar	1,525,000	1,699,000
Iron and iron goods	1,619,000	1,770,000
Cereals and milled products	1,000,000	850,000

In 1927 Germany, Austria, Hungary, Great Britain, and the United States, in the order named, were the leading purchasers of Czecho-

slovakian products, and Germany, Austria, the United States, Poland, Hungary, and Great Britain, also in the order named, furnished most of the imports. Imports from the United States showed a considerable gain in both volume and value in 1928. The favorable balance of trade in 1929 was only 497,000,000 crowns, as compared with 2,034,020,000 crowns in 1928.

FINANCE The budget for 1929 estimated total revenues at \$283,300,000 and expenditures at \$282,200,000, leaving a surplus of \$1,100,000. The total revenue from taxation and monopolies was placed at \$244,700,000, of which the income tax accounted for \$31,100,000 and import duties for \$34,600,000. Expenditures for the service of the public debt amounted to \$65,700,000, for defense, \$41,400,000, social service, \$24,700,000, education, \$27,300,000. The budget placed the public debt, exclusive of that arising from the peace treaties, at 887,500,000, or \$75 per capita. There has been a gradual but steady reduction in the debt in recent years, and the financial condition of the country is comparatively satisfactory due to the favorable economic situation. In 1927 the revenue yield exceeded the budget estimates and direct taxes were reduced by approximately 374,000,000 crowns in 1928. In that year's budget, the total of ordinary and extraordinary revenue was estimated at 9,562,270,000 crowns (9,569,907,000 crowns in 1929) and the ordinary and extraordinary expenditures at 9,536,074,000 crowns (9,534,383,000 in 1929).

State notes in circulation at the end of January, 1929, totaled 6,493,000,000 crowns.

COMMUNICATIONS There are 8530 miles of railway line in the Republic, of which 6859 are owned by the state. The remaining 1671 miles are privately owned, with the exception of 12 miles owned by foreign states. The introduction of improved conditions and schedules for international trains operating through Czechoslovakia was announced by the Ministry of Railways in December, 1929. The time between Berlin and Prague was to be cut from 7½ to 6 hours by a new express. By Article CCCLXIV of the Versailles Treaty, Czechoslovakia was vested with the right to use certain wharves in the ports of Hamburg and Stettin as a means of gaining direct access to the sea. The German cities refused their consent, however. The dispute was settled Nov. 4, 1929, when a committee consisting of one Czechoslovakian, one German, and one Briton decided that the Hamburg Senate must lease to Czechoslovakia certain lands at the Halle and Dresden shores of the River Elbe for 99 years. During 1929 plans were completed for the construction of a canal, to cost \$77,500,000, between Bratislava, Czechoslovakia, and Trieste, Italy. In 1927 there were 79,904 miles of telegraph and 292,531 miles of telephone wire. Thirteen air routes connected Prague with the principal European cities.

GOVERNMENT According to the constitution adopted by the National Assembly, Feb. 29, 1920, executive power is vested in a President, elected for seven years by the two chambers in joint session, who appoints and recalls his ministers; and legislative power in a Senate of 150 members elected for eight years and a Chamber of Deputies elected for six years, the former elected by all citizens over 26 years of age and the latter by all citizens over 21 years of age. The principle of proportional representation is applied. The composition of Parliament, according to preliminary

returns from the election of Oct. 27, 1929, was as follows: Czech Agrarians, 46; Czech Social Democrats, 39; National Socialists, 32; Communists, 31; Czechoslovak Clericals, 31; German Social Democrats, 20; Slovak People's party, 17; Czech Democrats, 15; German Clericals, 14; German Nationalists, 7. The remaining seats were distributed among nine smaller parties. President in 1929, Thomas G. Masaryk (elected May 28, 1920, reelected May 27, 1927).

A bourgeois-socialist government was formed Dec. 7, 1929, with František Udržal as Premier. Other members of the Cabinet, which is composed of 12 Czechs, two Slovaks, and two Germans, are Dr. Eduard Benš, Foreign Affairs; Dr. B. Vlasouk, Finance; J. Černý, Interior; Dr. Franz Matoušek, Commerce; Jan Dostalek, Public Works; Josef Najman, Railways; Dr. Ludwig, Social Welfare; Dr. Robert Mayr-Harting, Justice; Bohumír Prádac, Agriculture; Dr. Anton Stefaňák, Education; Dr. Jan Nesecký, Posts and Telegraphs.

HISTORY The year 1929 was marked by violent political turmoil, resulting in the resignation on February 1 of Premier Svehla, the defeat in September of the Udržal coalition government, and the dissolution of Parliament on September 24 by President Masaryk. A general election on October 27 resulted in gains of 4, 10, and 3 seats, respectively, by the National Socialists, Czech Social Democrats, and German Social Democrats, largely at the expense of the Communists, who lost ten seats (for composition of new Parliament, see under *Government* above). A new bourgeois-socialist coalition government was formed Dec. 9, 1929, with František Udržal again as Premier (for rest of cabinet, see under *Government* above). Parties participating in the government were the Czech and German Agrarians, the Clerical Czech People's party, National Democrats, Czech Business party, and Czech and German Social Democrats. The Communists, German Nationalists, German National Socialists, German Christian Socialists, Slovakian People's party, and both Hungarian parties formed the Opposition.

The growing Slovak agitation against Czech rule culminated in 1929 in the trial and conviction on October 5 of Professor Voitech Tuka on charges of high treason. He was sentenced to 15 years imprisonment after a trial which commenced in Vienna. Tuka engaged the attention not only of the Czechs but of the other countries of Europe. He was vigorously defended during the trial by Father Andreas Hlinka, leader of the Slovak People's party, who declared that the government sought not only to punish Professor Tuka but to destroy his party. Tuka's conviction was followed by the resignation on October 8 of M. Labay and Dr. Tiso, the two Slovak Ministers in the Cabinet, and on October 9 by the announcement of Father Hlinka that his party would henceforth join with the Hungarian and German minorities in an effort to overthrow Czech dominance. The Slovak People's party placed Professor Tuka on its list of candidates for Parliament but the Slovaks did not rally to his support at the election of October 27 and he failed of election on the first scrutiny, although preliminary returns indicated that he might win a seat in the second.

The Czechs accused Professor Tuka of aiding the irredentist movement among the Magyars who were incorporated in Czechoslovakia along

with a small slice of Hungarian territory by the peace treaties: Denying any connection with the movement, Tuka charged the government with making him the scapegoat for its failure to solve the problem of Slovak autonomy in the political field.

The ministry was reconstituted Feb. 2, 1929, was as follows: Prime Minister and Minister of National Defense, František Udržal, Foreign Affairs, Dr. Eduard Beněš, Finance, Dr. B. Vlasak, Interior, J. Černý, Commerce, L. Novák, Public Works, Dr. Franz Spina, Railways, Josef Najman, Social Welfare, Dr. Jan Sramek, Justice, Dr. Robert Mayr-Harting, Agriculture, Dr. Otakar Srdínko, Education, Dr. Milan Hodža, Posts and Telegraphs, Dr. František Nosek, Health, Dr. Josef Tiso; Minister for the Unification of Laws, Dr. Labay (February 27). Dr. Hodža resigned as Minister of Education on February 20, ostensibly because of illness, and Dr. Anton Štefánek of the Slovak Centralist party was appointed.

Foreign Minister Beněš, on February 20, announced that his government would refuse to pay claims awarded the Archduke Frederick of the Hapsburg line by an arbitral tribunal at The Hague as recompense for his property, which was confiscated by Czechoslovakia under authority of clauses in the treaties of Trianon and St. Germain. Furthermore, Dr. Beněš said, his country would henceforth decline to submit any similar claims to the arbitration of a foreign or international court.

The so-called Little Entente treaties of alliance between Czechoslovakia, and Rumania, concluded in 1920 and 1921, were renewed after a conference of their respective Foreign Ministers at Belgrade May 21. They were ratified by the Prague government on August 24, along with a new tripartite treaty of conciliation and arbitration signed at the Belgrade meeting.

Tense relations developed between Czechoslovakia and Hungary early in July when a Czechoslovakian railway employee was arrested at the Hungarian railway station in Hidasnémeti on a charge of espionage. Czechoslovakia suspended all traffic on the Budapest-Kassa railroad in reprisal but the line was reopened July 24, although Hungary steadfastly refused to release the prisoner.

On September 28, the Papal Nuncio at Prague decorated President Masaryk with the Grand Cross of the Order of the Sacred Tomb, a distinction hitherto reserved for Catholic sovereigns only. The presentation made in connection with the national observance of the thousandth anniversary of the Catholic Saint Wenceslaus, was taken as an indication of the final healing of the breach with the Vatican caused by the adoption of the birthday of John Huss as a national holiday in 1926. The naturalization pact negotiated between Czechoslovakia and the United States in 1928 went into force Nov. 14, 1929, with the exchange of ratifications.

The increasing difficulties of the agricultural situation due to a 50 per cent drop in the prices of farm products led to agrarian demands for government aid toward the end of the year. A proposal by the farmers for a 15 per cent reduction in the wages of agricultural laborers was followed by the announcement that a widespread agricultural strike would take place Jan. 1, 1930.

D'ABERCOM COLLECTION. See ART SALES.

DAGNAN-BOUVEËT, dá-nyān'bo'v'rā, PASCAL ADOLPHE JEAN A French historical and portrait painter, died July 3, 1929, in Paris. He was born there Jan. 7, 1852, and studied art under Gérôme. His first important success was "A Wedding at the Photographer's" (1879, Lyons Museum). He was an excellent draftsman and had a fine sense of color. "The Consecrated Bread" (1886), in the Luxembourg, shows his skillful management of light in interiors. Among his important paintings are "The Conscript" (1891, Ministère des Beaux-Arts), "Painting" and "Lady with a Child" (Palais des Beaux-Arts), "Madonna" (Pinakothek, Munich), "Madonna of the Rose" (Metropolitan Museum, New York), portraits of Gérôme, Courbet, and other prominent persons, "Spanish Dancer" (1909), "Marguerite au Sabot" (1912). He was made Chevalier of the Legion of Honor in 1885, and received the first medal at the Salon of 1889 for his "Breton Women at the Pardon."

DAHOMÉY, dá-hō'mī A French colony on the west coast of Africa between Togoland on the west, the British possessions of Lagos and Nigeria on the east, and the French military territories on the north. It is a subdivision of the colony of French West Africa (See FRENCH WEST AFRICA). The colony has only about 70 miles of coast, but opens out northward into a wide hinterland. Area, 62,772 square miles, population, according to the census of 1927, 1,057,200, of whom 1000 were Europeans. The chief center of trade and the seat of the government is Porto Novo with a population of about 27,000. The population, of pure Negro blood, is very industrious and engages mainly in agriculture. In the coastal region, they raise potatoes, corn, manioc, and yams. In the central provinces, cotton culture has been introduced. The forests contain oil palms of commercial importance. The chief exports are palm oil and palm kernels. Imports in 1928 amounted to 131,349,000 francs, exports, 97,773,000 francs. The local budget for 1929 was 10,102,000 francs. Governor in 1929, M. Reste.

DAIRYING The dairy industry has long been recognized as one of the most stable of the agricultural enterprises of the United States, probably because of the almost universal demand for dairy products, and the fact that the income of the milk producer is relatively uniform in its distribution over the year. Periods of excessive profits are generally unknown but heavy losses are likewise relatively rare.

The stability of dairying continued in the main through 1929. Conditions were generally favorable, but not so outstandingly so as in 1928. A relatively large spring and summer production lowered the price of dairy products to some extent, but the late summer and fall drought which was particularly pronounced in the dairy sections of the Atlantic and North Central States tended to restore them.

In November there was the most radical price decline in the butter market that has occurred at that season since 1921. Wholesale prices dropped to about 40 cents. This was associated with unsettled conditions in the stock market, but was probably more directly related to the relatively heavy butter stocks in storage. On November 1, there were 33,000,000 pounds more butter in storage than on November 1, 1928, and an increase of 25,000,000 pounds over the average for the last 5 years. Movement of butter to storage also increased in December, so that the

butter in storage at the close of the year was nearly twice that on hand at the close of 1928. The situation was aggravated by an apparent domestic butter consumption of some 20,000,000 pounds less than in 1928. At the same time, the production of butter substitutes was evidently increasing.

The production of canned milk was over 100,000,000 pounds more than in 1928. On account of the unsettled butter market toward the end of the year, surplus milk supplies of some of the fluid milk sections were reverted to condenseries, where it was used for the manufacture of condensed and evaporated milk instead of butter. Reduction in the stocks of canned milk in the fall was only about half the usual reduction, though it was equal to that of 1928.

Cheese markets were apparently in a stronger position on account of a reduction of about 50,000,000 pounds in manufacture, as compared with the previous year.

On the whole, the main difficulty in the marketing of dairy products was related to the need of more active buying demand on the part of consumers. Notwithstanding a reduced production of 15 per cent in cheese, the increase in butter production of about 1 per cent and of canned-milk production of about 8 per cent balanced the apparent production of dairy products so that the milk equivalent in the manufactured products showed little change from 1928. This was coupled with a reduced consumption in butter and cheese and an increased consumption of condensed and evaporated milk, resulting in a decrease of about 2 per cent in the milk equivalent of the manufactured dairy products.

For a number of years dairy production in the United States has been slightly less than domestic consumption. Exports of about 110,000,000 pounds of condensed and evaporated milk which were less than in 1928 were more than offset in milk equivalent by the importation of about 75,000,000 pounds of cheese, consisting mainly of the special foreign types principally from Italy and Switzerland.

Notwithstanding the large amount of publicity given to the importation of fresh milk and cream from Canada, the special provisions for requiring Canadian producers to comply with the public health regulations of domestic municipalities and the special efforts of the Canadian Government to aid producers in complying with requirements, slightly less fresh milk and cream was imported during 1929 than in 1928.

On account of the tariff and relatively unfavorable market conditions, very little butter was imported, totaling less than 3,000,000 pounds during 1929. Most of this came in during the winter and spring months, which is the season of low production in the United States but the season of heavy production in New Zealand, the country from which the bulk of butter imports to the United States is derived.

INTERNATIONAL CONDITIONS. The foreign dairy situation was quite comparable to that described above for the United States. European butter markets were generally regarded as disappointing, especially during the latter part of the year. Butter imports into Great Britain during 1929 were somewhat in excess of those in 1928. During the first 11 months of 1929 they amounted to 717,541,776 pounds, as compared with 684,652,864 in the preceding year. The increased importation resulted in a considerable accumulation.

German imports increased from 278,999,626 pounds in 1928 to 296,225,929 in 1929. This was associated with an increased domestic butter production as a consequence of lighter milk consumption.

Dairy production during the season beginning in August, 1929, in New Zealand was relatively heavy, but the tendency at the close of the year was to divert from the heavy butter production in the first part of the season to cheese production. Many of the New Zealand plants are equally well equipped for the manufacture of either butter or cheese. Dairy production in Australia was steadily increasing and was reported to be approximately 25 per cent heavier at the close of the year than for the corresponding period of 1928.

The tariff of 12 cents per pound on butter and 37 1/2 per cent ad valorem on Swiss cheese was an important factor in maintaining prices in the United States which were generally more favorable than those in the European markets.

TRENDS IN RESEARCH. The problem of replacing the older and discarded animals in dairy herds is one of much interest to dairymen. It is frequently considered that it is cheaper to purchase cows than to raise heifer calves in the market milk sections because of the large amounts of milk consumed by the calves and the relatively high prices of feeds, lands, and necessary equipment. Purchased cattle are, however, frequently inferior in milk producing capacity and there is more or less risk from the spread of diseases involved in the replacement of herds in this way.

Many of the State agricultural experiment stations, therefore, conducted tests of the comparative values of home-mixed calf meals, desiccated milk products, and other substances as substitutes for varying proportions of the milk ordinarily used for calf feeding. Liquid and powdered skim milk and semi-solid butter milk were found quite satisfactory, except for the expense, in studies of this nature at the Ohio and Wisconsin experiment stations. In studies at the South Dakota experiment station self feeders showed no superiority over hand feeding as a method of raising dairy calves.

The superiority of the high-producing cow over the medium or low-producing cow as an efficient milk producer was becoming more generally recognized and the United States Department of Agriculture aided in the identification and elimination of the low producers by the organization of dairy-herd testing associations, of which about 1100 were in operation. This work involved the testing of more than 465,000 cows monthly. By the elimination of the low-producing animals, the possibilities of the herds for breeding purposes were materially improved. Interest was stimulated also along the line of using only bulls for herd sires which have demonstrated, by the characteristics of their offspring, that they transmit desirable qualities to their sons and daughters.

Advance was continuously being made in the methods of manufacture of dairy products and the more efficient utilization of by-products. The U. S. Department of Agriculture contributed to the refinement in the method of manufacture of domestic Swiss cheese, by developing a bacterial culture which prevented, by its rapid growth and acid formation, the production of a defective eye formation and texture, resulting from

abnormal gassy fermentation. The Wisconsin Experiment Station perfected a process for pasteurizing cheese curd in the vat which markedly improved the flavor and texture of cheese made from second-grade milk.

In the field of butter production, the Arkansas, New York, and Wisconsin agricultural experiment stations made important contributions with reference to working, neutralization, and starters, and the U. S. Department of Agriculture studied the preservation of skim milk by concentration and developed further uses for the concentrated product.

The Kansas and New Jersey experiment stations studied the advisability of including egg yolk as a part of the ice-cream mix. It was found that from 0.5 to 1 per cent of egg yolk in the mix improved its whipping qualities and texture. The use of more than 1 per cent of egg yolk imparted an undesirable flavor.

The continued interest in dairy research was reflected in the development of the physical equipment at many of the State institutions. New dairy buildings were completed at the Iowa, Illinois, Kentucky, and Louisiana experiment stations during the year and new dairy buildings were erected at many of the State agricultural colleges and experiment stations within the last few years. Plans for new equipment and buildings were completed at several of the other institutions.

CHANGES IN PERSONNEL. The more important changes in personnel included the resignation of Dr. C. W. Laison from the National Dairy Council to become associated with a new commercial dairy enterprise. Prof. A. C. Baer, head of the dairy department at the Oklahoma Agricultural and Mechanical College, who died on July 1, 1929, was succeeded by Prof. E. A. Weaver from the Iowa State Agricultural College. Dr. R. B. Becker and J. H. B. from the Oklahoma A and M College accepted positions with the University of Florida and the Alabama Polytechnic Institute, respectively. Prof. H. O. Henderson was appointed head of the dairy department of the West Virginia University. Clarence B. Lane, Assistant Chief of the Dairy Division of the United States Department of Agriculture from 1903 to 1909, died on August 20.

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DALMATIA. A province of Yugoslavia, a crownland of Austria until the downfall of the Dual Monarchy in 1918. It extends from Bosnia and Herzegovina west to the Adriatic Sea. Area, 4916 square miles, population, according to the census of Jan. 31, 1921, 621,429. Capital, Zara, with a population in 1921, of 8060.

DAMS. The outstanding events in the field of dam construction during the year 1929 may be

stated as the refusal of the California authorities to permit the construction of the great San Gabriel Dam which was under way near Los Angeles, the completion of the Diabolo Dam, the highest in the world, and the success of the Boulder Canyon project in meeting the preliminary conditions set down by Congress in authorizing the construction of this great project. While both the gravity and arch types of dam hold their own, it is clear that a combination of these types, an arched centre portion with gravity ends or abutments, is an economical form in many locations. Similarly, the combination of the gravity and the multiple-arch types was to be noted in the important Suviana Dam in Italy.

GRAVITY DAMS. Until the completion of the Boulder Canyon Dam, the arch type held the record for height. It will be remembered that the special commission on the Boulder Dam recommended a more conservative design than that first proposed and a reduction of the maximum pressure on the foundation to 30 tons per square foot. Revised plans were not available at the end of 1929, but they were expected to be published early in 1930.

SAN GABRIEL DAM. In 1924 the city of Los Angeles voted a flood-control bond issue which included \$25,000,000 for this great dam. After a long period of controversy, due in large part to the fact that the dam was to form a reservoir for both flood control and irrigation, thus involving conflicting interests, final plans were adopted in 1928. The contract was awarded in December of that year and excavation was under way until September, 1929.

After this work was started, the failure of the St. Francis Dam (see 1928 YEAR BOOK) occurred. This failure resulted in the passage of a State law in California requiring the approval by the State Engineer of the design and location of all dams built within the State. When an extensive rock slide occurred during the excavation for the San Gabriel Dam in September, 1929, work was stopped immediately by the engineers of the district and a board of engineers and geologists were called in to examine the site. They reported adversely. Directly following this report, the State Engineer engaged a similar group of experts who also reported adversely, stating that the proposed dam "cannot be constructed without creating a menace to life and property." Thereupon, the State Engineer, on November 26, refused permission for this construction.

The report disclosed the fact that the rocks at the site were "ancient crystalline types, including granite and dioritic gneisses and occasional schists, cut by a variety of igneous intrusions, including granite, diorite, diabase, and other types. . . . Cut through in every direction by faults, slips, and crush zones, the rock at the site has been separated into blocks of various sizes and shapes, mostly of comparatively small size." It is difficult to understand how the preliminary borings and foundation examinations failed to indicate these conditions before excavation began, although it would be still more difficult to understand the letting of a contract for construction if such conditions had been known to exist.

While it was very obvious that the Forks site for the San Gabriel Dam, some 30 miles northeast of Los Angeles, was not at all suited for

a great gravity dam of 492 feet in height, the highest dam in the world, the experts suggested that an earth-and-rock-fill dam of conservative section could safely be built at this site.

LLOYD DAM, INDIA This dam, forming the major part of a great irrigation scheme built by the Bombay Presidency at Bhatgar, India, was officially opened in October, 1928. One of a great series of protective works begun in 1903, following the famine era of 1889-1902, this dam is notable not only for the important part it plays in a great project conceived on a great scale but also because of its great size—it is the largest dam in the world. The site required a structure over a mile long (5333 feet) with a maximum height above foundations of 190 feet. It cost \$6,300,000, took 15 years to build, and forms a lake 17 miles long. The dam is of gravity type with 45 automatic and 36 other gates to regulate flow. Some 21,500,000,000 cubic feet of masonry were involved in the construction which supplies the two main canals of the Nira system, 104 and 100 miles long, which command an area of 834,000 acres.

PARDEE DAM, CALIFORNIA This dam, which is part of the Mokelumne River water supply being built for nine cities of the East Bay Utility District of California, was to be the highest gravity dam yet built. It is of the curved gravity type and will be 359 feet in extreme height. Particular attention has been given to contraction joints in this structure, and provision has been made for joints 150 feet apart through the base and 37½ feet apart in the upper section. The contraction joints are being provided to prevent cracking of the masonry and possible leakage, they were also to be grouted with cement under pressure during the winter of 1929-1930, when full contraction of the masonry will have occurred. It was expected that this method of securing a solid masonry mass would add considerably to the stability of the structure due to arch action because of its curved form. High-speed construction methods were followed in building the dam and a battery of four two-yard concrete mixers served by a 4-mile cable tramway enabled the builders to place over 65,000 cubic yards of concrete in one month.

BULL RUN, OREGON This gravity-section dam 200 feet high was being built on an arched plan to give additional safety against sliding. A new trend in concrete construction was indicated in the fact that a denser mix than that used in the centre of the mass was being placed on both upstream and downstream faces. The reservoir formed by the dam will store some 31,000 acre-feet of water and would more than double the supply available for the city of Portland, Ore. The dam was completed in January and, by May 14, the reservoir had been filled and water was passing over the spillway. In view of the fact that studies of a number of dams on the West coast of the United States indicates that water, percolating and seeping through these structures, has shown a marked leaching action, this attempt at Bull Run to obtain an impermeable concrete is of particular interest.

WATERVILLE, NORTH CAROLINA A power project of the Carolina Light and Power Company on the Big Pigeon River required the construction of a concrete dam of large size. It is of unusual interest due to the fact that the dam is of the overflow type and a free drop of 180 feet for the overflow water is provided by means of a concrete

protection wall and apron. The dam is of the high thin-section arch type.

MARATHON DAM. On October 25, the Marathon Dam, part of a water-supply system for Athens, Greece, was dedicated. The structure is notable not because of any novel features of design nor because of its size but simply because it is faced with the famous Greek Pentelikon marble, used in the greatest structures of Classical Greece, and because the supply will be carried to Athens by the famous aqueduct built some 18 centuries ago under the Roman Emperor-Engineer, Hadrian.

St. FRANCIS DAM Plans were being prepared for a new dam near Los Angeles to replace this ill-fated structure, the failure of which caused great damage and loss of life. The new dam was to be some miles below the St. Francis site.

ASWAN DAM In 1907 the great Aswan or Assuan Dam on the Nile in Egypt was increased 164 feet in height. Now, a buttressing scheme and added material on the top of the existing structure is proposed to secure an additional height of 30 feet. It was expected that this plan would go forward without delay.

ARCH DAMS Arch dams continued to be built in increasing sizes wherever the cross-section at the site is suitable—that is, where solid and steep abutment walls provide proper surfaces to receive the end thrusts of this form of construction.

DIABLO DAM Seattle's 425-foot dam on the Skagit River progressed rapidly during the year. Part of a municipal waterpower project, this structure is a constant-angle arch dam between gravity abutments. The dam is located about 100 miles northeast of Seattle and will impound 90,000 acre-feet of water. The site is a narrow gorge with granite walls rising almost vertically for 200 feet and only 125 feet apart in the lower portion. Above, the valley widens and the gravity sections on each end, somewhat longer than the arched section itself but of much less height, will contain the spillways of the dam. An especially dry concrete, giving a crushing strength of almost 4000 pounds per square inch, was used, and this fact, combined with a novel arrangement of belt conveyors supported by booms for placing the concrete, makes the work of special interest from the standpoint of construction. The dam section widens out from 57½ feet at about the mean height to 130 feet in thickness at the base, and in maximum section the top of the structure is 426 feet above the lowest foundation. At water level, the maximum height is 410 feet.

CALDERWOOD DAM This notable structure, 230 feet high above foundations, nearing completion at Calderwood, 45 miles south of Knoxville, Tennessee, is the third unit of the hydroelectric development of the Little Tennessee River by the Aluminum Company of America. It is a true thin-section arch with a downstream radius at the crest of 312½ feet. This radius is maintained for the top 45 feet and the rings of the arch are also of constant thickness, 25 feet. Below this, the radius rapidly decreases to a minimum at the base, while each arch ring is increased in thickness at the abutments. Special concrete was used in the construction of this dam and elaborate preparations were being made, in the hope of securing valuable data on arch-dam design, to measure the deflections of the structure as the basin back of it gradually fills with water. The dam is provided with 24 crest gates of the Stoney type, each 25 feet long and 20 feet high.

The overflow will be cushioned by a pool to be formed by a secondary overflow dam of gravity form 40 feet high and located 230 feet downstream from the main structure.

MULTIPLE-ARCH DAMS The notable development in recent years in the use of multiple-arch dams continued. This type of dam, an evolution from the slab and buttress form of hollow dam, has proved to be an economical structure in many locations due to reduced foundation excavation and to the saving in material over that required for the usual gravity type. Properly constructed, it should prove more reliable and have a longer life than the slab type, and it is doubtless destined to be widely used in those locations where the old and conservative gravity dam would be excessively costly to build.

BIG DALTON DAM In August, 1929, the Big Dalton Dam of the Los Angeles Flood Control District was completed. This dam, 180 feet high above foundations, 145 feet above stream bed, adds the eleventh unit to the flood-control and water-conservation plan of the district. It is located on Big Dalton wash, about 30 miles east of Los Angeles, and the 1280-acre-foot of storage provided will not only prevent the brief but devastating floods, to which the extensive orange groves below the site have been subjected, but also will store water which will be used to replenish the ground-water storage which has been seriously depleted owing to extensive pumping for irrigation. Six arches, varying in thickness from 2 to 5 feet, are supported on double-walled buttresses of 60-foot centres. The structure was heavily reinforced and one of the unusual features was the substitution of heavy gravity-type end sections, instead of the usual arch construction, so as to avoid difficult end excavation. A rock-fill dam was at first planned for this location and work was started in December, 1925. The lack of suitable material for such construction, however, resulted in the change in the plans.

SUVIANA DAM, ITALY Between 1922 and 1926, the Pavana Dam, of the Limentre hydroelectric development, was constructed. This notable work of the multiple-arch type consists of three arches with a height of 170 feet above average foundation level. Compared with American dams of this type, the upstream face is very steeply inclined, and the design was very solid, substantial, and conservative and resulted in a very monumental and imposing structure. This dam formed an important link in a chain of dams and tunnels to supply power for railroad electrification between Florence and Bologna. A second link in this development was under construction in 1928—the Suviana Reservoir. In connection with interest in the publication of the details of this work, as they recognize that modern hydroelectric construction in Italy has made many and important contributions to current practice in this field.

LAKE PLEASANT DAM Apparently a desire to reduce cost to a minimum and a consequent cutting down of buttress sections and width resulted in at least a partial failure of this multiple-arch structure near Phoenix, Arizona, which rises 250 feet high above the lowest point of the foundations. In December, 1928, vertical cracks in the buttresses caused apprehension and a special investigating committee advised caution in putting the work in operation. Later it was advised that the spillway be cut down to an elevation of 130 feet above stream bed and the buttresses strengthened, or that the cut should be

made to elevation 120. Work on this cutting down was rushed in order that the dam might not be suddenly filled by flood. Thus, false economy again claimed a victim and the dam was crippled and doubtless would have to be rebuilt in large part.

EARTH DAMS. The history of earth-dam construction has been one in which the engineer has secured important knowledge largely through the failure or partial failure of a number of these earth structures. The year 1929 was no exception to this rule. In Australia the Eildon Dam, a rock-fill structure with a clay core, failed, fortunately with no loss of life. Apparently, the rock fills were not sufficient to sustain the pressure of the wet clay core. The Virgin River rock-fill dam, on a tributary of the Colorado River, was washed out during the year. The Lafayette Dam in California settled some 24 feet during construction and gave rise to doubts as to whether it could be successfully completed.

The two great problems in modern hydraulic-fill construction are, first, to secure an impermeable core mass by deposition under water; and, second, to secure a mass that will be stable and not slide under possible conditions of saturation—conditions frequently worse during construction than later in the life of the structure. Numerous slips in earth dams during construction illustrate clearly this danger. Naturally, an impermeable material will not drain well, so that one problem is solved only at the expense of the other. Obviously, the success of the great earth constructions under way will depend in large measure on a most careful attention to these difficulties and the use of the best available data in design and for controlling construction operations.

SALUDA DAM. Construction was started on this huge earth dam late in 1927. It is a semi-hydraulic fill structure and some idea of its magnitude can be obtained from the fact that it will contain 11,000,000 cubic yards of earthwork, it will be $1\frac{1}{2}$ miles long on the crest and 208 feet high. The dam forms a lake about 40 miles long, which will cover 78 square miles of land, will have a shore line of 620 miles, and will hold 2,300,000 acre-feet of water. The project is to be completed in 1930 and will be operated by the Lexington Water Power Company of Columbia, S. C., for hydro-power purposes. The dam is located about 10 miles west of Columbia. Approximately 40,000 acres of timber land must be cleared, and 35 sawmills and 1200 men were used in this work alone. Some 10,000,000 board feet of useful lumber will be salvaged. An impervious clay-earth core was formed in a segregation pool in the centre of the dam. The structure is 25 feet wide at the top and has a maximum bottom width of 1150 feet.

Construction arrangements for passing floods received a severe test during the year, when a flood of 68,000 cubic feet per second was successfully passed. This was said to be more than the dam will be called upon to pass when completed.

LAFAYETTE DAM FAILURE. The fill for this rolled-earth structure, being built by the East Bay Municipal Utility District in California, settled some 24 feet during construction and gave rise to grave doubts as to whether it could be completed. Investigation showed that the foundation material, a thick bed of clayey alluvium, was plastic and under the heavy load of the fill had been squeezed out, chiefly toward the down-

stream toe of the structure, permitting the central portion to collapse. Flatter slopes for the earth fill and a smaller height (100 feet) for the dam (originally 140 feet) were advised.

VIRGIN RIVER ROCK-FILL DAM. This work, under construction on a tributary of the Colorado River, was washed out in July before the dam had been completed to its full height of 120 feet. Apparently, the rock-fill was steep in slope and uncompacted and the water broke through when the depth was about 65 feet behind the dam. See *GEOLOGY*.

DANA, JOHN COTTON American librarian, died in New York City, July 21, 1929. He was born Aug. 19, 1856, in Woodstock, Vt. In 1878 he was graduated from Dartmouth, but it was not until 1889 that he entered upon his career as librarian. Meanwhile, he studied law in Woodstock (1878-80), but was forced because of ill health to go to Colorado where he worked as a land surveyor 1880-81. Returning to the East, he was admitted to the bar in New York in 1883, but was again in Colorado as a civil engineer in 1886-87. From 1889 to 1897, he was librarian at the Denver Public Library, and at the city library in Springfield, Mass., from 1898 to 1902. After 1902 he was with the Free Public Library at Newark, N. J., and from its foundation in 1909, he was director of the Newark Museum. Mr. Dana held liberal and revolutionary views in regard to library and museum methods. He believed that the public should be encouraged to know and to use all books and newspapers in a library, and that a museum should be a place of actual service. While he was librarian in Denver, he founded a special library department for children. The first library branch to be devoted to business in the United States was established by him in 1901 in Newark, N. J. He was one of the early champions of open shelves in public libraries, he advanced public library information service, he raised the standard of library printing, and set a standard for public library co-operation with other civic activities. Into the museum which he directed, he introduced a similar ideal of service. He was a pioneer in art in industry among American museum directors. He explained his views in a number of papers and books, among them *A Library Primer* (1896, revised, 1909, practically rewritten, 1920), *Library Problems* (1902), *American Art, How It Can Be Made to Flourish* (1914), *Libraries: Addresses and Essays* (1916), *On Buying and Using Print, Practical Suggestions from a Librarian to the Business Man* (1921), *Should Museums be Useful?* (1927), *Modern American Library Economy as Illustrated by the Newark, N. J., Free Library* (vol. 1, 1908-12, vol. 2, 1913-18, 3d ed., revised, 1928).

DANISH LITERATURE. See *SCANDINAVIAN LITERATURE*.

DANNAT, WILLIAM T. (URNER). An American painter, died in Monte Carlo, Mar. 12, 1929. Born in New York in 1853, he studied at the Munich Academy, and in Paris worked under Carolus Duran, and Munkacsy. After traveling and painting in Italy and Spain, he established his residence in Paris, later becoming a teacher at the Ecole des Beaux-Arts. His exhibits at the Paris Salon in 1883 attracted much attention and won for him a medal, the state purchased the "Aragon Smuggler," and the "Lady in Red" for the Luxembourg. One of his best paintings, "The Quarantine," completed in 1884 and now in the Metropolitan Museum, New York, exemplifies his

daring, unconventional style and technical ability. Later, Dannat concentrated on color problems and was influenced by Japanese art. He chose many Spanish subjects, among them, "Sacrifice in Arragon," 1888, now in the Chicago Art Museum, and "A Café Chantant," a brilliant study of artificial light which was the sensation of the Munich exhibition in 1892 and remained in that city. Reverting somewhat to his earlier manner, Dannat produced the "Lady in White." In 1895 "Madame E," a portrait almost colorless except for the red of the woman's lips, and a likeness of the dancer, Otéro, aroused both criticism and praise. After winning the gold medal at the Buffalo Exhibition in 1901, Dannat exhibited little, and devoted his time chiefly to portraits. He received the Cross of the Legion of Honor in 1889 and was at one time president of the Paris Society of American Painters.

DANZIG. A free city, which, with its surrounding territory, was established by the Treaty of Versailles in 1919. It was formerly a part of the German Empire Area, about 754 square miles, population in 1928, 390,000. The administrative district of the City of Danzig had a population of 230,000 in July, 1927. The city is the chief outlet for the commerce of Poland and continues to maintain its century-old position of being the leading grain port of the Baltic Shipping is the chief industry, manufacturing being engaged in largely for local consumption.

In 1927, 6950 vessels of 3,899,854 tons entered and 6942 vessels of 3,932,577 tons cleared from the port. The budget for 1928 balanced at 117,028,590 gulden (1 gulden equals about \$0.154). The government of the free city is in the hands of a High Commissioner appointed by the League of Nations. Its constitution approved by the League May 11, 1922, provides for a legislative Assembly of 120 members elected for four years, a Senate consisting of 20 members, and a President and Vice President. The Senate is the highest authority in the city and holds secret sessions. High Commissioner in 1929, Count Mantied Gravinas, appointed Sept. 22, 1928.

DARTMOUTH COLLEGE. A nonsectarian institution for the higher education of men in Hanover, N. H., founded in 1769. The 1929 autumn session had an enrollment of 2251 students, most of whom were working for the regular college degree, the exceptions being 15 graduate students, 39 students in the medical school, 25 in the Thayer School of Civil Engineering, and 104 in the Tuck School of Administration and Finance. There were 275 members on the faculty. The productive funds amounted to \$14,000,000. The library, housed in the Fisher Ames Baker Memorial Library, contained 300,000 volumes. During 1929 the Carpenter Art Building, the Seaborn English House, and two dormitories were completed, and a group of four connected buildings for the Tuck School, including administration and class rooms, dormitories, and a refectory, was under construction. A revised curriculum has been in force since 1927, providing among other things for special treatment for students of high grade and for the granting of but one degree, bachelor of arts. President, Ernest Martin Hopkins, A. M., Litt. D., LL. D.

DARWIN'S COTTAGE. See *ZOOLOGY*.

DATE SCALE. See *ENTOMOLOGY, ECONOMIC*.

DAVIDSON, HON. SIR CHARLES PIERRE Canadian jurist, died in New York, Jan. 29, 1929. Born in Huntingdon, P. Q., Canada, in January, 1841, he

attended Victoria College, Cobourg, and McGill University, Montreal, and was called to the bar of the Province of Quebec in 1865. Made Queen's Counsel in 1878, he was raised to the bench in 1887, and served as puisne judge until 1912, when he was made chief justice of the Supreme Court of the Province of Quebec, a position which he retained until 1915. Sir Charles was also professor of criminal law at McGill. He was decorated for his services with the military forces during the Fenian raids, 1866-67, in 1887 he became lieutenant-colonel in the Victoria Rifles.

DAWES PLAN. See REPARATIONS; GERMANY, under *History*.

DAWKINS, SIR WILLIAM BOYD English geologist, died in Cheshire, England, Jan. 15, 1929. He was born Dec. 20, 1837, in Buttington, Welshpool, and was graduated from Oxford University. In 1861 he became a geologist in the Geological Survey of Great Britain, holding the position until 1869, during which time he conducted important research in the history of early man. Later, from 1874 to 1890, he traveled in North America and Australia, adding much to his investigations. In 1870 he was appointed curator of the Manchester Museum and the same year became lecturer at Owens College, and in 1872, professor of geology. In 1880 he gave the Lowell lectures in Boston. Professor Dawkins combined theory with practice, being, after 1870, consulting geologist in mining and civil-engineering projects. Among the enterprises for which he acted as geological adviser were the engineering of the Manchester Ship Canal, a survey of the French and English coasts for the proposed Channel tunnel, and for the water supplies of cities of England and New Zealand. He was a fellow of the Royal Society and honorary professor of geology and paleontology at Victoria University in Manchester. He was knighted in 1919. His published works are *Cave Hunting* (1874), *Early Man in Britain* (1880), *British Pleistocene Mammals* (1866-87).

DEATH RATE. See VITAL STATISTICS.

DECEPTION ISLAND. Deception Island (Lat. 63° S., Long. 60° 15' W.) near the northern extremity of Graham Land is a volcanic island into whose breached crater the sea has entered and provided an excellent land-locked harbor for the whaling vessels congregating in the adjoining waters each year. Fumaroles and hot springs give evidence of recent volcanic activity. This island was used as a base for the Wilkins-Hearst Antarctic Expedition in 1928 and 1929. See POLAR RESEARCH.

DEFECTIVES. See CRIME.

DELAWARE. POPULATION. According to the Fourteenth Census the population of the State on Jan. 1, 1920, was 223,003. The estimated population on July 1, 1928, was 244,000. The capital is Dover.

AGRICULTURE. The accompanying table gives the

Crop	Year	Acreage	Prod Bu	Value
Corn	1929	132,000	4,224,000	\$3,717,000
	1928	136,000	4,488,000	3,949,000
Wheat	1929	101,000	1,919,000	2,226,000
	1928	102,000	1,836,000	2,395,000
Hay	1929	83,000	120,000 *	2,069,000
	1928	83,000	141,000 *	2,281,000
Potatoes	1929	7,000	546,000	874,000
	1928	7,000	658,000	494,000
Sweet potatoes	1929	8,000	1,180,000	1,044,000
	1928	7,000	980,000	784,000

* Tons

acreage, production, and value of the principal crops in 1928 and 1929.

MINERAL PRODUCTION. Clay products, which form the chief element of the State's mineral industry, yielded a greater total in 1927 than in 1928, the value of all clay products for the year 1927 being \$293,089, as against \$156,897 for 1926. The output continued to be entirely in the class of brick and tile. Outside of clay and its products, the only mineral activity of importance in the State was the production of stone, sand, and gravel. The total mineral product of Delaware was, for 1927, \$493,377, for 1926, \$375,945.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$4,826,035 (of which \$1,406,380 was for local education); for interest on debt, \$474,073, for permanent improvements, \$2,558,123, total, \$7,858,231 (of which \$2,383,939 was for highways, \$258,167 being for maintenance and \$2,125,772 for construction). Revenues were \$8,968,467. Of these, property and special taxes formed 58.8 per cent, departmental earnings and remuneration for officers' services, 6.3, license sales, 23.1 (including gasoline taxation of \$747,583). The State debt, \$11,406,285 on Jan. 1, 1928, and \$8,448,752 net of sinking funds, included \$10,530,000 for highways. On a property valuation of \$265,582,580 were levied State taxes of \$398,374.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 325.11. There was built, in 1929, 0.01 mile of additional first track.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the U. S. Department of Commerce in 1929 and relating to the operations of 1927, there were in the State, 446 manufacturing establishments. These employed 21,324 wage earners, whose wages for the year totaled \$25,222,182. Materials and supplies used in production cost \$69,032,720. Manufactured products attained the combined value of \$129,899,735.

EDUCATION. The educational effort of the State was amplified by the action of the Legislature in appropriating for the succeeding biennium a total 30 per cent greater than in the preceding similar period, for current school expenditure, and a total 25 per cent greater for State aid to school construction. For the academic year 1928-29, the gross enrollment in the public schools was 42,432; the net enrollment, 41,586. Of the latter total, 34,809 pupils were enrolled in elementary, and 6777 in high-school, grades. The expenditures for public-school education in the State during the year totaled \$4,309,183. The yearly salaries of public-school teachers averaged, for whites, \$1208.65, for the colored, \$1065.99.

CHARITIES AND CORRECTIONS. Statutory provision for the sterilization of defectives, in force in the State since 1923, was amplified in 1929 by a law creating a Mental Hygiene Clinic at the State Hospital at Farnhurst endowed with power to recommend any feeble-minded, epileptic, or insane person in the State for sexual sterilization. Another act empowered this Clinic to recommend for sterilization likewise any person convicted of three felonies, on the Clinic's finding that criminality had resulted from mental abnormality or disease. Final decision on such recommendations rested with the State Board of Charities. The Board of Charities, the State's

central administrative organization for institutions of care and custody, visits State institutions and supervises dependent children that have been imported from outside the State. State institutions, each under its own board, are Delaware State Hospital for the Insane, Farnhurst, Delaware Industrial School for Girls, Claymont, Industrial School for Colored Girls of Delaware, Marshallton, New Castle County Farm for Women, Retention Home for Juveniles, Delaware Colony for Mental Defectives. The State maintained the Mothers' Pension Commission, the State Health and Welfare Commission, and commissions for the blind and the feeble-minded.

LEGISLATION The 102d session of the State Legislature convened on January 1 and adjourned on April 19. By act, a place on the State highway commission was taken from the Secretary of State and given the Governor. The record of satisfaction of mortgages was required to be entered within 60 days. An enactment rendered compulsory the teaching, in public schools, both elementary and high, of the effects of alcoholic drinks, stimulants and narcotics on the human system, along with other matters of physiology and hygiene. The State adopted the principle of sterilization of undesirable, by the passage of statutes providing for the sterilization both of the mentally deficient and of persons who had been thrice convicted of felonies. Provision was made for the licensing of aircraft and pilots and for the regulation of aerial navigation. The law providing the death penalty for first-degree arson was modified. The State Board of Agriculture received authority to carry on the tuberculin test of cattle under the system known as the "Modified Accredited Area" plan. Under the same board was placed the direction of the Japanese beetle quarantine, previously answerable directly to the Governor. Among measures enacted that bore on public education were an appropriation of \$2,500,000 for a school-building programme, appropriation of \$6,500,000 for the school budget, an act enabling the State Board of Education to determine in consultation with local trustees the number of grades to be taught in local schools. There was much legislation dealing with sport. Boxing bouts were legalized, the shooting of waterfowl on public lands bordering on the shores of the State was prohibited, protection for these wild birds being thus afforded, the daily catch of each sort of the chief fresh-water fish was limited, and the minimum length of calico bass lawful to possess was set at 6 inches. A commission for the work of opening the closed Indian River inlet was created, with an appropriation for the purpose. Exemption from inheritance tax on legacy to the widow was raised to \$20,000, from \$3000. The fiscal system was somewhat changed by the passage of amendments to the income tax, providing for other things exemptions of \$200 for each. . . . 20, by the elimination of the State's invested capital tax, and by a franchise tax designed to take its place.

POLITICAL AND OTHER EVENTS With a view to enabling the State Highway Department to carry on its work directly out of revenue, the State administration, through the Sinking Fund Commission, retired on July 1, \$2,100,000 of highway bonds and made preparation for calling other highway bonds to the amount of \$1,455,000 at the outset of 1930. New Jersey filed against Delaware in the United States Supreme Court on June 3 a suit to establish the boundary between

the two States beneath the waters of Delaware Bay. Delaware's contention that her territory extended to the low-water mark on the New Jersey shore was opposed by New Jersey's contention that the boundary followed the mid channel of the Bay. The suit was peculiar in that it involved the evidence to be drawn from some of the oldest documents available relating to the American colonies. It was announced on July 13 that Alfred I du Pont had the intention of providing pensions to "worthy residents of the State over 65 years old," thus making good the failure of the Legislature of 1929 to pass an old-age pension measure with which he sympathized.

OFFICERS Governor, C Douglas Buck, Lieutenant-Governor, J Henry Hazel, Treasurer, Howard M. Ward, Auditor, Edward Baker, Secretary of State, Charles H Grantland, Attorney-General, Reuben Satterthwaite, Jr.

JUDICIARY Chancellor, Josiah O Wolcott, Chief Justice of Supreme Court, James Pennewill, Associate Justices, Richard S. Rodney, Herbert L. Rice, William Watson Harrington, Charles S Richards.

DELAWARE, UNIVERSITY OF An institution of higher learning in Newark, Del, founded in 1833. The enrollment in 1928-29 was 694, of whom 395 were men and 299 were women. These were distributed as follows: Seniors, 141, juniors, 133, sophomores, 181, freshmen, 228, graduate students, 5, specials, 6. The enrollment in the 1929 summer session was 298. The faculty numbered 114 members, 86 of whom were on the regular teaching staff, the others being members of the experiment station and extension staffs. Appropriations from the State and Federal governments amounted to approximately \$375,000, expenditures for 1929 totaled \$624,362. Invested endowment funds amounted to \$540,000. The library contained approximately 55,000 volumes. Among the new buildings erected during the year were an engineering building and laboratories costing \$330,000 from State appropriation and an auditorium costing \$300,000 with an endowment of \$50,000, the gift of H Rodney Sharp, an alumnus. President, Walter Hulihan, Ph D, D C L, LL D.

DELBÜCK, delbrük, HANS A German historian, died July 14, 1929, in Berlin. He was born Nov 11, 1848, in Bergen, on the Island of Rugen off the coast of Germany, and was educated at Halle, Bonn, Göttingen, and Bonn. Shortly after the Franco-German War, in which he served, he was preceptor of Prince Waldemar of Prussia, a brother of Emperor William II (1874-79). In 1882-83 and from 1884 to 1890, he was a deputy in the Reichstag. In 1883 he became an editor of the *Preussische Jahrbücher*, a German political magazine, and editor-in-chief in 1899. He was appointed professor of modern history at the University of Berlin in 1885, and in 1920 he became a member of the Historical Committee for the Imperial Archives. Professor Delbrück was a monarchist, a supporter and defender of the Kaiser's policies during the World War, and the leader of a group of historians working to prove that Germany was not responsible for the outbreak of the World War. He was the author of a number of important books, most of them on the history of the art of war. They include *Die Perserkriege und die Burgunderkriege* (1887), *Die Strategie des Persisches elandtes durch die Strategie Friedrichs des Grossen* (1890); *Friedrich, Napoleon, Molt-*

ke, *Actiere und neuerer Strategie* (1892), *Geschichte der Kriegskunst im Rahmen der politischen Geschichte*, 3 vols (1901-07), *Romer und Germanen* (1902), *Das Mittelalter* (1907), *Erinnerungen, Aufsätze, und Reden* (1902). His later works include *Regierung und Volkswille* (1914, 1920); *Bismarcks Erbe* (1915), *Krieg und Politik*, 3 vols (1919), *Geschichte der Kriegskunst*, 4th vol. (1920), *Kaustsky und Harden* (1920), *Ludendorff, Tirpitz, Falkenhayn* (1920), *Ludendorffs Selbstportrat* (1922), *Vor und nach dem Weltkrieg* (1925).

DEMENTIA PRÆCOX. See INSANITY.

DE MOLAY, ORDER OF A nonsectarian secret organization for young men between the ages of 16 and 21, founded in 1919 by Frank S Land in Kansas City, Mo., and named in honor of Jacques De Molay, the last military grand master of the Knights Templars. The members are pledged to the precepts of love of parents, reverence, patriotism, cleanliness, courtesy, comradeship, fidelity, and to the promotion of the public-school system and good citizenship. The order is governed by a grand council of Freemasons, while the chapters are sponsored by Masonic bodies or groups of Masons. In November, 1929, there were 1759 chapters, 250,000 members, and more than 200,000 De Molays who had outgrown active membership. Frank S Land, the founder, was grand scribe. The headquarters of the order are in its own building, The Shrine of Youth, at 201 East Armour Boulevard, Kansas City, Mo.

DENBY, EDWIN American lawyer and Secretary of the Navy, 1921-24, died suddenly in Detroit, Mich., Feb. 8, 1929. Born in Evansville, Ind., Feb. 18, 1870, he accompanied his father, then U. S. Minister to China, to that country in 1885 and served in the Chinese Imperial Maritime Customs Service, 1887-94. Returning to the United States, he was graduated from the law school of the University of Michigan in 1896. Admitted to the bar in the same year, he practiced at Detroit until the Spanish-American War, 1898, when he enlisted in the Navy and served as gunner's mate on the USS *Yosemite*. After that war, he returned to Detroit and resumed his law practice until seated, as a Republican, in the Michigan House of Representatives, 1903. The following year, he was elected to the Fifty-ninth Congress, serving until 1911. On his return to Detroit, he continued the practice of law and also became associated with several automobile manufacturing concerns, being one of the original stockholders of the Hupp Motor Company. When the United States entered the World War, 1917, Mr. Denby enlisted as a private in the marines, and having been promoted through the grades, was commissioned major in the reserves, Jan. 1, 1919. Again in Detroit, he was appointed chief probation officer of the Recorder's Court in December, 1920. He once more entered the services of the national Government when President Harding appointed him Secretary of the Navy, May 4, 1921, the first service man to hold that position. It was Mr. Denby who, as head of the Navy Department, signed the papers transferring Teapot Dome and the Elk Hills Naval Oil Reserve to the Department of the Interior, thereby becoming connected with the discussions which followed. He resigned on Mar. 10, 1924, after President Coolidge had refused to act upon a resolution of the Senate, of February, 1924, requesting that the President require the resignation of his Secretary. Mr. Denby returned to his private busi-

ness in Detroit, and in the decision on the subsequent oil-lease trial, Feb. 28, 1927, the U. S. Supreme Court stated that there was no evidence that the Secretary had taken any active part in the fraud.

DENISON-PENDEB, SIR JOHN DENISON See PENDEB, SIR JOHN DENISON-DENISON.

DENISON UNIVERSITY. A coeducational Baptist institution of higher education in Granville, Ohio, founded in 1831. The enrollment for the autumn of 1929 was 852 and for the summer session of 1929, 164. The faculty in the autumn of 1929 totaled 66, of whom 50 were men and 16, women, and of the total 4 men and 3 women were new additions. The amount of endowment of the university was \$3,520,000, the net income for the year was \$152,000. There were 70,000 volumes in the library. On Nov. 18, 1929, the university launched a campaign to raise \$3,300,000 for buildings and endowment in view of the coming centennial celebration in 1931. For immediate construction were a new library, administration building, biology building, conservatory of music, and auditorium. President, Avery Albert Shaw, D.C.L., D.D.

DENMARK. The smallest of the three Scandinavian states, comprising the peninsula of Jutland with its adjacent islands in the Baltic, the Faroe Islands, a part of Schleswig as a result of the plebiscite of 1920 under the terms of the Treaty of Versailles, and Greenland, the only colony or possession. Iceland is a free sovereign state, but united to Denmark under the King of Denmark, who is also head of the Government of Iceland. Capital, Copenhagen (See GREENLAND, ICELAND).

AREA AND POPULATION. The area is 16,568 square miles, including the Faroe Islands, which have an area of 540 square miles, population, according to the census of Nov. 5, 1925, 3,434,555. The population of which voted in the plebiscite of 1920 to form a part of Denmark, had an area of 1502 square miles and a population in 1925 of 176,433. The islands in the Baltic had an area of 5133 square miles and a population of 1,575,533 in 1925. Of the population more than 95 per cent were born in Denmark. The movement of population in 1927 was: Living births, 68,024; deaths, 40,190; marriages, 26,199. The surplus of births over deaths fell from 34,814 in 1925 to 27,834 in 1927. Emigration (chiefly to the United States and Canada) in 1927 totaled 7996 (5804 in 1926). The population of Copenhagen in 1925 was 587,150, with suburbs, 731,496. Other large cities with their 1925 populations are Aarhus, 76,226; Odense, 52,376; Aalborg, 42,812; Horsens, 28,135; and Randers, 26,850.

EDUCATION. Primary instruction is free and compulsory between the ages of 7 and 14. In 1927 there were 4482 lower schools, of these 31 were maintained by the National government, 3868 by the local communes, and 580 were private institutions. The number of pupils in the lower schools on Jan. 1, 1927, was 487,083. For higher education, there is the University of Copenhagen, founded in 1479, with about 120 professors and 4400 students. There are also many popular high schools, agricultural schools, training schools for teachers, and other technical special institutions.

PRODUCTION. Having virtually no basic natural resources such as coal and iron, agriculture has of necessity assumed primary importance in Danish economy, although industrial development is

not lacking. As agriculturists, the Danes have achieved notable progress. About 76 per cent of the total area is under cultivation, and supports about 35 per cent of the population. For many years, the government has fostered the division of the land into small parcels. A recent survey shows that 13,800 small farms, with a total area of 81,543 acres, have been established through grants and state loans since state aid was adopted in 1899. Loans and grants made by the government to aid the small farmers aggregate about 140,000,000 crowns (\$37,380,000). About 92 per cent of all farmers now own the land they cultivate. A feature of the economic organization of the country is the prevalence of coöperative societies, particularly in agricultural lines. Ninety per cent of all Danish farmers are members of coöperative dairies and 70 per cent of coöperative slaughterhouses. In 1926-27 Danish agriculture suffered from a severe depression due to small crops and low prices, but the situation improved in 1928 and in 1929 the Danish farmers appeared again on the road to prosperity. A census taken July 15, 1928, showed the cultivated area to be divided as follows: grain, 3,238,000 acres, root crops, 1,271,000, other crops, 78,000, green fodder and grass, 2,125,000, fallow land, 180,000; total, 6,892,000. Agricultural products constitute three-fourths of the value of Denmark's annual exports, and exports of butter and bacon account for two-thirds of all exports. In 1928 there were in Denmark 518,000 horses, 3,021,000 cattle, 3,360,000 swine, and 18,000,000 hens.

The fisheries, in which some 12,800 boats are engaged, support a considerable portion of the population. In 1927 the total catch amounted to about 84,000 metric tons, valued at 33,800,000 crowns (1 crown equals \$0.2680 par value, exchange value in 1928, \$0.2674).

Standardization and the consolidation of industry, together with higher costs in competing countries, have enabled Denmark to regain some of the ground lost during the post-war industrial depression. Latest available statistics place the number of factories and industrial shops at 89,175, employing altogether 392,000 persons. Industries manufacturing for home consumption include textiles, clothing, tobacco, soap, building materials, paper, pewter and silver ware, and foodstuffs. Meat packing, dairying, and the manufacture of machinery, automobiles, electrical equipment, cement, wire and cables, vegetable oil, and porcelain are carried on for both export and domestic consumption.

The marked improvement in general industrial conditions is indicated by the fact that imports of iron and steel products in 1928 totaled 318,738 metric tons, as compared with 295,048 metric tons in 1927. Much of the imported iron and steel was used in the shipbuilding industry, which produces most of the world's motor ships. Forty new vessels launched in 1928 totaled about 138,800 gross tons, placing Denmark fourth in the production of new ships. Total production is valued at about \$25,000,000 annually. In the first half of 1929 conditions in the industry improved still more markedly and there was a steady increase in the activity of foundry and machinery plants and in bridge construction.

In 1927 electrical equipment manufactured in Denmark was valued at 30,000,000 crowns, the cable production reached 5675 metric tons as against 1754 in 1913, the output of iron and steel wire, 20,600 metric tons, as against 11,800

tons in 1913. In the same year, the production of vegetable oils was 88,000 metric tons and of fodder products, 193,000 metric tons, the exports of the industry totaling 37,000,000 crowns.

COMMERCE. Since 1927 Denmark has ranked first among European nations in the value of exports per capita and in the per-capita total foreign trade. In both quantity and value, her foreign trade is now well above the pre-war level. In 1928 imports were valued at 1,734,000,000 crowns and exports, at 1,653,000,000 crowns, a total of 3,387,000,000 crowns, as compared with a total of 1,576,000,000 crowns in 1913 and 3,208,000,000 crowns in 1927. In the latter year, imports totaled 1,658,800,000 crowns and exports, 1,549,200,000 crowns. Quantitatively, the annual foreign trade amounts to about 12,000,000 metric tons, of which imports constitute about 84 per cent. The imports are divided into finished manufactures, 26.4 per cent, raw materials for agriculture, such as fertilizers and fodder, 23 per cent, foodstuffs, 15 per cent, mineral oils, 8.5 per cent, raw materials for industry, 13.3 per cent; semi-manufactured materials, 13.8 per cent. In 1929 the value of imports rose to 1,792,000,000 crowns and exports, to 1,707,000,000 crowns, according to preliminary returns.

Exports of meat and butter were valued at 507,000,000 crowns in 1928 (223,000,000 crowns in 1913), packing-house products, pork, and meat at 182,000,000 crowns in 1928 (184,600,000 in 1913), manufactured products, 300,000,000 crowns in 1928. Fish, flint, and chalk are other exports.

Great Britain purchases 56 per cent of all Danish exports, Germany, 21 per cent, and Sweden, Norway, and Holland the bulk of the remainder. One-third of Danish imports come from Germany, 14 per cent from Great Britain, and 13 per cent from the United States. Imports from the United States consist mainly of grains and animal fodder, machinery and automobile parts for assembly, mineral oils, flour, cotton, fruit, rubber products, and tobacco. In 1929 the trend was toward a more favorable balance of trade, an increased trade with Great Britain, and a marked decline in imports from Germany.

FINANCE. The considerable deficits which characterized the Government's financial operations after 1920 have been virtually eliminated in the past few years for both ordinary and extraordinary accounts. Direct and indirect taxes are still comparatively high and account for about 80 per cent of the total ordinary revenue. The budget for the fiscal year ending Mar. 31, 1929, balanced at 412,404,000 crowns, with current revenues estimated at 324,338,000 crowns and current expenditures at 319,433,000 crowns. Preliminary returns indicated that there would be a surplus of 1,000,000 crowns from the year's operations. The budget for 1929-30 provided for current revenues of 319,573,000 crowns and revenue from state capital of 43,598,000 crowns, for current expenditures of 313,288,000 crowns and expenditure for the increase of state capital of 57,620,000 crowns. Major items of current expenditure were: Ministry of Public Instruction, 62,089,719 crowns, Interior, 62,140,116 crowns, Health, 41,789,551 crowns, War, 36,400,017 crowns, Finance, 22,770,113 crowns, Marine, 22,321,137 crowns.

The public debt on Mar. 31, 1928, stood at 1,172,000,000 crowns, or about 340 crowns per capita. The debt is entirely funded and is held in

Denmark for the most part. The national wealth is estimated at above 10,000,000,000 crowns and the net private debt owed abroad at 995,000,000 crowns. The Danish crown has been stable at \$0.286 since Denmark returned to the gold exchange standard in January, 1927.

Den Danske Landmandsbank in Copenhagen, the reconstruction of which was undertaken with the aid of the Danish government through a \$55,000,000 loan floated in Europe and the United States in April, 1928, reported a steady and sound development during 1928, having on Jan. 1, 1929, liquid assets of about 64 per cent of its demand liabilities, with an additional 31 per cent of partially liquid assets. The government subscribed 50,000,000 crowns of new capital of the bank. The report showed gross profits of 7,387,213 crowns for the year 1928.

COMMUNICATIONS On Dec. 31, 1928, the Danish merchant marine (exclusive of colonies) possessed 2013 vessels of 1,120,139 registered tons gross. In 1926, 33,073 vessels of 10,431,000 tons entered the Danish ports from foreign countries and 34,649 vessels of 10,808,000 tons cleared. The total length of railways open to traffic was 3219 miles, of which 1526 belonged to the state. The total value of state railways up to Mar. 31, 1928, was 446,351,000 crowns. In 1929 the state railways were experimenting with new types of steam, Diesel motor, and gasoline locomotives.

GOVERNMENT Executive power is vested in the King, who acts through a responsible ministry, but who has no power to declare war or make peace without the consent of the Rigsdag, or Parliament, and the legislative power is vested in the Rigsdag, which is composed of the Folketing (lower house) and the Landsting (upper house). The Folketing has 149 members, of whom 117 are elected on the basis of proportional representation and the remainder divided among the parties not having obtained sufficient returns at the district elections, the Landsting has 75 members, elected indirectly by the voters for the lower house and the former Landsting. The composition of the Landsting after the election of September, 1928, was as follows: 28 Liberals, 27 Socialists, 12 Conservatives, and 8 Radicals. The Folketing, elected December, 1926, consisted of 61 Social Democrats, 43 Agrarians, 24 Conservatives, 16 Radicals, 3 Justice party representatives, and 1 from the Niesvig (German party). King in 1929, Christian X (born Sept. 26, 1870), who succeeded his father, Frederik VIII on May 14, 1912. The ministry as formed following the elections to the Folketing on April 24 was headed by Th. Stauning, a Socialist who was Prime Minister during 1924-26. It also included M. Bismansnaes as Finance Minister, M. Munch as Foreign Minister, M. L. Rasmussen as Minister of Defense, and M. Steintjke as Minister of Social Welfare.

HISTORY The question of the reduction of national defense forces which had agitated Danish politics for a number of years became a critical issue in 1929. In October, 1924, the Stauning (Socialist) Ministry introduced bills abolishing conscription and cutting naval and land forces to a minimum which would have reduced the annual item of military and naval expenditure from 60,000,000 crowns to about 12,000,000 crowns. The bills were defeated in both houses. The succeeding Madsen-Mygdal ministry attempted to effect a compromise between the demands of the Left and Centre groups, which favored reduction of armaments, and those of the

Conservative groups, which opposed reduction, by offering a defense budget of 40,000,000 crowns. This did not satisfy the Left and Centre, however, and the budget bill was rejected Mar. 21, 1929, the dissolution of the Folketing following on April 23. Besides their disarmament stand, the Socialists and Radicals campaigned for the abolition of the Upper Chamber, or Landsting, and the introduction of a one-chamber system.

At the election of April 24, about 52 per cent of the voters supported the Socialist-Radical disarmament policy, defeating the government parties by a 100,000 majority. The new cabinet (see above, under *Government*) presented its disarmament bill to the Folketing on October 3. It provided for the abolition of the army, navy, and private military forces, and the substitution of a defense corps of 1500 enlisted men, to be known as constables and to serve for patrol purposes only, a state marine of about 13,000 tons for coast guard and fishery duties, the abolition of the War and Navy ministries, the supreme command of the defense forces to be placed in the hands of the Ministry of State; demolition of present fortifications, and strict regulation of the manufacture and sale of munitions. The total national defense budget under the proposed system was estimated at 19,000,000 crowns. The bill provides further that after being passed by both chambers of Parliament, it must be approved by a national referendum before becoming a law.

The theory behind the move for disarmament was that small and exposed nations such as Denmark are incapable of real self-defense under modern conditions of warfare. Premier Stauning said it was also the opinion of his supporters "that we have good reason to give, in international relations, a good example in a question which has become the most serious burden of all peoples, and an obstacle to the furtherance of cultural advance."

The possibility remains that the Upper House, in which the Conservatives still controlled a majority, might defeat the bill as it did a similar one in 1926. In this case, the proposed reform would go over until 1932, the earliest date at which the abolition or reform of the Landsting could take place. Unemployment, social insurance, and the improvement of farming, industry, and the crafts were other problems to which the new government was devoting itself. The question of home rule for the Faroe Islands was again debated during the session of the Faroe Lating which closed September 26.

DENVER, UNIVERSITY OF A coeducational institution of higher learning in Denver, Colo., founded in 1864. The registration for the autumn of 1929 totaled 2685, as follows: Graduate school, 54; college of liberal arts, 940; school of engineering, 167; school of law, 74; school of dentistry, 49; school of commerce, 802; art school, 77; and city college, 522. There were 969 students enrolled in the 1929 summer session. The faculty had 176 members. The library contained more than 50,000 volumes. The Margery Reed Memorial Hall, a class-room building with offices for professors, was completed during 1929. Chancellor, Frederick M. Hunter, Ed.D.

DEPAUW UNIVERSITY. A coeducational institution for higher learning in Greencastle, Ind., under the auspices of the Methodist Episcopal Church, founded in 1837. For the autumn session of 1929, the enrollment was 1603, including 888 men and 715 women. Of this number,

1429 were registered in the college of liberal arts and 174 in the school of music. In the summer session of 1929, there were 102 students. The college of liberal arts had a faculty of 91 members and the school of music a faculty of 16. During the year, there were appointed a professor of mathematics, and assistant professors of economics, English literature, and sociology. The productive funds of the university amounted to \$5,414,124, including assets of the Rector Scholarship Foundation amounting to \$2,206,642. The income from productive funds was \$272,850, while the total current income for the year was \$613,442, \$118,308 of the income from productive funds was for scholarships.

In June, 1929, six new Rector fellowships for graduate work in institutions to be chosen by the students receiving them were awarded, these fellowships carrying a stipend of \$1200 each. In September, the Rector's Scholarship of History, carrying a stipend of \$300 a year, was established. Among the important gifts received during the year was a bequest of \$1,000,000 from the late Frank Hall and of \$100,000 from Mrs. Larz Whitcomb to establish the Larz Whitcomb Chair of Sociology. The library contained 69,050 volumes. On Oct. 12, 1929 (Home-Coming Day), the corner stone was laid of Asbury Hall, a recitation and lecture hall which was being erected at a cost of \$250,000. Plans also were developed for the erection of Golum Memorial, a recitation and lecture hall for religious education, to cost \$100,000, of a new science hall for the departments of biology and geology to cost \$250,000, and of a new auditorium with a seating capacity of 2500 to cost \$250,000. President, G. Bromley Oxnam, D.D., LL.D.

DEPENDENT CHILDREN. See CHILD WELFARE.

DERBY. See RACING.

DESIGN, NATIONAL ACADEMY OF. See NATIONAL ACADEMY OF DESIGN.

DES MOINES UNIVERSITY. See IOWA, under *Political and Other Events*.

DESTROYERS. See VESSELS, NAVY.

DETROIT, UNIVERSITY OF. An institution of higher education in Detroit, Mich., under the auspices of the Roman Catholic Church and conducted by the Jesuit Fathers; founded in 1877. In the autumn of 1929, there were 3715 students registered, distributed as follows: Arts and sciences, 597; engineering, 1301; commerce and finance, 1032; law, 220; foreign trade, 59; Saturday and Thursday extension school, 268. The summer-school registration was 220. The faculty numbered 200. The productive funds in 1929 totaled \$1,218,446. There were 52,000 volumes in the library. President, the Very Rev. John P. McNichols, S.J., Ph.D., LL.D.

DETROIT INSTITUTE OF ARTS. See ART EXHIBITIONS, ART MUSEUMS.

DEWEY, JOHN. See PHILOSOPHY.

DIABETES. Dr. E. P. Joslin, well-known authority on diabetes, writes a practical article for the benefit of the patient and his family physician on the subject of preventing diabetic coma. The patient is presumed to be under the favorable influence of diet and insulin, one or the other or both (*Journal of the American Medical Association*, July 6). Every patient, no matter how complete his resources for heading off coma, should be trained to avoid this possibility. He must never omit his insulin as long as there is the least sugar in the urine, even if on a rigid diet, and the more so if he is not. If he suffer from some intercur-

rent disease, like a severe cold, he is under no condition to stop his insulin, but if anything to take it oftener and in larger doses. If in spite of all he begins to feel ill, he is to go to bed after summoning his medical attendant and a nurse, drink a cup of hot water every hour; take an enema; keep warm in bed, and have boiled water ready on the stove in order that the doctor or nurse may at once inject a quart of it subcutaneously. The doctor is to wash out the stomach and place the patient on fluid diet with caffeine as a heart stimulant. Dr. Joslin evidently attaches no importance to frequent tests of the urine for the ketone bodies supposed to usher in acidosis and coma, as he does not mention these.

DIABETES IN CHILDREN. Dr. E. P. Joslin and Dr. Priscilla White give some statistics of a series of 303 diabetic children seen over a period of about two years. The death rate for six years in this class of patient had been constant at 2 per cent. All deaths had been due to coma, which implies neglect. The present status of the children was good and they matured normally. While under diet and insulin their resistance to accidental infection is normal, although in the long-standing cases some sugar persists in the urine. The reactions to insulin are disagreeable but not dangerous. Since evidence goes to show that diabetes in early life is due to hereditary factors, the triumph of treatment is the more remarkable. There is nothing to prevent these children from marrying when they grow up and they are in urgent need of companionship—of some one to take an interest in them and make them attend to their treatment. The inability to metabolize carbohydrates will not of course be overcome but it may be that these unfortunates may have compensations. It was found recently that they suffer less from dental caries than the average when under full diabetic management and the value of insulin is a broad one and may secure to the patient advantages other than the holding in check of diabetes (*Journal American Medical Association*, January 12). See INSULIN.

INCREASING INCIDENCE OF DIABETES. The figures of the Metropolitan Life Insurance Company show that despite the great value of insulin in the treatment of diabetes, the disease is on the increase, a fact to which attention was called in 1927. There was a further rise in the following year, while during the early part of 1929, the death rate of 23.8 per 100,000 population was the highest ever recorded by the Metropolitan Insurance Company. How many patients are receiving insulin today? According to the insurance company named, over half the sufferers. An analysis of one group of 1044 fatal cases showed that 63 per cent had received it to some extent, but, of this fraction, 46 per cent had received it too late to be of benefit. Insulin, it must be remembered, is not a cure and not a preventive. Given properly and faithfully, it enables a person to live with his disease and in spite of it and in good health for many years, perhaps until his original expectation of life is realized. The slight reduction in the percentage of deaths due to diabetic coma is a tribute to the efficacy of insulin. It must be remembered that many diabetics fall an easy prey to other diseases, such as influenza and pneumonia. See FOOD AND NUTRITION.

DIAGHILEV, SERGI. The famous creator of the Russian Ballet, died in Venice, Aug. 19, 1929. He was born in Novgorod, Mar. 19, 1872. Al-

though graduated from the Petrograd Conservatory with honors, in 1892, he did not take up music as a profession, but devoted himself to journalism and began to arrange exhibitions of modern art. In 1899 he founded an art journal, *Iskusstvo*, which attained great vogue, but was forced to suspend publication in 1905, owing to unfavorable conditions brought about by the Russo-Japanese War. In 1899 he also became connected with the ballet of the Imperial Russian Theatre in Moscow, and there he found sympathetic understanding of his original ideas in Michael Fokin, the director, and Léon Bakst, the painter. Enthusiastic collaboration of these three men resulted in the development of the ballet by coordinating dancing, stage decorations, costumes, lighting effects, and music, thus fusing these concomitant elements into a homogeneous whole. The beginning was made with ballets in the regular repertory. Then, influenced by the art of Isadora Duncan, choreographic actions were adapted to famous instrumental works, such as Rimsky-Korsakov's *Scheherazade*, Strauss's *Die Eulenspiegel*, Debussy's *Après-midi d'un Faune*, etc. About that time, Diaghilev first met Stravinsky, who was then entirely unknown, but whose style of music seemed to fit admirably into the general scheme of the reformers. Accordingly, the young musician was commissioned to write the music to *L'Oiseau de Feu*. In the spring of 1909, Diaghilev took the Moscow troupe to Paris for the ostensible purpose of introducing Russian operas in which the ballet figured extensively. Incidentally, separate performances were given also of standard ballets, and these met with even greater favor than the operas. Diaghilev now severed his connection with the Moscow organization and formed his own company, the Ballet Russe, with which he visited Paris in 1910, scoring a sensational success with the first production of Stravinsky's *L'Oiseau de Feu*. The next year, the same composer's *Petrushka* was acclaimed with equal enthusiasm and London fully endorsed the verdict of Paris. Two years later, these phenomenal successes were even eclipsed by *Le Sacre du Printemps*, and the demand for ballets in the new style led Diaghilev to commission new works from various composers of established reputation, among them R. Strauss, Debussy, Ravel, Hahn, Tcheterepnin, Dukas, Milhaud, Bartók, Wellesz. Even conservative New York gasped and was completely carried away when the new art was first introduced there in 1916. After 1921 Diaghilev divided his activity mainly between Paris and London.

DIAMONDS During 1929 the diamond market of the world remained stable due to the continued control of the Diamond Syndicate and the extreme caution used by the South African Government in marketing stones from the government workings in Namaqualand, where there had been extraordinary finds of diamonds. This region and the adjacent territory in Southwest Africa continued to be the leading centres of interest, but accurate statistics regarding production were not forthcoming during the year. For 1928, however, the Namaqualand output was officially stated as 900,491 carats, making a total for the Union of South Africa of 4,372,857 carats. These and other figures led to an estimate of the world total for 1928 as about the same or possibly slightly in excess of the record year 1927, when the total output was 7,363,000 carats. In 1929 various causes seemed to be responsible for a decrease in South African

production, with an estimated total of 3,800,000 carats. The Namaqualand territory had produced in less than two years diamonds valued at \$35,000,000, with a future production worth \$5,000,000 a year indicated for 10 years. The government placed only about half of the stones recovered at its diggings on the market, holding the remainder for future sales.

While the South African production dropped in 1929, there were increases in southwest Africa, the Gold Coast, and Tanganyika. New finds were announced from British Guiana indicating an increase, while Congo and Angola were expected to equal the 1928 production, making a total world output for 1929 of 7,000,000 carats. See SOUTH AFRICA, under *Production*.

An interesting feature of the year was the development of the diamond-cutting industry in South Africa, with 17 establishments in operation in August as compared with 11 in January. In 1929 there were imported into the United States rough, uncut diamonds to the amount of 354,415 carats valued at \$9,885,072, as compared with 201,302 carats valued at \$11,935,191 in 1928. Stones cut but not set were imported in 1929 to the amount of 416,992 carats valued at \$42,009,583, as compared with 440,437 carats valued at \$42,390,162 in 1928. As usual, the Netherlands and Belgium were the leading sources of cut stones in the 1929 supply, 179,000 carats valued at \$19,044,681 being imported from the Netherlands, and 200,673 carats valued at \$17,150,419 from Belgium.

DIAMONDS, ARTIFICIAL. See CHEMISTRY, INDUSTRIAL.

DICTIONARIES. See PHILOLOGY, MODERN.
DIESEL ENGINES. See INTERNAL COMBUSTION ENGINES, ELECTRIC RAILWAYS, SHIP-BUILDING, SHIPPING.

DIET. See FOOD AND NUTRITION.

DIPHTHERIA. It has been assumed that when a patient recovers spontaneously from a mild or moderate case of diphtheria, this is due to the formation in the blood of antitoxin which neutralizes the toxin of the disease, and naturally in the malignant case there is lack of ability to produce this antitoxin, but according to Hamburger and Seigel (*Munchener medizinische Wochenschrift*, September 13), study of the blood of some patients with cases so mild that antitoxin was thought unnecessary may show that the patient has not formed this protective substance so that his recovery could hardly be attributed to that event, while on the other hand, the blood did contain the toxin of the disease and the patient therefore was suffering from the latter in latent form, even though in relative health. The so-called diphtheria carrier is known to harbor bacilli somewhere in the body, but has not, so far as known, harbored the toxin in his blood. Should these results be upheld, diphtheria will not be so simple an affection as we have believed, for it will be evident that some substance other than antitoxin has protected him from the disease. For the vast majority of patients, the situation will be quite unchanged, but we shall have to recognize the existence of paradoxical exceptions to the general rule and seek out the unknown immunizing substance.

DISARMAMENT. See LEAGUE OF NATIONS, MILITARY PROGRESS, NAVAL PROGRESS, PEACE AND PEACE MOVEMENTS.

DISCIPLES OF CHRIST. A communion, known also as the Churches of Christ, which

sprang from a movement for Christian unity, in American Presbyterian circles at the beginning of the nineteenth century under Barton W Stone in Kentucky and Thomas and Alexander Campbell in western Pennsylvania. This is the largest religious body having its origin in America and in 1929 ranked fifth among Protestant communions in the United States. In polity, the churches are congregational. There were six major agencies of the denomination in 1929. The United Christian Missionary Society; board of education, board of temperance and social welfare, Association for the Promotion of Christian Unity, pension board, and the missionary societies of the different States and provinces of Canada. These agencies are corporations and are related in an advisory way to the International Convention of the Disciples of Christ which meets annually in the late summer or early autumn. The total church membership throughout the world in 1929 was 1,668,500, a gain of 117 over 1928. In the United States the membership in 1929 was 1,573,245, a gain of 34,880. The Bible-school enrollment for the world was 1,201,885 and for the United States and Canada, 1,128,090. During 1929, 57 young people's conferences were held, a gain of 12 over the previous year. Contributions reported for the fiscal year in the United States and Canada totaled \$3,647,787. The church erection fund amounted to \$2,677,793.

The general missionary work of the church is organized under the United Christian Missionary Society, with headquarters at 222 Downey Avenue, Indianapolis, Ind., its board of managers of 120 is composed of an equal number of men and women. The foreign missionary work of the church in 1929 embraced the Belgian Congo, China, India, Jamaica, Japan, Mexico, Philippine Islands, Porto Rico, Argentina, Paraguay, and Tibet (Batang, on the border). During the year, there were 5610 baptisms in the foreign field. The 510 mission schools had a total enrollment of 11,916, and the denomination maintained 16 hospitals and 19 dispensaries which administered 434,791 treatments, an increase of 85,214 over the previous year. Mission work in the United States was conducted among the French, Highlanders, immigrants, Negroes, Orientals, Latin-Americans, and Mexicans. The department of benevolence maintained six homes for children, an equal number of homes for the aged, and one hospital. In 1929, 28 colleges cooperated with the board of education, and the denomination maintained Bible chairs in four State universities. Among the periodicals published by the communion are the *World Call*, *Christian Evangelist*, and *Christian Unity Quarterly*. The president of the International Convention in 1929 was Harry H. Rogers of Tulsa, Okla. The Rev. F. W. Burnham of Indianapolis, Ind., was president of the United Christian Missionary Society.

DISEASES OF ANIMALS. See VETERINARY MEDICINE

DISEASES OF PLANTS. See BOTANY

DIVORCE. See MARRIAGE AND DIVORCE

DOCKS, DRY DOCKS. See PORTS AND HARBORS

DOGS. The year 1929 again made clear that dogs and dog shows and the sport of showing dogs had become increasingly popular. The Westminster Kennel Club show in New York in February was considered the biggest and most important show of all and attracted an entry of over 2000 dogs, some exhibitors traveling from California and other distant corners of the country to show their

pets and strive to win the award for "Best in Show," emblematic of the best dog in the United States. In 1929 this signal honor was captured by Laund Loyalty of Bellhaven, a magnificent collie puppy owned by Mrs. Florence B. Ilich of Red Bank, N. J. The youngster swept all before it and was acclaimed the best specimen in the show.

The remarkable thing noticed at all the important shows of the country, the Westminster, the New Haven, Boston, Baltimore, Chicago, San Francisco, and others, was the enormous increase registered by the Boston terriers. This breed led all others in number of entrants in most of the shows, and was recognized as one of the most popular of all dogs. For years this breed was considered an outcast of the streets of Boston, but of late years has been barking at the doors of fame and at last has been admitted. There are many fine qualities to the breed and it is on a par with the wire-haired fox terrier group as a favorite with most dog fanciers. Some other breeds showed a marked decline. The Eskimos, the field spaniels, and the English bulldogs were seen to be fading out, and they failed to attract public fancy. These breeds were never in great demand, but they showed a greater decrease in 1929 than ever before. It is noteworthy that only one of each of these three types of dogs was entered in the Westminster Show at Madison Square Garden in New York City.

During the year, the wire-haired fox terriers held their tremendous popularity, while the other terriers also did well, notably the Cairns and the Scotties. Then, too, the cocker spaniels increased in number and quality until that breed had gotten up among the leaders at many of the shows. It was a great year for varieties and to a greater degree than ever before thoroughbred dogs are displacing those of uncertain pedigree as household pets.

The real merit of the blood dogs came to the fore prominently in 1929, as more and more breeders sent to England for pedigreed dogs. The importations stood the test well, and seem to have a slight advantage over the domestic animals.

DOLLS, INTERNATIONAL. See INTERNATIONAL-ISM

DOMESTIC RELATIONS COURTS. See CHILD WELFARE

DOMINICA. See LEeward ISLANDS

DOMINICAN REPUBLIC (SANTO DOMINGO). A West Indian state occupying the eastern part of the island of Haiti, the western part of which is occupied by the Republic of Haiti. Capital, Santo Domingo. See HAITI

AREA AND POPULATION. The estimated area is 19,332 square miles. Population, according to the census of 1921, 897,405. The largest cities with their populations at that census were Santo Domingo, 30,937, Santiago de Los Caballeros 17,052, San Pedro de Macoris, 13,802, and La Vega, 6564. The population was estimated at 1,022,485 at the beginning of 1928.

PRODUCTION. The Dominican Republic derives its income almost entirely from the cultivation of the soil. Sugar is the major crop, contributing 62 per cent of the total exports in recent years. Cacao, tobacco, and coffee, also are important crops. Except in the provinces of Seybo and San Pedro de Macoris, which are given over almost entirely to the raising of sugar cane, the economic condition of the local population is largely determined by the production and prices obtained

for these secondary crops. Thus, prosperity was fairly prevalent during 1927, despite the depression in the sugar industry, due primarily to large crops of cacao and tobacco with favorable prices. In 1928 crops were generally smaller than in the preceding year and the prices obtained for them considerably lower. By the middle of the year this situation was reflected in unfavorable business conditions and a decrease in government revenues.

Conditions generally improved somewhat toward the end of 1929. The sugar yield for the 1927-28 season was 412,380 short tons, an increase of 23,372 tons over the 1926-27 total, but the prices received were lower. For the 1928-29 season sugar production decreased to 390,575 short tons. The 1927-28 cacao crop was below average, being estimated at 45,000,000 pounds, as compared with 58,450,000 pounds in 1926-27, and prices declined during 1928. In 1928-29 the crop was estimated at 48,000,000 pounds. The export value of the tobacco crop in 1928 was about \$1,500,000, as compared with \$2,582,000 in 1927. Of the 27,500,000 pounds of tobacco produced in 1928, 25,000,000 pounds were exported. In 1927 exports totaled 44,750,000 pounds. The coffee crop available for export in 1928-29 was placed at 8,000,000 pounds, as compared with 9,025,000 in 1927-28. Exports of coffee in 1928 were valued at \$2,135,682, in 1927 at \$1,749,522. Diversification of agriculture was being sponsored by the government, which had also reclaimed 3000 acres of arid land by irrigation at a cost of about \$700,000. A colonization policy under which 500 families were settled on reclaimed lands and other public lands was being carried out, principally in the western part of the republic.

The Dominican Republic contains about 9,500,000 acres of forests and numerous mineral deposits, including gold, copper, iron, petroleum, and some coal.

COMMERCE. Dominican imports and exports showed a decided drop in 1928, imports totaling \$26,787,940 (\$27,784,014 in 1927) and exports, \$28,754,528 (\$31,178,709 in 1927). As usual, the United States supplied more than half of the imports, valued at \$16,374,110. The nearest competitors for the Dominican market in 1928 were Germany, which supplied \$1,400,082 of the imports, British India, \$1,437,809, and the United Kingdom, \$1,304,497. The principal articles of import in the order of their importance were foodstuffs, cotton and its manufactures, iron and steel manufactures, mineral oils, machinery and apparatus, vegetable fibre and its manufactures, automobiles, and hides and leather goods.

The United Kingdom was the republic's best customer in 1928, taking exports to the value of \$12,790,850, as compared with purchases of \$6,610,963 by the United States, \$2,848,677 by France, \$1,828,189 by Canada, and \$1,516,440 by Porto Rico. Principal exports were sugar, \$19,384,418, cacao, \$4,250,415; coffee, \$2,135,682, tobacco, \$1,348,958. Other exports were hides and skins, corn, honey, molasses, plantains, woods, and vegetable fibres.

The volume of foreign trade in 1928 while considerably below the record year of 1927, was higher than in any of the other immediately preceding years. A distinct improvement was noted toward the end of 1929.

FINANCE. The budget deficit at the beginning of 1929 amounted to \$1,631,277, which had accumulated since 1924 at the rate of \$408,000

annually. In the 1928 budget revenues were estimated at \$12,505,400 and expenditures at \$12,172,828. The slackening of economic activity during the year, however, caused a considerable reduction in revenues and the Government was forced to suspend construction on a number of public works. The Government's share of the customs receipts, which are handled by a receiver appointed by the United States, was \$3,770,047, instead of the \$4,800,000 estimated. Total customs collections for the year were \$5,290,308, the remainder going for the service of loans and the cost of the receivership. The Dawes Mission (see below, under *History*) estimated that appropriations under the 1929 budget would exceed receipts by \$4,127,000. The mission placed the total debt at \$22,050,000 in 1929, of which \$20,000,000 was bonded indebtedness. The continued deficits revealed by the mission were not shown in the closed accounts which, for instance, placed the actual surplus for 1927 at \$962,080. The discrepancies were attributed by the experts to the lack of a central accounting system. It was said to be common knowledge among Dominican politicians, however, that many of the unlisted appropriations were passed out as political patronage.

COMMUNICATIONS. In 1926 there were 149 miles of railway besides 255 miles of private lines on large estates. The total highway mileage in 1927 was 557. Road construction proceeded rapidly in 1928 with the aid of loans floated in the United States. The road budget for 1928 was \$1,300,500. The merchant marine consists of 30 small steamers engaged mostly in coastwise trade. There are 1034 miles of telegraph line and a telephone system owned and operated by the government, with 2383 instruments in 1924. An air-mail line linking the republic with the United States was inaugurated in January, 1929.

GOVERNMENT. The Republic is governed under a constitution adopted by the Constituent Assembly on June 13, 1924. Executive power is vested in a president and cabinet of seven ministers. The president is ineligible for a second successive term. The senators and deputies are elected for four years by direct popular vote. Each of the 12 provinces is represented by one senator and (in practice) by two deputies. President in 1929, Horacio Vasquez, who assumed office on July 12, 1924, vice president, Frederico Velazquez. On May 7, 1929, a law was approved providing for the reorganization of the government into the following departments: Executive, Interior and Police, Foreign Relations, Treasury, Justice and Public Education, National Defense, Promotion and Public Works, Agriculture and Commerce, Health and Social Welfare.

HISTORY. A commission of American financial experts, headed by former Vice President Charles G. Dawes, visited the Dominican Republic during April, 1929, at the invitation of President Vasquez, studied the financial situation, and submitted a report recommending the adoption of laws regulating the budget, state accounting, public improvements, and certain changes in departmental organization. A number of these recommendations were later adopted by Congress.

On March 11, the Dominican Congress ratified a treaty settling the boundary with Haiti. The U. S. Department of State on Oct. 19, 1929, announced the appointment of Charles Evans Hughes, former Secretary of State, as chairman of the United States committee to cooperate with

the Pan American Union in forwarding the project for the construction of a monumental lighthouse on the coast at Santo Domingo in honor of the memory of Christopher Columbus. A bill appropriating the sum of \$871,655 as the contribution of the United States toward the project was introduced into Congress.

Conditions in the Republic were reported none too stable toward the end of the year, particularly after President Vasquez went to the United States to undergo serious surgical operation. Following the outbreak in Haiti in December, several Dominican cabinet members were said to have conferred with the American High Commissioner in Haiti regarding the possibility that the trouble would spread across the border.

DOUBINE ERADICATION See VETERINARY MEDICINE

DRAINAGE See RECLAMATION

DRAKE UNIVERSITY. An institution for the higher education of men and women in Des Moines, Iowa, founded in 1881. The number enrolled in the autumn of 1929 was 1736, distributed as follows: College of liberal arts, 538, commerce, 292, education, 340, lay, 81, fine arts, 407, and Bible, 82. The faculty numbered 90. The fixed endowment amounted to \$1,363,076. The number of volumes in the library was 53,029. President, Daniel W. Morehouse, Ph.D.

DRAMA See THEATRE and articles on LITERATURE, ENGLISH AND AMERICAN, FRENCH LITERATURE, GERMAN LITERATURE, ETC.

DUBOIS, CARDINAL LOUIS ERNST. A French prelate, died in Paris, Sept. 23, 1929. He was born Sept. 1, 1856, in St. Calais, Sarthe, and educated there and at Précigné and Le Mans. In 1879 he was ordained a priest. In 1895 he was curate at Saint-Benoît au Mans, Bishop de Verdun in 1901, Archbishop of Bourges in 1909, of Rouen in 1916, of Paris in 1920. In 1916 he was created cardinal-priest. Cardinal Dubois was active in the post-war reconciliation of Church and State in France. He was a knight of the Holy Sepulchre and an emeritus member of the Academy of Saint Thomas Aquinas.

DUFFIELD, WAITER GEOFFREY. English astronomer and director of the Solar Observatory of the Australian Commonwealth died in August, 1929. He was graduated from the University of Adelaide in 1900 and from Cambridge University in 1903, and he received the doctor of science degree from the University of Manchester in 1908. As an honorary research fellow at the University of Manchester, he carried on experiments with the effect of pressure upon arc spectra, and in 1906-07, working on a Mackinnon studentship awarded by the Society, and influenced by Sir Arthur Schuster, he presented four memoirs on the effect of pressure upon arc spectra to the *Transactions* of the Royal Society. From 1911 to 1923, he was professor of physics at University College, Reading, England, and also dean of the faculty of science. Here, he studied the carbon arc further and published papers on this subject in the *Proceedings* of the Royal Society. Dr. Duffield in 1912 discovered the existence of minute repulsion between the poles of a carbon arc, around which discovery he carried on experiments.

The results of his careful study of the value of gravity over the ocean, made on a voyage to Australia and back in 1914, were published in the *Proceedings* of the Royal Society. In 1908 he was chosen secretary of the committee appointed to

aid in the work of establishing a solar observatory in Australia, and in 1923, on its foundation, Dr. Duffield became the first director of the Solar Observatory of the Australian Commonwealth at Mount Stromlo, Canberra, Australia. During the World War, he served in the Royal Air Force.

DUISBURG ANNIVERSARY See CELEBRATIONS

DUKE, BENJAMIN NEWTON. American capitalist, died in New York, Jan. 8, 1929. Born in Orange (now Durham) Co., N. C., Apr. 27, 1855, he was graduated from Guilford College, N. C. As a boy, he aided his father and brother on a small tobacco farm, which later developed into the W. Duke Sons & Co. tobacco factory at Durham, N. C. The firm grew rapidly, and in 1890 merged with the American Tobacco Company, of which Mr. Duke was treasurer and director until the company was dissolved as a monopoly by the U. S. Supreme Court, 1911. While in business, Mr. Duke remained in Durham, becoming president of the Durham & Southern Railway, and the Erwin Cotton Mills Company, vice president of the Durham Hotel Company, and the Southern Power Company, and director of the Durham Realty Corporation. He was instrumental in reorganizing Trinity College, Durham, as Duke University, which James B. Duke, his brother founded.

DUKE UNIVERSITY. An institution for higher education in Durham, N. C., established in 1924 by the expansion of Trinity College, made possible through benefactions from James B. Duke, as described in the article on the university in the 1925 YEAR BOOK. Enrollment for the fall of 1929 was 2027, distributed as follows: Undergraduates, 1721, school of religion, 96, law school, 50, students in other graduate schools, 160. For the summer session of 1929 there was an enrollment of 1406. In the autumn of 1929 the faculty, including officers but not staff assistants, numbered 243 and in addition there were 74 teachers in the 1929 summer school who were not included on the regular staff of Duke University. The endowment funds of the university amounted to \$21,017,966, and the income for the year was \$1,107,355. Gifts received during the year 1928-29 amounted to \$29,000, while the Angier B. Duke Memorial Student Loan Fund exceeded \$1,250,000 in value. The library contained 143,000 books and 22,000 catalogued pamphlets. In the fall of 1930, the present university campus was to be opened as a coordinate college for women, remaining as it has been a distinct unit of Duke University. The undergraduate college for men and the several graduate schools were to be moved to a 4500-acre tract of land, approximately a mile distant from the campus, on which there had been erected a group of buildings, built of native North Carolina stone of the Cambrian formation, taken from a quarry owned by Duke University President, William Preston Few, Ph.D., LL.D.

DUNKERS or DUNKARDS. See BRETHREN, CHURCH OF THE

DUTCH EAST INDIES. A possession of the Netherlands in the East Indies, comprising the territory of Dutch East India and consisting of the group of islands in the Pacific lying between 6° N. and 11° S. latitude and between 95° and 141° E. longitude. Capital, Batavia.

AREA AND POPULATION. The usual method of dividing the colony is as follows: (1) Java and

Madura, divided into 17 residencies, each under a resident and several assistants at the head of a large number of native officials; (2) the Outposts, consisting of Sumatra, Borneo, Celebes, a part of New Guinea, the Molucca Archipelago, the Sunda Islands and other small islands, under functionaries variously entitled governor, resident, controller, etc. The area is estimated at 733,642 square miles, population, according to the census of 1926, 51,881,862, of whom 36,901,643 were in Java and Madura. On Jan 1, 1928, the population of Java and Madura was 37,384,343, including 174,036 Europeans, 463,507 Chinese, and 34,545 Amlas.

PRODUCTION. Agriculture is the basic industry of the islands. In Java and Madura in 1927, there were 18,173,000 acres, or 56 per cent of the total area, under native cultures; 1,623,000 acres, or 5 per cent of the total, in European-operated plantations, and 7,437,000 acres of government forests. Unusually large harvests were obtained of virtually all crops in 1928. Prices were somewhat lower than in 1927. The production of the principal crops for the years 1926, 1927, and 1928 is shown in the accompanying table.

CROP PRODUCTION DUTCH EAST INDIES

[In thousands of units]

Product	1926	1927	1928
Sugar ^a met tons	1,973	2,379	2,948
Rubber do	204	232	226
Coffee lbs	193,557	261,446	291,871
Tea do	138,713	143,471	161,581
Rice ^b bu	257,750	256,946	246,304
Corn ^c do	79,702	78,639	
Tobacco lbs	214,590	225,645	152,583
Cassava roots ^a met tons	5,498	6,617	
Copra ^c lbs	830,882	673,019	966,673
Cinchona ^d do	2,446	27,981	
Orttonella oil ^d do	2,068	2,178	
Palm oil do	28,093	47,655	64,437
Kapok do	39,947	43,583	43,411
Sisal do	84,500	103,856	113,286

^a Java, seasons ended the following year.^b Java and Madura. ^c Exports. ^d Estate production.

The effect on the rubber industry of the abandonment of restrictions on exports from British areas was less severe than was expected, but considerable uneasiness continued among rubber growers. Of the 1,250,000 to 1,500,000 acres planted to native rubber, about 400,000 acres were in production in 1928.

An appropriation of 6,000,000 florins (\$2,400,000) for the commencement of work on a ten-year project for the irrigation of 227,000 acres in the Celebes was contained in the budget for 1930. A second project for the irrigation of 87,400 acres located in Central Celebes was begun in 1929.

The output in 1927 of the tin mines, part of which are worked by the Government, was 560,567 piculs (of 133 pounds) from 11 mines, 1,620,205 metric tons, of mineral oil, 3,093,870,000 kilogrammes. Tin production was slightly larger in 1928, although prices declined somewhat. Petroleum output also increased through the opening up of several large producing wells in eastern Java.

COMMERCE. An 11 per cent increase in imports and a decline of 2½ per cent in exports marked the foreign trade of the islands in 1928. The drop in exports was due almost entirely to the decline in the price of rubber. The comparative values of leading import commodities in 1928 and 1927 and of leading export commodities in

1927 and 1928 are given in the accompanying table. According to preliminary figures, 1929 imports, including parcel post and gold and silver, totaled 1,162,179,000 florins (\$467,195,000) and exports, 1,481,024,000 florins (\$595,372,000).

Imports of textiles and yarn during 1928 increased nearly 20 per cent in quantity, those from the United States reaching the record value of \$800,000. Imports of oil-well drilling machines, sewing machines, iron and steel manufactures, automobiles and automobile tires also increased, the United States supplying 79 per cent of the latter two articles. Of the export commodities, rubber, tobacco, and petroleum were the only leading ones to show decreases in value.

PRINCIPAL COMMODITIES IN DUTCH EAST INDIES TRADE

[In thousands of dollars]

IMPORTS		1926	1927
Fish, dried or salted		\$ 6,862	\$ 6,561
Rice, clean		38,824	26,797
Tobacco, leaf or cut		7,851	8,851
Cotton piece goods		66,349	69,293
Jute bags		9,030	7,748
Textile manufactures, other		9,588	10,429
Clothing and millinery		6,718	6,849
Iron and steel		29,607	30,004
Tin plate		4,625	3,980
Machinery and tools		27,637	28,511
Automobiles		8,873	9,146
Chemicals and medicines		5,167	6,044
Sulphate of ammonia		6,810	7,789
Gold and silver		11,841	9,976
Total imports		\$346,987	\$349,652
EXPORTS		1927	1928
Tapioca		\$ 8,532	\$ 13,461
Coffee, clean		29,668	32,544
Tea		36,191	36,480
Pepper and cubebs		10,582	17,700
Sugar		141,976	149,720
Tobacco, leaf or cut		45,688	35,871
Agave fibres		7,207	7,118
Kapok, clean		8,009	7,755
Rubber		167,281	117,827
Gasoline		32,662	28,576
Kerosene		7,048	6,727
Fuel oil		13,881	16,096
Tin ore		16,947	21,508
Tin, crude		21,497	16,811
Copra		29,313	42,580
Total exports		\$651,777	\$632,442

In 1927, 22 per cent of the total trade was with Singapore, 17½ per cent, with the Netherlands, 13½ per cent, with the United States, and 9½ per cent, with the United Kingdom.

FINANCE. The budget adopted for 1929 estimated revenues at 815,781,393 guilders and expenditures at 869,799,896 guilders, leaving a deficit of 54,018,503 guilders, as compared with an estimated deficit of 55,006,234 guilders in 1928. The deficit was accounted for mainly in connection with extraordinary services. The chief items of revenue estimated for 1929 were direct and indirect taxes, 326,000,000 guilders, salt monopoly, 18,324,200 guilders, pawnshops, 21,892,000 guilders, opium, 44,531,000 guilders, railway service, 84,244,000 guilders, post, telegraph, and telephone services, 30,874,000 guilders, harbor service, 13,236,000 guilders, forestry, 20,375,000 guilders, tin, 51,075,000 guilders.

The world prices of tin and rubber had an important bearing upon the government's revenues, as in 1926 and 1927, when high prices for these staples caused the anticipated deficits in the budgets to be converted into surpluses. The com-

paratively low prices obtaining for both products in 1929 gave little promise that the anticipated deficit would be reduced

The public debt was 1,011,677,000 guilders on Dec 31, 1928. The note circulation on Nov. 2, 1929 was 307,000,000 florins (123,567,000).

COMMUNICATIONS In 1928, 21,062 vessels aggregating 11,127,000 tons entered the ports of the Dutch East Indies and 18,193 vessels of 10,959,000, cleared In 1927 the length of railway and tram lines was 4507 miles, of which 3379 were in Java and 1099 in Sumatra, gross receipts were about 127,904,823 guilders, and operating expenses, 80,031,884 guilders The length of government lines was 7593 miles, of government lines, 14,315 miles. There were also 21 telephone radio telegraph stations

A fortnightly air-mail service from Europe to Java was started in September, 1929

GOVERNMENT The territory is under the sovereignty of the Netherlands (see NETHERLANDS, THE), but is partly under direct government and partly under subject native officials In 1917 and again in 1925, the mother country granted certain measures of home rule The chief executive authority is the governor-general who is aided by a council of five members which acts partly as a legislative and partly as an advisory body The Volksraad is a legislative assembly including representatives of the natives, Europeans, and foreign Orientals, and has comparatively little power in internal affairs In 1929 the Dutch Parliament passed a law providing for a native instead of a Dutch majority in the Volksraad, which will henceforth consist of 30 natives, 25 Dutch, and a maximum of five foreign subjects, such as Chinese The Governor-General and the council are nominated by the Crown Governor-General in 1929, A C D de Graaf, appointed Mar 26, 1926

DUTCH GUIANA, ge-u-na, or SURINAM A possession of the Netherlands on the north coast of South America lying between French Guiana on the east and British Guiana on the west, bounded on the south by inaccessible territory reaching to the Tumuc-Humac Mountain Area, 54,291 square miles population, Dec 31, 1927, 117,700 Negroes and Indians Capital, Paramaribo 45,703 inhabitants The movement of population in 1927 was Births, 3481, deaths, 2107, marriages, 440 Among the chief products are sugar, cacao, bananas, coffee, rice, maize, rum, and molasses. Gold production in 1927 was 239,796 grams, and that of balata, 770,000 kilos Local revenues are insufficient to meet expenditures and the state provides an annual subvention, which in 1929 amounted to 2,463,000 guilders In the same year, the local revenue was estimated at 5,951,000 guilders and expenditure at 8,414,000 guilders (1 guilder, or

florin, equals \$0 4020). The executive authority rests with a governor and an assisting council, both nominated by the Crown. Governor in 1929, Dr A. A. L. Rutgers, appointed Apr 1, 1928

DUTCH REFORMED CHURCH. See REFORMED CHURCH OF AMERICA

DUTCH WEST INDIES. The name applied to the Dutch possessions in the West Indies, viz, Dutch Guiana and Curaçao Consult those titles

DVOŘAK ANNIVERSARY See MUSIC

DWIGHT, JONATHAN An American physician and ornithologist, died in New York, Feb 22, 1929, where he was born Dec 8, 1858 He was graduated from Harvard in 1880 After studying engineering, he turned to medicine, receiving the M D degree from the College of Physicians and Surgeons, Columbia University in 1893 He served as assistant surgeon in the department of laryngology of the Vanderbilt Clinic, 1894-1904 His greatest interest, however, was in the study of ornithology and he accumulated one of the most important collections (over 60,000 specimens) of North American birds in existence, which he kept in the American Museum of Natural History Dr Dwight served as president of the Linnæan Society (1900-21), receiving a medal from that association in February (1929), was president of the Ornithologists' Union at the time of his death, having been made a fellow in 1886, and treasurer in 1905, and was treasurer of the Audubon Society He also belonged to numerous other scientific societies, including the International Ornithological Congress, and the British Ornithological Union He was the most valuable of Dr Dwight's - is that on his speciality, bird plumage, entitled *Plumages and Molts of the Passerine Birds of New York, and Gulls of the World*, published by the American Museum, he also wrote *A Study of Scoters of the World*

DYNAMO ELECTRIC MACHINERY. In the field of large generators for turbine drive, the most interesting feature of the year was the design of a 110,000-kilowatt unit, the turbine of which was to operate with steam at 1200 pounds pressure This unit, being built by the General Electric Company for the Ford Motor Company, was to be a cross compound design consisting of a 1200-pound steam turbine with its generator developing 55,000 kilowatts at 1800 revolutions per minute on one shaft and a low-pressure turbine and its 55,000-kilowatt generator on another shaft The high-pressure unit will be mounted on top of the other and the steam, after passing through the high-pressure turbine, will be reheated and passed through the other turbine.

The accompanying table gives a list and brief description of the outstanding examples of turbo-generators completed in 1929 and installed and operating

TURBO-GENERATORS FOR 1929

Purchaser	Kv a	Speed	Voltage	Shaft	Manufacturer
State Line Generating Co	235,000	1,800	22,000	3	G E.
United Electric Light & Power Co	188,400	1,800	13,800	2	West.
United Electric Light & Power Co	188,250	(LP 1,200) (HP 1,800)	13,800	2	A B B.
American Gas & Electric Co	187,000	1,800	11,000	3	G E
N Y Edison Co	180,000	1,500	11,400	1	G E
Brooklyn Edison Co	137,500	1,800	13,800	2	West.
Southern California Edison Co	100,000	1,500	16,500	1	G E
Union Electric Light & Power Co	89,933	1,800	13,800	1	G E.

G E = General Electric Co. West. = Westinghouse E. & M. Co A B B = American Brown Boveri Co

In the field of water-wheel driven generators, the record for size again was broken by the construction of four generators of 77,500 kv-a. at 88 revolutions per minute which have an overall diameter of 40 feet and are the largest of water-wheel generators both as to bulk and capacity. They are of the fabricated and welded steel-plate type of construction which is now common and which causes a considerable saving in weight and bulk. The next largest machines, those installed at Conowingo and in operation in 1929, are of 40,000 kv-a. at 82 revolutions per minute. In operation these machines have shown an efficiency of 98 per cent at rated load and unity power factor.

The following list comprises the more important machines ordered or installed during the year

WATER-WHEEL DRIVEN GENERATORS FOR 1929

Purchaser	No	Kv a	Speed	Manufacturer
Dneprostroy Hydroelectric Development	4	77,500	88 2	G E
Lexington Power Co	4	40,025	138	West
Philadelphia Electric Co (Conowingo)	4	40,000	81 8	G E
	3	40,000	81 8	West
New England Power Co	4	39,000	138	West
Hermann Hydroelectric	1	35,000	125	G E
Southern California Edison	1	35,000	375/450	G E
Alabama Power Co	2	28,000	100	West
Norwood Electric Co	2	27,500	90	A C
City of Los Angeles	1	25,000 (Hor)	143	A C
Montana Power Co	2	25,000	81 8	West
Norwood Electric Co	1	22,500	75	A C

A C = Allis Chalmers Co

An increasing percentage of large generators, particularly those for steam stations, were designed for operation at the higher voltages, such as 22,000, and a British manufacturer built some generators to give 33,000 volts.

The problem of operating machines of such large capacities in a network introduced serious problems of controlling these enormous values of power in case of trouble caused by breakdown, such as a short circuit, or sudden increases or decreases in the load. To meet these conditions, the engineers introduced the "high-speed circuit breaker" and "high-speed excitation." The former acts to cut out a defective line or part of the network in a small fraction of a second ($\frac{1}{60}$), and the latter will adjust the voltage of each generator, upward or downward in a very short period, thus making for a steady voltage which does not give even "winks" of the lights.

Among transformers, a record for capacity was made in a self-cooled single-phase transformer for 40,000 kv-a. at 60 cycles. While there has been no tendency to increase the operating potential of transmission lines and transformers above the established values of 220,000 volts, an increasing proportion of transformers built are designed for the high voltages, 220,000, 160,000, and 132,000 volts. This has introduced problems of material insulations which have been met by one company by the "non-resonating" type of transformer.

In this type, a metallic shield must be placed inside the transformer near the high-voltage windings, so that the dielectric field from conductor to the ground is controlled by this shield and each turn of the coil has an electro-static potential to ground proportional to its real voltage to ground, thus dividing the strain on the insulation as if there were only continuous voltages present.

Some large auto-transformers of the water-cooled type were built having a capacity of 83,333 kv-a. at 25 cycles, equivalent to a two-circuit transformer of 49,800 kv-a. Another large self-cooled, 60-cycle, auto-transformer is noteworthy in having an efficiency of 99.7 per cent at about 35,000 kv-a. output.

The use of Mercury Arc Rectifiers for the conversion of alternating current into direct current continued to increase. For railway work, they have become particularly popular because they are more adaptable to the higher voltages, 600, 1500, and 3000, of railway work than the low voltages, 125 and 250, of industry and domestic systems. A noteworthy installation was one of 6500-kilowatt capacity at 650 volts in one tank for the Consolidated Mining & Smelting Co of British Columbia.

EARTH, STUDY OF See GEOLOGY

EARTHQUAKES. It is estimated that an earthquake is felt in some part of the world on an average of at least 4000 times annually, in the United States alone, 200 or more are usually reported each year. Fortunately, the vast majority either are feeble and harmless or occur under the sea or in thinly populated regions. The year 1929 had the usual quota of quakes, many of which resulted in more or less local damage and loss of life, and a few of which ranked as severe disasters. A number of heavy quakes occurred under the oceans, the Aleutian Islands region being particularly active.

Cumana, Venezuela, which has been destroyed by earthquakes several times in its history, was again laid in ruins on January 17, about 50 people were killed, and 800 injured. The longest and most severe quake ever recorded in the region of Fairbanks, Alaska, occurred on January 21, 14 shocks were felt in four hours. The Tajikistan region of central Asia was shaken on February 1 and several villages were destroyed. A disastrous quake took place in Khorasan, Persia, May 1, a large area was devastated, with great loss of life.

An earthquake in New Zealand on June 17 was the strongest felt in that country since 1855. The greatest damage was caused at Westport, Greymouth, and Murchison, the loss of life was small. Severe aftershocks took place on June 23. The quake was remarkable for the great distance to which the sounds accompanying the shock were heard. The centre was on the White Creek fault, differential displacements of the order of 14 feet occurred, and one area 50 by 18 miles was raised as much as 16 feet in some places. On the west coast at Whitecliffs, a strip of sea bottom was uplifted into a ridge a quarter-mile long and 60 yards wide. The uplift at Murchison amounted to about four feet.

New York State and surrounding regions were shaken on August 12; the damage, mostly to chimneys and walls, was confined largely to the town of Attica. An unusually powerful quake, which must have been of the highest order of intensity at the epicentre, occurred November 18 off the southern coast of Newfoundland. It shook New England and eastern Canada, being felt along 940 miles of the American coast, and sea waves swept in over the southern shores of Newfoundland, two and one-half hours after the shock, to a height of 100 feet in some places, drowning 26 people and devastating the region. The area of the disturbed region has seldom been exceeded in the quakes of the last 50 years. The shock broke 12 submarine cables in at least 23 places, 10 of these were transatlantic cables. The cable breaks occurred mainly on two roughly parallel lines along a continuation of the trough-like valley through Cabot Strait, over this submarine-rift valley the ocean is hundreds of fathoms deeper than on either side, reaching 285 fathoms in places; and the quake was probably due to a fresh subsidence of the bottom of the rift. See PHYSICS.

EAST AFRICA PROTECTORATE. See KENYA COLONY.

EBERLE, REAR ADMIRAL EDWARD WALTER, U S N, RPT American naval officer, died July 6, 1929, in Washington, D C. He was born in Denton, Tex., Aug. 17, 1864, and in 1885 was graduated from the United States Naval Academy. He rose to the rank of rear admiral in 1929. During the Spanish-American War, he served on the *Oregon*, and also in the Philippine insurrection of 1899. Later in that year, he became an aide to the superintendent of the Naval Academy. In 1913-14 he was at the Naval War College, where he prepared mine-laying and mine-sweeping tactics of the United States Navy. He was in command of the Navy Yard and the naval gun factory at Washington in 1914-15, and from 1915 to 1919, was superintendent of the United States Naval Academy. He was in command of the Pacific Fleet in 1922-23 and of the Battle Fleet in 1922-23. After 1923 until 1928, the year of his retirement, he was chief of naval operations. As early as 1913, he proposed using airplanes to study the depth at which submerged submarines might be seen from the air, and he was among the first officers to suggest the use of the smoke screen in naval warfare.

ECLIPSE OBSERVATION. See ASTRONOMY, PHYSICS.

ECLIPSES. See ASTRONOMY.

ECOLOGY. See ZOOLOGY.

ECONOMIC ASSOCIATION, AMERICAN. An organization founded in 1885 in Saratoga, N. Y., to encourage economic research, especially the historical and statistical study of the actual conditions of industrial life, to issue publications on economic subjects, and to encourage perfect freedom of thought and discussion upon current problems from an economic point of view. The membership, which in 1929 totaled approximately 3500, comprises persons interested in the study of political economy or the economic phases of political and social questions. During the first 25 years of its existence the association published mainly monographs on special economic topics, dealing largely with current problems, which make up 28 volumes and furnish the best existing guide to the progress of economic thought in the United States. The official periodical is the

American Economic Review, a quarterly founded in 1911, which aims to supply material showing the progress of economic thought. Papers read at meetings are published in the *Proceedings of the association* and furnished free to members.

The association, which holds one meeting annually, met in Washington on Dec. 27-30, 1929. Among the topics discussed at this meeting were: "The Corporation, the Investor, and the State"; "Marketing—Modern Tendencies in Food Distribution"; "The Public Works Plan and Unemployment"; "The Theory of Economic Dynamics as Related to Industrial Instability"; "The Chief Economic Problems of Mexico"; "The Reparations Settlement and the International Flow of Capital"; and "The Federal Reserve Board—Its Problems and Policy." The officers of the association for 1929 were: President, Edwin F. Gay, Harvard University, vice presidents, Winthrop M. Daniels, Yale University, and Waddill Catchings, New York City, counsel, John E. Walker, Washington; and secretary and treasurer, Frederick S. Deibler, Northwestern University. The elected members of the executive committee were: Fred R. Fairchild, Yale University, George W. Dowrie, Stanford University, William H. Kiekhofer, University of Wisconsin; Edmund E. Day, New York City, Ernest L. Bogart, University of Illinois, and Richard T. Kly, Northwestern University.

ECONOMIC ENTOMOLOGY. See ENTOMOLOGY, ECONOMIC.

ECONOMIC GEOLOGY. See GEOLOGY.

ECONOMICS. See BANKS AND BANKING, BUSINESS REVIEW, FINANCIAL REVIEW, LITERATURE, ENGLISH AND AMERICAN, PUBLIC FINANCE, STATISTICS, ETC.

ECONOMIZERS. See BOILERS, STEAM.

ECUADOR, ek'wa-dōr. A South American republic on the northwest coast of the continent between Colombia on the north and Peru on the south. Capital, Quito.

AREA AND POPULATION. The area in 1929, still undetermined because of the boundary dispute with Peru, was variously estimated at from 116,000 to 276,000 square miles. The population is estimated at from 1,500,000 to 2,000,000 and includes about 601,219 inhabitants of pure European blood, 291,000 of mixed blood, and 600,000 Indians, of whom 200,000 are savages virtually untouched by civilization. In 1927 there were 89,423 births, 47,065 deaths, and 12,935 marriages. The last official census in 1903 placed the population at 1,328,821. The chief towns with their populations are Quito, 80,702, Guayaquil, 100,000, Cuenca, 30,000, Riobamba, 12,000, and Ambato, Loja, and Latacunga, each with about 10,000 inhabitants.

EDUCATION. Elementary instruction is free and compulsory. Institutions of higher learning include the Central University at Quito, the Guayas University in Guayaquil, and the Azuay University in Cuenca. There is also a law college at Loja. In 1928 there were 1771 government, municipal, and primary schools, with 2399 teachers and 128,746 enrolled pupils.

PRODUCTION. Primarily an agricultural country, the bulk of Ecuador's income is derived from the cultivation of cacao, sugar, coffee, cotton, ivory nuts, corn, rice, fruits, and similar products. Rubber, cinchona bark, kapok, and bloom, macora, and toquilla straw are other important vegetable products. Cacao is the most important crop both in Ecuadorian export trade and in its

effect on general economic conditions. The plantations have suffered greatly, however, from inroads of the witchbroom and Monilia diseases and production decreased by 50 per cent between 1913 and 1928. Receipts of cacao at Guayaquil for export, which represent from 85 to 90 per cent of the total crop, decreased from 87,111,000 pounds in 1913 to 43,518,000 pounds in 1927 and 42,537,000 pounds in 1928. Observers report that production of cacao is likely to remain permanently at a low level. The 1929 production, however, was estimated at 48,000,000 pounds, slightly above that of the preceding year. Ecuador, which was the foremost producer of cacao in 1905, dropped to fifth place in 1927. To this decline is attributed a business depression which has continued for the past few years and became even more pronounced in 1928 and 1929, when the world prices for cacao dropped.

The coffee crop, which goes mainly to European nations, was estimated at between 22,000,000 and 25,000,000 pounds in 1928. The 1929 production showed a decrease of about 20 per cent. Rubber and tagua (ivory nut) production declined during 1928, exports of rubber to the United States from Guayaquil dropping from \$158,699 in 1927 to \$88,000. Sugar production approximated 20,091 long tons for the 1927-28 season and 22,400 long tons, for 1928-29. The tobacco industry, which has been encouraged by the Government, is showing considerable expansion, the output being 220,460 pounds in 1927, 544,711 in 1928, and 660,000 (estimated) in 1929. The cotton crop was about 2,436,520 pounds in 1927-28.

Gold, silver, petroleum, copper, iron, coal, and sulphur exist in commercial quantities. Gold is the chief mineral mined, the exports in 1927 amounting to 4,766,128 sueres (one suere equals \$0.20). Petroleum production increased from 5,866,202 gallons in 1925 to 17,101,466 in 1927. The Panama-hat industry was dull in 1928, exports of the United States 998, as compared with \$720,490 in 1927. The textile industry, which is the chief manufacturing enterprise of the country, showed some improvement.

COMMERCE. According to preliminary figures, imports in 1928 were valued at \$15,779,000, an increase of 46 per cent over the previous year, and exports at \$19,571,000, an increase of 7 per cent. Smaller exports of gold bullion accounted for about half the decline which occurred in the export surplus.

Exports of the principal commodities in 1928 (with 1927 figures in parentheses) were as follows: Cacao, \$5,904,000 (\$7,001,000), coffee, \$3,439,000 (\$1,817,000); crude petroleum, \$2,316,000 (\$997,000); tagua nuts, \$1,250,000 (\$1,094,000); rice, \$560,000 (\$207,000); fruits, \$330,000 (\$278,000); hides, 395,000 (\$221,000); gold bullion, \$972,000 (\$2,744,000). The chief imports are foodstuffs, textiles, machinery, hardware, minerals, drugs, and vehicles. Trade between Ecuador and the United States increased in 1928, the exports to the United States rising in value from \$5,193,000 in 1927 to \$5,346,000 and imports from the United States increasing from \$5,531,000 in 1927 to \$8,595,000.

FINANCE. The extended business depression has been reflected in the increasing difficulty which the Government has experienced in balancing the budget. In 1927, the latest year for which figures are available, actual ordinary receipts amounted

to 65,150,000 sueres and ordinary expenditures to 71,646,000 sueres. In the original budget estimates for 1928 and 1929, ordinary receipts and expenditures balanced at 51,588,000 sueres and 59,900,000 sueres, respectively. The 1929 estimates were modified by decree of the Council of State on Sept. 4, 1929, to balance at 63,324,575 sueres. Customs collections and port dues, the most important source of governmental income, amounted to 26,728,000 sueres in 1928, an increase from similar receipts of 22,672,000 sueres in 1927. Actual ordinary expenditures in 1927 were distributed (in sueres) as follows: debt service, 25,446,000; national defense, 9,051,000; public instruction, 5,515,000; social welfare, 1,585,000; public works, 9,323,000; all others, 20,726,000.

The preliminary budget for 1930 calculated revenues at 60,150,000 sueres, or 3,174,576 sueres less than in the budget for 1929. Export duties were estimated to yield 4,500,000 sueres in 1930, as compared with 6,170,000 in 1929. The expected reduction in revenue was attributed by President Ayora to "the difficult economic situation faced by the country as a result, largely, of the cacao pest and the 1929 floods." To avoid a threatened deficit, the salaries of the President and cabinet officials were reduced by 25 per cent and those of subordinate public officials in proportion. On the other hand, salaries of teachers, postal employees, and army officers were raised. Appropriations for all departments except those of public instruction, agricultural development, and the interior were cut down.

A distinctly noticeable improvement in the service of the external debt occurred in 1928. The external debt on Jan. 3, 1929, was \$19,645,000 and the internal debt on Oct. 9, 1928, totaled \$3,725,000. The Central Bank of Ecuador received new-type coins to the value of 1,420,160 sueres from the United States Philadelphia Mint in 1929 which were used to replace old copper and nickel coins.

COMMUNICATIONS. In 1929 there were nine railway lines in Ecuador with a total length of 698 miles. The office of Public Works calculated the value of the nine lines at 10,150,925 sueres, the average annual appropriation in the budget for the payment of employees and the acquisition of materials at 6,482,400 sueres, and the prospective earnings for 1930 at 8,700,000 sueres. Most of the highways are little better than bridle paths, many being closed for half of the year. The budget for 1929 contained \$420,000 for highway construction. An air passenger and mail service between Quito and Guayaquil was opened in August, 1929. Other air routes connect Ecuador with cities in Panama and Colombia. Guayaquil is a port of call for steamships of nine European lines. During 1927, 424 steam vessels of 1,029,095 net tonnage entered, and 417 vessels of 998,120 net tonnage cleared, the port.

GOVERNMENT. Under the constitution, executive power is vested in the President elected for five years, who acts through a cabinet of six ministers; and legislative power in the Congress of two Houses, the Senate of 32 members and the Chamber of Deputies of 48 members. A new constitution, adopted by the Constitutional Assembly in October, 1928, was proclaimed Mar. 25, 1929, by President Ayora, and a new cabinet was appointed May 7, 1929, by the President. The members were Dr. Teofilo Fuentes Robles, Minister of Government and Social Welfare, Gonzalo

Zaldumbide, Foreign Relations, Dr Manuel Maria Sanchez, Public Education; Julio E. Moreno, Public Works, Agriculture, and Promotion, Juan de D. Martinez, Treasury and Public Credit, Colonel Carlos A. Guerrero, War, Navy, and Aviation.

HISTORY The military dictatorship under which Dr. Isidro Ayora had ruled the country as Provisional President from 1920 on, was ostensibly ended in 1929 with the proclamation of the new constitution adopted in 1928 (see above, under *Government*). The Constitutional Assembly elected Dr. Ayora the constitutional President for a term of five years on Mar. 27, 1929, after revising the constitution so as to legalize the election. His inauguration took place April 12. Under the constitution, the President is not eligible for reelection in 1934. Dr. Ayora polled 42 of the 50 votes cast, there being two other candidates. Under his leadership, it was expected that the recommendations of the Kemmerer Commission, most of which have been adopted, would be carried to fruition. His régime has been marked by the creation of a central bank, an agricultural credit bank, the stabilization of the currency, the balancing of the budget, the adoption of a general banking law, the prosecution of an extensive public-works programme and advanced labor legislation. His Liberal supporters wrote into the new constitution provisions safeguarding Ecuador's control of her natural resources, and taking the control of elementary and secondary education out of the hands of the Roman Catholic Church. The latter measure provoked demonstrations in the capital.

In elections held at the close of October, the Liberals won a complete victory over their Conservative opponents. President Ayora adopted a policy of drastic economy during the year in the face of falling revenues. The ministers of Finance and of Public Welfare resigned toward the end of the year and the President experienced difficulty in filling the vacancies. The latter post was finally accepted by Francisco Bolona, a member of the cabinet during the military dictatorship of 1925 and the former by Sixto Duran, former collector of customs at Guayaquil. A dispute between Harry Tompkins, American Superintendent of Banks in Ecuador, and Saens de Tejada, then Minister of Finance, engaged the attention of the country early in the year. The Minister imposed a heavy fine on Mr. Tompkins for alleged invasion of his powers, but the latter, who had full control of all national funds, refused to approve the fine. Dr. Homero Viteri Lafonté, formerly Foreign Minister of Ecuador, assumed the post of Minister to Washington in October, 1929, succeeding Gonzalo Zaldumbide.

EDUCATIONAL PSYCHOLOGY. See PSYCHOLOGY.

EDUCATION ASSOCIATION, NATIONAL. See NATIONAL EDUCATION ASSOCIATION OF THE UNITED STATES.

EDUCATION IN THE UNITED STATES. PROPOSED FEDERAL DEPARTMENT OF PUBLIC EDUCATION. The agitation for a Federal department of public education continued throughout the year. Representative Robinson of Kentucky introduced a bill in the House of Representatives which provided for the creation of

race, creed, or color, shall have larger educational opportunities and thereby abolish illiteracy, make more general the diffusion of knowledge, and provide for the general welfare, but without impairment of or the infringement upon the laws, the rights, duties, authority, or responsibilities of the several States, Territories, and the Citizens thereof, with respect not only to the public educational agencies and institutions but likewise as to the private educational institutions and agencies in the several States and Territories.

The bill provided for a Secretary of Education to be appointed by the President by and with the advice of the Senate. The Secretary of Education would have a place in the President's cabinet. The salary attached to the position was to be \$15,000.

The bill provided for the transfer of the Bureau of Education to the new department. The office of Commissioner of Education was to be abolished and all of his duties were to be exercised by the Secretary of Education. Section 7 of the Bill defined the scope of the secretary's responsibilities in regard to the collection of statistics and facts as follows:

The Department of Education shall collect such statistics and facts as shall show the condition and progress of education in the several States and Territories in order to aid the people of the several States and Territories to establish more efficient schools and school systems, to devise better methods of organization, administration, and financing of education, to develop better types of school buildings and provide for their use, to improve methods of teaching and develop more adequate curricula and courses of study, investigations and studies shall be undertaken in (1) rural education, (2) elementary education, (3) secondary education, (4) higher education, (5) professional education, (6) physical education, including health education and recreation, (7) special education for the mentally and physically handicapped, (8) the training of teachers, (9) immigrant education, (10) adult education, and (11) such other fields as in the judgment of the Secretary of Education may require investigation and study to promote generally the welfare of education throughout the United States and its possessions.

The sum of \$1,500,000 was authorized to be appropriated for the purpose of the payment of salaries and the conduct of studies and investigations, the payment of incidental and traveling expenses incurred in connection with the investigations and inquiries undertaken by the department, and for law books, books of reference, and periodicals, and for the payment of rents whenever necessary, and for such other purposes as may be necessary to enable the Department of Education to carry out the provisions of the act.

One of the most interesting sections of the Bill was that relating to a National Council of Education. The following is the wording of Section 10:

There is hereby created a National Council on Education to consult and advise with the Secretary of Education on subjects relating to the promotion and development of education in the United States and in its possessions, which national council shall consist of the several State superintendents of education or other State chief educational authorities by whatever title known, and one member from each of the United States possessions, namely, Alaska, Hawaiian Islands, Philippine Islands, Porto Rico, and Isthmus of Panama. The Secretary of Education shall be chairman of said council. The members of said council shall meet for conference once each year at the call of the Secretary of Education, they shall serve without pay, but their actual expenses incurred in attending the conferences called by the Secretary shall be paid by the Department of Public Education.

It was difficult to form any accurate judgment regarding the possibility of such a department being formed. Educational journals gave a very pronounced expression to the desires for such a department. Some important civic organizations advocated its establishment. On the other side, there were some influential bodies that opposed

A Department of Public Education, to aid and encourage the public schools and promote the public educational facilities of the Nation, so that all the people of the several States and Territories, without regard to

any attempt on the part of the Government to deal with education. The claim was made that the States should have full authority to deal with public education within their borders and that this would become impossible if the Government exercised even such limited authority as the bill provided.

MOTION PICTURES IN SCHOOL For several years, a group of experts had been investigating the influence of motion pictures in classroom instruction. For this purpose, various topics were developed and various methods of treatment were employed. Twelve cities cooperated in the experiment. In all, nearly 200 teachers and 10,000 children took part. The results showed that those who made use of the motion pictures were better able to deal with the examinations that were set than were the other classes. In some cases the difference was very marked.

Coincident with this investigation, there were a variety of efforts to develop more practical apparatus for the use of the schools. It had become possible for the teacher to operate the machine herself while she was in her class room among the boys and girls. Many schools were equipped with motion-picture apparatus, and there was an increasing supply of suitable films. During the year, the American Museum of Natural History made it possible for schools outside of New York City to use the science films that had proved very helpful to the schools within the city.

EDUCATION BY RADIO During the year, there was a pronounced increase in the use of radio as an educational means. Dr. Walter Damosch conducted his second season of radio concerts for schools and colleges. The concerts which occurred each Friday from eleven to twelve were known as the N. B. C. Music Appreciation Hour. The National Broadcasting Company made use of its entire two networks covering some sixty stations. There were four series of concerts graded from the third grade through high school and college. Each series included twelve programmes. There was prepared a teacher's manual that might be used with these programmes. There were evidences that these concerts were received in large numbers of schools over the entire United States. In many cities, the entire school system was equipped with radio at public expense, in others, public spirited citizens provided funds with which to install radios.

The use of the radio was considered so important that Secretary of the Interior Ray Lyman Wilbur formed an advisory committee on education by radio. The committee was composed of representatives of various interests including several radio broadcasting companies. At a conference held in May at the office of the Secretary of the Interior, it was suggested that the four phases of radio that needed immediate close study were engineering techniques, organization and control, finance, and educational material for programmes. The radio companies indicated great interest.

They had on a number of occasions put their entire facilities at the disposal of those who were conducting educational campaigns.

The University of Southern California established a radio-correspondence educational division known as the Trojan Air College. The programmes, which were broadcasted, supplement the correspondence courses for which the University gives college credit. Those who were desir-

ous of credit could obtain mimeographed outlines to which the lecturers make references in their broadcasting.

THE PAYNE FUND The Payne Fund was organized in 1927 and was incorporated in 1929 under the laws of the State of New York. Its purposes are "to initiate, assist, or conduct researches, surveys, experiments, and other projects from which may be developed increased understanding of youth and its needs and capacities for constructive participation in society." The fund provided for the National Committee for the Study of Juvenile Reading, it assisted the National Committee for the Study of Social Values in Motion Pictures, it also established the Payne Fund Committee on Educational Research (in Motion Pictures), it financed the preliminary Committee on Educational Broadcasting and cooperated with the Ohio State Department of Education in organizing and maintaining the Ohio School of the Air. It financed a study of the biblio-psychology methods of Dr. Nicholas Roubakine, and assisted and cooperated in a number of other social enterprises. The endowment of the Payne Fund was approximately \$2,000,000.

THE FIELDS-STOKES FUND This fund was incorporated in 1911. The act of incorporation directs the trustees to use the income for "the erection or improvement of tenement-house dwellings in New York City and for educational purposes for the education of Negroes both in Africa and the United States, North American Indians, and needy and deserving white students." The capital of the fund was approximately \$1,200,000.

THE VISITING TEACHER There were 230 visiting teachers in the city school systems of the United States. They were in 70 different cities scattered throughout 36 States. The function of the visiting teacher was set forth in a report of the director of visiting teachers of Dayton, Ohio, as follows:

To discover the cause of the child's failure to grasp the opportunity that benevolent school boards have planned.

To confer with the parents, enlisting their cooperation when the child shows signs of falling below the school's standards of scholarship or conduct.

To try to adjust many home conditions whereby more favorable conditions will be attained in regard to school work, conduct, attendance, and interest.

To interpret the school purposes and ideals to parents, thus securing a greater amount of much desired cooperation on the part of each toward the other.

To secure and record family history, personal history, and past and present performances of all children coming to her attention.

To aid in securing better school adjustment for all misfits in the broad interpretation of the word.

To secure personal and social information in regard to the child and bring it to the teacher and principal, so that it will make for better understanding of the child.

To try to find causes of unusual misconduct and endeavor to remedy the condition, either by influence with the child or the parents or both.

To cooperate with every outside agency to the highest degree, that all possible forces may be assembled toward individual and social betterment.

To analyze the child's social environment, home, and neighborhood.

ADVISORY COMMITTEE ON EDUCATION Secretary of the Interior Ray Lyman Wilbur with the approval of President Hoover formed an advisory committee on education for the purpose of making a study of the present relations of the National Government to education and to make recommendations as to what should be the future programme of the Government in that field. This marked the first comprehensive attempt that had been made to define the policy that should exist

between the Federal Government and education. The committee consisted of fifty-one members, the Chairman is Dr. C. R. Mann, Director of the American Council of Education.

The committee was formed early in the year, but lack of funds prevented their undertaking the work. In November, the Julius Rosenwald Fund provided a donation of \$100,000 for the use of the committee. Dr. Henry Suzzalo was employed to direct the educational survey.

Three subcommittees were organized to consider the following problems: (1) Educational activities of the U. S. Government and present administration, what should be the future organization; (2) The subsidies of the Federal Government to colleges, their administration, results obtained, future policies; (3) Subsidies granted for education of less than college grade, how administered, results obtained, suggestions for future policy.

ILLITERACY. In anticipation of the 1930 Census, there was a determined effort to reduce the amount of illiteracy in the United States. Secretary of the Interior Ray Lyman Wilbur with the approval of President Hoover announced the appointment of an advisory committee on national illiteracy. In announcing the formation of the committee and its aims, Secretary Wilbur said:

This matter of illiteracy is not very well understood. It is known vaguely that there are certain individuals here and there who do not know how to read and write. When young men drafted for service in the World War were examined, it was found that an unexpectedly large number of them were illiterate.

This was the first sweeping measure of illiteracy that had been applied. It indicated that illiteracy was, to a considerable extent, geographic. There were more illiterates in certain sections than in others. Isolation had a good deal to do with it. Certain individuals are beyond the reach of schools.

It will be important to determine how much illiteracy is due to a lack of opportunity. In many cases, also, illiteracy is due to personal causes. Certain physical or mental handicaps or poverty may prevent individuals from getting educations.

The facts, aside from certain estimated numbers, however, have never been adequately gathered. The first purpose of the present study is to assemble those facts. When they were ascertained, the members of the committee will recommend those remedies and methods which seem most likely under existing conditions to reduce illiteracy to the minimum.

It is apparent that new agencies are becoming available that may be used in campaigns against illiteracy, but the methods and possibilities of their use are not understood.

Radio, for example, may reach isolated individuals and communities that are without schools. Another committee is studying the possibilities that lie in the use of radio for educational purposes.

The office of education has already arranged for certain educational courses by correspondence that will go to such isolated families as those of forest rangers or highhouse keepers. There will also be made available to any isolated family. Talking motion pictures have possibilities. The study will include all available means of reaching those who are missing educational opportunities.

ADULT EDUCATION. The movement toward adult education continued with increasing force. The U. S. Bureau of Education conducted a survey of the work undertaken in the different States. The results showed that there was legislation providing for the education of adult native illiterates in 25 States, while in addition 26 States had legislation pertaining to the education of foreign-born adults. The States reporting gave 2439 communities as holding classes for adults. The enrollment for the year ending June 30, 1928, was 262,308. This was an increase of approximately 58,000 over the preceding year. Some 34 institutions of higher learning reported that they were offering training for teachers of adults and six

States report that they have illiteracy commissions.

Entirely apart from the attempt to decrease illiteracy, there was great popular interest in the type of adult education that had for its purpose the further education of those who had entered upon their life work. There was marked progress in parent education. In many States provision was made for the instruction of parents in various phases of child study. It was reported that 47 colleges and universities offered such instruction in connection with their summer sessions. There are various extension divisions which offer courses for parents or subjects related to child welfare.

Programs related to parent problems and child training have been broadcasted. The Carnegie Corporation of New York has supplied the funds with which the American Association for Adult Education has made a six months' survey to determine the possibilities of radio broadcasting as a mechanism in adult education. See ADULT EDUCATION, AMERICAN ASSOCIATION FOR.

NURSERY SCHOOLS. During recent years, much attention has been given to the care and education of children of pre-school age. For the year 1927-28, the U. S. Bureau of Education reported 121 nursery schools located in 70 cities. The total enrollment in 107 of the nursery schools was 2573 children. There was an average of nine children per teacher. The length of the school day was between six and eight hours and nearly all the schools operated for five days each week. The main service of the nursery school is the education of young children and their parents. The education of the parents is cared for in various ways. These include daily conferences with teachers, discussion and study groups, home visits by the school staff, and observation of and participation in the actual work of the children. In a few schools, the mothers and sometimes the fathers are required to give stated time to participation in the nursery-school programme. The nursery school has not been made a part of public-school education. There were a few demonstration schools in some of the larger public-school systems and teacher-training institutions.

Several of the larger universities, including the University of California, University of Iowa, Yale University, and Columbia University, had established and equipped nursery schools in which very careful experiments and investigations were under way.

SURVEY OF SECONDARY EDUCATION. Congress authorized the U. S. Bureau of Education to make a study of the organization, administration, financing, and work of secondary schools and their articulation with elementary and higher education. There was an appropriation of \$225,000 of which \$50,000 is available for 1930. The Secretary of the Interior formed an advisory committee of 30 educators who were to aid in the nation-wide survey. He proposed to form a second committee consisting entirely of laymen. These two committees, one of trained educators and the other of laymen, were to pass upon the work of the commission viewing it both as educators and as average citizens.

TEACHER TRAINING. The most important aspect of teacher training was to be found in the remarkable growth in the number of teachers' colleges. In 1920 there were but 46 teachers' colleges in the United States. By 1928 this number had increased to 137. Coincident with this in-

crease in the number of teachers' colleges, there was a decided decrease in the number of State, private, city, and county normal schools. It was estimated that approximately 975 colleges, junior colleges, and universities contributed to the training of teachers, supervisors, and administrators. There were also no less than 3000 high schools in which courses in education were offered.

The increase in the number of students who are prepared to teach also brings with it a serious problem in educational affairs. In 1920 the enrollment in teacher-training institution was 194,534. In 1928 this had increased to 274,348. If the number of students registered in all teacher-training courses were included, the total for 1928 would be 512,247. It was estimated that there were approximately 900,000 teaching positions in the United States. It appears therefore that there were more than half enough students in training to fill all teaching positions.

In 1928 the teachers' colleges and normal schools certified or graduated 57,075 students having from one to four years of training. This does not represent a large percentage of the total teaching positions, but in various sections a serious over supply of teachers was reported. This difficulty was caused by the continued employment of those who had had no professional training but who had had experience in the schools. Were the positions occupied by those untrained teachers made vacant, there would be a serious lack of trained persons with which to fill them.

Many teacher-training institutions were limiting their enrollments, and some city institutions had been closed. Many States were making an effort to select their teachers from among the more capable applicants for entrance to teacher-training institutions. For the purpose of making such selections, fully one-third of the teachers' colleges and normal schools were making use of intelligence tests and refused admission to those who stood low. About half of the institutions required certificates of health and a few require superior scholarship records in high school.

The expenditures for teacher training in 1928 amounted to \$64,349,498. The per-capita cost varied somewhat with the size of the institution. It was reported as \$205.47 in certain State normal schools having between 800 and 1000 students, while 16 teachers' colleges having an enrollment of fewer than 400 students had an average per-capita cost of \$439.67 for current expenses.

STATISTICS. No comprehensive statistics on enrollment in elementary schools of the United States have been issued by the U. S. Bureau of Education later than those in the 1928 YEAR BOOK.

See **UNIVERSITIES AND COLLEGES**, also paragraphs on *Education* in articles on various States and countries.

EDWARDS, ALBERT. See **BULLARD, ARTHUR EGGS.** See **LIVESTOCK.**

EGYPT. A kingdom in northeastern Africa, governed by the King since Mar. 15, 1922, after the termination of the British protectorate declared Dec. 18, 1914, occupying the Valley of the Nile, the Libyan Desert, the region between the Nile and the Red Sea, and the Sinai Peninsula, claiming jurisdiction also over the Sudan, which claim, however, is denied by the British. Capital, Cairo. Ruler in 1929, Fuad I.

AREA AND POPULATION. The total area of Egypt proper which is described above is about 383,-

000 square miles. This figure does not include the Sudan. The cultivated and settled area, comprising the Nile Valley and Delta and the oases is only 13,000 square miles. The last census of the settled area, taken on Feb. 18-19, 1927, gave the total population at 14,186,898, including 34,402 nomads, as compared with 12,760,918 at the census of March, 1917. It was estimated in 1929 that the cultivated area of Egypt is the most densely populated in the world, containing an average of three persons to an acre. Most of the inhabitants live at an expense of less than 10 cents each per day. The chief cities with their populations at the census of 1927 were: Cairo, 1,064,667; Alexandria, 573,063; Port Said (including Ismailia), 104,003; Suez, 35,547; Tanta, 90,014; Mansura, 63,676; Asyut, 57,131; Dammanhur, 61,720; Faiyum, 52,372. In 1917 the population was distributed among the various religions as follows: Mohammedans, 11,658,148; Greek Orthodox, 854,778; Roman Catholic, 107,687; Jews, 59,581; Protestants, 47,481. The movement of population in 1927 was: Births registered, 627,583; deaths, 359,455.

EDUCATION. Primary instruction is supplied by native schools called *maktabs*. In the school year 1927-28 the number of these receiving grants-in-aid and under government inspection was 2,361, with 205,900 pupils and 5049 teachers, while those under the immediate direction of the government was 380, with a total attendance of 62,423. In addition, there are higher elementary and higher primary schools, a few schools for special and technical training, and higher colleges of law, engineering, military science, veterinary science, agriculture, pedagogy, commerce and accounting, and medicine. The total population of school age, 5 to 19 years, in 1927 was 4,734,071 and the number attending school during 1927-28 was 841,711. About 88 per cent of the population is illiterate. The centre of Moslem culture is the mosque and university of El-Azhar at Cairo, founded in 972. In 1929 the university was reorganized and a modern curriculum established.

PRODUCTION. Cotton prices continued to improve during 1928 and the agricultural and economic condition of the country showed further recovery from the depression of 1926. The cotton crop for the year was estimated at 1,491,000 bales (averaging 478 pounds net), an increase of about 19 per cent over the previous year. The higher price was reflected in a large increase in cotton export values. The onion crop was good, the grain crops smaller, and sugar output about the same as in the previous year. The acreage and production of the principal crops in 1928 was as follows: Wheat, 1,590,000 acres, 37,296,000 bushels; barley, 366,000 and 10,799,000; rice, 215,000 (other figure not available); beans, 531,000 and 10,922,000; onions, 54,000 acres, 756,320,000 pounds; sugar cane, 59,000 acres, 1,544,000 metric tons (reduced to 90,000 metric tons of raw sugar); cotton, 1,805,000 acres, 712,698,000 pounds.

Crop diversification has been stimulated by the restriction of the area sown to cotton to one-third the original acreage. The extension of irrigation projects upon which Egypt is so dependent proceeded rapidly in 1929. A barrage at Nag Hammadi, which will provide perennial irrigation for 500,000 acres along the Nile, will be completed in 1930. Other plans call for the heightening of the Assuan Dam and the reclamation of about

1,500,000 acres of salt-laden coastal waste land along the Nile delta. In 1928 there were in Egypt 792,000 cattle, 788,000 buffaloes, 1,200,000 sheep, 15,000 swine, 648,000 goats, 180,000 camels, and 782,000 asses. Chief mineral products were petroleum, 1,972,000 barrels, manganese ore, 200,563 metric tons, phosphate rock, 137,502 metric tons.

COMMERCE Egypt had a favorable balance of trade in 1928 for the first time in three years, the surplus of exports over imports amounting to £E4,121,000 (\$20,571,000), as compared with an adverse balance of £E345,000 (\$1,720,000) in 1927. The improvement was chiefly due to an increase of 16 per cent in the value of cotton exports. Total exports were £E280,338,000, as compared with £E241,011,000 in 1927, and total imports, £E269,767,000, as compared with £E242,733,000 in 1927. Besides cotton, the other principal exports were onions, cottonseed cake, cottonseed, gold bullion, and silver bullion. The chief imports were fertilizers, tea, wool textiles, sugar, tobacco leaf, engines, and kerosene, for all of which larger quantities were required than in the previous year, and also cotton piece goods, coal, soap, and railway trucks, the demand for which declined in 1928. The United Kingdom took 38 per cent of the total exports and supplied about 22 per cent of the imports in 1928. Exports to the United States amounted to \$30,541,000, a decrease of 10 per cent, while imports from that country were valued at \$13,416,000, an increase of about 18 per cent. France, Italy, and Germany were other leading countries in Egyptian trade.

According to preliminary figures, Egyptian foreign trade in 1929 resulted in an adverse balance of £E4,337,500 (about \$21,687,500). Imports totaled £E50,089,500 (\$280,447,500) and exports, £E51,762,000 (\$258,760,000).

FINANCE Government finances, which have been in a favorable condition for several years, showed further improvement in 1928. The reserve fund which had been built up largely through the failure to utilize appropriations for public works, increased from £E35,000,000, at the end of 1927, to £140,000,000, at the close of 1928. The actual receipts for the budget year ending Apr. 30, 1928, were £E38,566,805 and expenditures were £E35,389,036, leaving a surplus of £E4,263,880. The estimates for the year anticipated receipts of £E36,277,000 and expenditures of £E38,919,000. The budget for 1928-29 estimated receipts at £E37,532,000 and expenditures at £E41,532,000, while that for 1929-30 placed receipts at £E38,950,000 and expenditures at £E47,410,000, or a deficit of £E8,460,000, which is expected to be met from the reserve fund. The latter budget contains an item of £E11,000,000 for new public works, chiefly irrigation. In April, 1928, the total public debt was £100,740,610. The service on the debt was estimated at £E4,786,789 in the budget for 1928-29. Early in 1929 a financial agreement between Great Britain and Egypt was ratified, providing for the settlement of outstanding financial questions and in particular determining Egypt's liability for the Ottoman Guaranteed Loan of 1855. The Egyptian government agreed to pay the arrears of the Egyptian contribution to the service of the loan which had been withheld since 1924.

COMMUNICATIONS In 1927 there were 2272 miles of railway owned by Egypt and 854 miles by private enterprise. Operating expenses of the state railways in 1927-28 were £E4,672,138, or 66 per cent of the gross receipts of £E7,118,272.

The length of telegraph and telephone lines in 1928 was 169,204 miles. The telephone system is government owned. Air lines connect Cairo with Mesopotamia and Palestine. During 1928, 2173 steamships of 4,965,800 registered tons entered Alexandria, as compared with 2132 vessels of 4,880,700 tons in 1927. Vessels passing through the Suez Canal in 1928 numbered 5977 of 31,615,800 registered tons, in 1927, 5422 vessels of 28,525,500 tons.

GOVERNMENT According to the constitution promulgated Apr. 19, 1923, Egypt was proclaimed a sovereign state under a hereditary monarch, with representative government. Equal rights, irrespective of race, language, or religion, were guaranteed, as was the liberty of the individual and religious belief. Executive power is vested in the King, who also exercises legislative power in concurrence with the Legislature. The latter consists of the Senate and Chamber of Deputies, the Senate to be composed of three-fifths elected by universal suffrage and two-fifths (including the President) appointed by the King (the term of office is 10 years, one-half is renewed every five years), and the Chamber of Deputies consists of members elected by universal suffrage for a period of five years. The King can dissolve the Chamber of Deputies to which the cabinet is individually and collectively responsible. Mohammedanism is the state religion and Arabic the official language. King in 1929, Fuad I, who acceded to the throne Mar. 15, 1922.

HISTORY. The deadlock between the British Conservative government and the Egyptian Nationalists which followed the rejection of Foreign Secretary Austen Chamberlain's proposed treaty of 1927 (see 1928 NEW INTERNATIONAL YEAR BOOK) was broken during 1929 by the advent of the Labor government in Great Britain. The Labor Foreign Secretary, Arthur Henderson, made new proposals for a settlement of outstanding difficulties which were approved by Mohammed Mahmud Pasha, the Egyptian Premier, during the latter's visit to England in the summer, and made public in the form of a draft treaty on August 6. The treaty, if ratified, will terminate the British military occupation effective since 1922, establish a close military alliance between the two nations, and place in the hands of the Egyptian government responsibility for the lives and property of foreigners in Egypt. It authorizes Great Britain to maintain troops on Egyptian territory bordering the Suez Canal for the protection of that vital artery of Empire trade, pledges British support in behalf of the abolition of the capitulatory régime in Egypt, and defines the status of the Anglo-Egyptian Sudan as that established by the Convention of 1899.

A promise to consider the proposal for the return to the Egyptian army of a battalion is made by the British on condition other provisions of the treaty are observed in Egypt in the same friendly spirit in which the treaty was negotiated. By other terms in the proposed treaty, Great Britain undertakes to support Egypt's application for admission to the League of Nations, the two countries agree, in the event of a critical dispute with a third state, "to concert with a view to its peaceful settlement"; and each country undertakes not to violate the friendly spirit of the alliance in its dealings with other nations, nor to conclude with a third Power an agreement prejudicial to the interests of the other.

It is further provided that Egypt shall select any foreign military instructors required from among British subjects, and when engaging the services of other foreign officials "will, as a rule, engage British subjects", that Great Britain will be represented in Egypt by an Ambassador, who will have the highest diplomatic rank at the court of the King of Egypt; and, finally, that modifications of the treaty may be made by agreement between the two governments after the treaty has been in force 25 years. To become effective, it is stipulated that the treaty must be ratified by a freely elected Egyptian Parliament and by the British Parliament. In Egypt, the terms of the treaty appeared to be favorably received, but the internal political situation was such that it was impossible to predict what would happen when it came before Parliament. The Liberals, whose leader, Mohammed Mahmud Pasha, negotiated the treaty, and the Ittihad party declared unhesitatingly for its acceptance, but the powerful Wafd, or Nationalist party, which had a considerable majority when Parliament was dissolved in 1928, refused to allow the treaty to be made the issue of the Parliamentary elections and announced that it would not express an opinion upon it "except under the dome of the Chamber of Deputies."

While criticized by the Conservative press in Great Britain, Australia, and South Africa on the ground that it failed to properly safeguard British interests, the treaty appeared likely to receive the approval of the British Parliament. Lord Lloyd, who on July 24 had been forced to resign as British High Commissioner in Egypt under pressure by Foreign Minister Henderson, attacked the treaty in the House of Lords December 11. He said it committed British and other foreign interests in Egypt to an immature political system and that the proposed return of Egyptian troops to the Sudan would "undo all the magnificent work Great Britain has done in that territory." Sir Austen Chamberlain, on the other hand, indicated that he would support the treaty, which he said followed closely the terms of the treaty he negotiated with Sarwat Pasha, which was rejected by Egyptian extremists. The most important difference between the draft treaties of 1927 and 1929 is that the former did not provide for the immediate termination of military occupation but simply indicated that the location of British troops maintained in Egypt was to be decided "after a period of 10 years."

Mohammed Mahmud Pasha who had served as Prime Minister since June 25, 1928, and governed without Parliament after July 19, 1928, resigned on Oct. 2, 1929, thus paving the way for the resumption of constitutional government. Adly Pasha Yeghen was asked by King Fuad to assume the office temporarily, pending the holding of elections and on October 31 the King issued a decree restoring the constitution. The meeting of the new Parliament was set for Jan. 11, 1930. Members of Adly Pasha Yeghen's cabinet were Midhat Pasha Yeghen, Foreign Affairs, Ahmed Pasha Aly, Religious Endowments, Hussein Pasha Darwish, Justice, Abdel Rahim Pasha Sabry, Communications, Mustapha Pasha Maher, Finance, Hussein Pasha Massif, Public Works, Wassef Pasha Semeika, Agriculture, Hafez Pasha Hussein, Education, Mohammed Afiatoun Pasha, War. The election of December 21 resulted in an overwhelming victory for the Nationalist, or Wafd party, which in the new

Parliament held 206 of the 232 seats. Nineteen of the non-Wafd seats were filled by Independents allied with the Nationalists. Adly Pasha Yeghen's cabinet resigned on December 31 and King Fuad announced that he would summon Mustapha Pasha Nahas, the Nationalist leader, to form a cabinet.

Another important event connected with Mohammed Mahmud Pasha's brief dictatorship was the conclusion in 1929 of an agreement with Great Britain regarding the distribution and control of the Nile waters. The agreement was reported to make the previous consent of the Egyptian government a condition of the construction of all future irrigation works situated in the Sudan or other British Nile territories, in case such projects should impair the interests of Egypt. With this difficult problem settled, the Egyptian government prepared to proceed with the construction of the great dam at Gebel Aulia, on the White Nile, 30 miles south of Khartum. The dam will nearly double the quantity of water available for distribution from the Assuan Dam. On Nov. 12, 1929, the Egyptian government notified all countries concerned that a new customs tariff would come into force on Feb. 16, 1930. The tariff is based on the recommendations of an international commission of tariff experts, and is expected to impose higher protective duties on certain articles manufactured in Egypt. King Fuad made a tour of Germany, Czechoslovakia, Switzerland, France, and England during the summer of 1929.

EGYPTIAN ARCHAEOLOGY. See ARCHAEOLOGY

EINSTEIN THEORY. See PHYSICS
ELECTRICAL ENGINEERS, AMERICAN INSTITUTE OF. A national organization representing the electrical engineering profession, founded in 1884. The objects of the institute are the advancement of the theory and practice of electrical engineering and of the allied arts and sciences, the maintenance of a high professional standing among its members, and the development of the individual engineer. It is governed by a board of directors, elected by the membership, consisting of a president, the 2 junior past presidents, 10 vice presidents, 12 directors, and a treasurer. In 1929 there were 57 sections of the institute located in various cities throughout the United States and 104 branches in colleges giving courses in electrical engineering. Three annual conventions are held, in addition to regional, local section, and branch meetings. Much of the institute's work is accomplished through its standing and technical committees, of which there were 37 in 1929. It maintains, in cooperation with other national engineering societies, the engineering societies' library and a national employment service. There are three grades of members as follows: Associate, member, and fellow. The total membership on Oct. 1, 1929, was 18,329.

The principal publications of the institute are the monthly *Journal*, the quarterly *Transactions*, the *Standards of the A.I.E.E.*, and the *Year Book*. The officers elected for 1929-30 were: President, H. B. Smith; junior past presidents, Bancroft Gherardi and R. F. Schuchardt; vice presidents, E. B. Merriam, H. A. Kidder, W. T. Ryan, B. D. Hull, G. E. Quinan, H. S. Evans, W. S. Redman, C. E. Fleager, E. C. Stone, and C. E. Sisson; directors, I. E. Moulthrop, H. D. Don Carlos, F. J. Chesterman, F. C. Hanker, K. B. Meyer, H. P. Liversidge, J. A. Johnson, A. M. MacOut-

cheon, A. E. Bettis, W. S. Lee, J. E. Kearns, and C. E. Stephens; national treasurer, George A. Hamilton, national secretary, F. L. Hutchinson. The institute's national headquarters are in the Engineering Societies Building, 33 West 39th Street, New York City, of which it is joint owner and occupant with three other national engineering societies.

ELECTRICAL INDUSTRIES The application of electric motors to industry has been characterized by a very great increase in the quantity and the variety of methods of mechanical handling of materials in place of manual labor. Within the past year, the electric motor has, in many new installations and replacements of old, taken over the hard labor of man and relieved him of the arduous work of his hands to be free to use his head instead. The central stations of the United States gave an output of 92,737,000-000 kw-hrs in the year 1929, an increase of 12 per cent over the preceding year. The gross revenue from this was \$2,107,000,000, making an average of 2.28 cents received per kw-hr. 04 per cent of this energy was produced from fuels and 36 per cent from water power. The average coal used per kw-hr was 1.6 lbs., as compared to 1.7 the year before.

The steel mills again showed the most notable increase in the use of electric motors, over 200-000 horse power of new motors was installed in these mills in one year. In the important work of the rolling mills, 80 per cent of the motors are of the direct-current type supplied by a motor-generator set by means of Ward-Leonard control, the motor of the set being driven by alternating currents from a large supply system, either local to the plant or from a public utility. The largest direct-current motors in existence were to be found in the steel mills, an example being the installation of the Illinois Steel Company with a 7000-horse-power direct-current motor operating at from 50 to 120 revolutions per minute at 750 volts from a motor-generator set with a fly-wheel.

On the other hand, there were certain constant speed mills which are now operated by synchronous, alternating-current motors, for example, a 5000-horse-power 82-revolutions-per-minute synchronous motor of the Columbia Steel Company in California. The advantages of this type of motor are its higher efficiency, higher power factor, and lesser cost. The disadvantages are its lesser adaptability to frequent starting and impossibility of changes of speed.

The New York Central Railroad installed a car dumper which would unload one car each minute by turning it upside down, which requires an aggregate of 3000 horse power. The mining industry continued to improve its methods by the installation of electric hoists because of their high speed and labor-saving qualities. One hoist in a coal mine makes 230 trips per hour to a depth of 282 feet and involves a rope speed of 3300 feet per minute. Another hoist in a copper mine is of the two-skip balanced type, taking 12 tons each from a depth of 835 feet at a speed of 900 feet per minute, and is operated by a push button like an automatic electric elevator. The record for size of electric shovels again was broken by the construction by the General Electric Company of a shovel of 1800-tons weight taking 20 cubic feet at a stroke on a 120-foot boom. The aggregate energy of all its motors was 4000 horse power and it could dig and dump a

shovel-ful in less than one minute. It was built on caterpillar tractors and is self-propelled.

Among small motors, the increasing use of capacitor motors was noteworthy. These are alternating-current motors which will operate from single-phase mains and yet have a good starting torque and high-power factor. The best-known application is in electric refrigeration, but they are very generally applied in industry in sizes up to 5 horse power. Another improvement is a new type of induction motor which, in sizes up to 30 horse power, may be started by simply closing a switch without the use of a starting device. An interesting novelty brought out by the Westinghouse Company was "the motor that tries and tries again." It is a small motor for household uses (such as washing-machines), which has an ingenious friction clutch between the motor and the load. If the load becomes too great, the clutch slips, lets go the load, and then springs back at it again giving a jerk with momentum which tends to overcome the sticking.

Electric welding continued to claim a larger field. Naturally, it thrives best in its home, so we find that a greater percentage of electric machinery is of the welded or fabricated construction instead of castings. A pipe line 90 miles long and 66 inches in diameter was constructed by welding rolled-steel plates at a cost less than that for riveting. Sets for supplying the current for welding are now completely built on small self-propelled trucks. A number of cities revised their building codes to permit electric welding of steel structures instead of riveting. The new Ford car uses electric welding to such an extent that its design was adapted to make the most of the economies and convenience of electric welding.

There was a considerable development in electric heaters, ovens, and furnaces. The automobile industry adopted electric ovens for much of its work and also the making of malleable iron had been improved because of the ease and exactness of control of the electric heat. A new electric furnace was developed in the form of a cap or bell which contains the resistance heating units and which may be lowered on to various bases on which material to be heated has been piled. By the use of several bases for one furnace bell, the active part is working on one charge while others are being prepared or are being cooled after the operation.

Among the interesting small devices was a 10,000-volt direct-current generator for the plate current of tubes for radio transmitting and a smoke recorder which consists of a beam of light thrown across the interior of a chimney onto a photoelectric cell. As smoke passes, it obscures the beam of light and affects the current given by the photoelectric cell. The decrease in current is proportional to the opacity of the smoke column.

ELECTRICITY See PHYSICS **ELECTRIC LIGHT ANNIVERSARY. See CELEBRATIONS**

ELECTRIC LIGHTING. In 1929 there were sold 340,000,000 large-sized incandescent lamps and 292,000,000 miniature lamps, an increase of 6 and 21 per cent, respectively. Simplification and standardization of sizes has continued and the 60-watt lamp was made in the same bulb as the 50- and 40-watt sizes and the basic price reduced to the standard 20 cents. Production managers of industries are finding it safe and profitable to increase the general illumination of their factories

up to 15- to 30-foot candle intensity, with 40- to 60-foot candles in special locations. It is interesting to compare these values with the 5- to 8-foot candle intensity which was considered good illumination 10 years ago.

For health and general therapeutical purposes, there was put on the market a so-called "sun lamp" which consists of a bulb of standard size and shape inside which there is a coiled tungsten filament, and an arc between tungsten electrodes in an atmosphere of mercury vapor. This combination gives a light rich in the active rays in the blue-violet spectrum. The glass of the bulb is of special composition known as "Corex" which strains out the excess of dangerous ultra-violet rays and transmits a light which is claimed to be the same as sunlight in summer time. The complete outfit (a transformer and regulator are required) is fitted up as a household device that may be plugged into any alternating-current supply socket so that the health-giving effects of sunlight may be had in the home without the dangers involved in the use of the excessively active rays from either the mercury or the iron arc.

The fiftieth anniversary of Edison's development of the incandescent lamp was celebrated as "Light's Golden Jubilee" in 1929. There were many expositions and display effects by lighting companies, municipalities, and private individuals. The Westinghouse Company took this occasion to establish a "Lighting Institute" in the Grand Central Palace in New York City. This was intended to give the general public a chance to see examples of good illumination and the latest improvements in the art. This, like similar institutions of the General Electric Company, Harrison, N. J., and Cleveland, Ohio, is a permanent exhibit where anyone interested may see what is considered latest and best in electrical illumination.

The trend toward modernistic art in lighting fixtures continued and increased, particularly in new residences and the entrances and foyers of office buildings and hotels, while the simple and practical seems more popular in the offices themselves. Increase in quantity of light and improvement in artistic effects were the characteristics of street lighting in 1929. Woodward Ave., Detroit, is an outstanding example having ornate standards placed 100 feet apart on both sides of the street with two 2000-watt lamps on each standard. This gives 1900 lumens per linear foot of street. New devices for airports, particularly boundary lights and course beacons, were developed for aviation for the purpose of making night flying safer.

Flood-lighting has been used to make possible outdoor recreation and sports at night. Several stadiums and football fields were equipped and games were played at night with thousands of satisfied spectators and tennis courts were lighted from above with an illumination intensity of from 30- to 50-foot candles, under which condition it was found that the game could be played and seen comfortably. In the moving-picture industry, there has been a trend to the use of large-sized incandescent lamps, 1000 to 5000 watts, in place of the mercury light. This gives a better and more convenient arrangement, as the incandescent lamp is smaller and more adaptable. In making one well-known picture, 3,900,000 watts in incandescent lamps were used. In certain cases, to avoid danger of fire, these lamps are water-cooled.

Much difficulty has been experienced from the glare of automobile headlights. It was found that in most cases the objectionable glare was caused by the car owners themselves in replacing burned-out lamps, since they were not competent to place the new lamp at the exact focal point of the reflectors. With the older types of lamps, this was a matter of nice adjustment. To overcome this, the manufacturer of the headlights and of the lamps have cooperated in the production of the fixed-focus headlight, in which it is impossible to put the lamp in a wrong position.

ELECTRIC POWER TRANSMISSION

AND DISTRIBUTION. Protection from interruption by lightning continued to be the principal item of interest in long-distance transmission. New instruments for studying the effects of lightning have been devised, old ones improved, and an intensive campaign of study in the field has been carried on. The most notable improvement was the Norinder cathode-ray oscillograph in which the lightning stroke itself is utilized to set the instrument in operation to obtain a record. Formerly, it was necessary to have attendants present to start the oscillograph operating when a lightning stroke was expected, and to wait some minutes for the stroke, during which time the photographic film was being fogged by uninvited phenomena. Now the instrument may be left set and only requires the attention of replacing the exposed film by a fresh one. Surge-voltage recorders, lightning-stroke recorders, and cloud-intensity meters have been added to the equipment. Lightning generators capable of giving an impulse of 1,000,000 volts have been developed so that they can be carried around on automobile trucks, thus making it possible to produce lightning at will, where and when it is wanted.

A prize was given by the American Institute of Electrical Engineers for a paper which discussed this subject and proposed a careful rational design of the insulation of a system and so proportioning the insulation of the various parts that the least important or least vital parts have the weakest insulation and therefore be the first to give way. Such a part would be the transmission line and that part of it near the power station where repairs could be made the most readily.

It has been found that natural lightning flashes cause a rise in voltage in a transmission line to somewhere between one and two million volts in a period of time of about five-millionths of a second. A new type of lightning arrester was brought out known as the "porous disc arrester." This arrester is similar to the "autovalve arrester" but each disc is one inch thick. One disc will do for a 2300-volt line, yet it will discharge 1000 amperes when a stroke comes. This improvement will decrease the size of the lightning arrester to about one-half.

An oil-filled type of circuit breaker was developed capable of interrupting a 220,000-volt circuit with 3,000,000 kva. of power in it.

A new circuit breaker, known as the "De-ion" breaker was brought out which does not require oil to suppress the arc which always forms when any switch opens. This type operates by forcing the arc, by means of a magnetic field, into a special chamber where the arc is broken up into many short arcs in series, on the principle of the multigap lightning arrester. These small arcs die out very rapidly.

The use of underground cables for high-voltage

transmission at 44,000, 66,000, and 132,000 volts continued to grow. Improvements were made in the method of keeping the cable and joints filled with oil under pressure, as the secret of the success is to keep out all air and water. In 1929 there were in commercial operation 193 miles of 66,000-volt underground cable and 53 miles of 132,000-volt cable.

There was a distinct trend among the public utilities to go to the higher voltages for their transmission systems, thus changing from 33,000 or 44,000 to 66,000 or 132,000, but there has been no attempt to go higher than 220,000 volts in this country.

DISTRIBUTION In distribution, the three-phase, four-wire system during the year 1929 continued to displace the two-phase and the old direct-current systems. The direct-current system usually was left to supply industrial plants which find that direct-current motors are more adaptable to their kind of work, but residences, apartments, and hotels were gradually changing over to alternating-current service. This service had become as reliable and steady as the direct-current service because of the many improvements such as network protectors, tap-changing transformers, and improvements in transformers in general.

ELECTRIC RAILWAYS For a good many years, the electric railways of the United States had been having a difficult time due to the competition of jitneys, busses, and automobiles in general, but in the year 1929, these electric railways earned the largest net revenue in their history \$83,000,000. This was earned out of a gross income of \$1,130,000,000, resulting from carrying 16,000,000,000 passengers and performing 2,400,000,000 car miles. It will be noted that this is an average income of 7.1 cents per passenger or 0.47 cent per car mile.

Among the steam railway electrification projects, that of the Pennsylvania R. R. ranks first. This road had established electric suburban service from Philadelphia to Wilmington, Del. and to West Chester, Pa. and was at work on providing for through passenger and freight service from New York to Wilmington, Del. The New York Central was at work on the electrification of the West Side freight branch from Spuyten Duyvil to Canal Street in New York City. The upper part, being on private right of way, was to be equipped for operation from trolley or third rail, but from Sixtieth Street south, there would be employed locomotives equipped with a Diesel-electric prime mover, storage batteries, and the usual traction motors. The Delaware, Lackawanna & Western decided on the use of mercury arc rectifiers exclusively for the conversion of the purchased alternating-current to the 3000-volt direct-current power used by the trains.

The use of Diesel-electric locomotives was increasing. The usual type had 300 horse power in its prime mover. Some were built having two of those 300-horse power sets on one locomotive of 108 tons. More recently (for the N. Y. Central), a locomotive was developed having a 12-cylinder engine arranged as a twin six in a V-shape and giving 900 horse power.

Gasoline and the lighter distillates had been almost exclusively used on the "gas-electric cars" in the past, but these cars were being built to use heavier oils in Diesel-electric prime movers. The Canadian Pacific Railway has 14 of such cars.

In an endeavor to save the life of the electric street railways, a new type of car has been

brought out. It is a light-weight car (13 tons), constructed partly of aluminum alloys, seats 42 people, and has four 50-horse-power motors of a new type, weighing only 850 pounds each. It has the new automatic control which permits an acceleration of 5 miles per hour per second without discomfort, because the rate of change of speed is constant by automatic means. The braking is done at the same high rate by using the electric motors, automatically controlled, as generators. This value of acceleration and braking is about double that used on the New York City subway.

The steam railways of the country were gradually adopting the control of the operation of their trains by the automatic electric system in which electric circuits in the track communicate signals to the locomotive which give first a warning by light and bell, and then, if the speed is not moderated, the control will apply the brakes and stop the train. Thus even fog or carelessness will not allow the engineer to pass a danger signal. There were about 15,000 miles of track and 9000 locomotives equipped in this way and the principal lines, particularly between New York and Chicago, were using this fact as an argument to attract passenger traffic.

ELECTRIC TRANSPORTATION, MARINE In marine transportation, the addition of the new S. S. *Pennsylvania* to the New York-San Francisco service gave three large turbo-electric vessels on this route. The *Pennsylvania* was similar to the *California* and *Virginia* which had been in service a couple of years and have been described before. Five similar vessels were being built for the Grace Line, the Ward Line and the Dollar Line. A novelty in water transportation by electric motors is the caterpillar tractor tugboat for hauling barges in the shallow rivers of the Middle West and South. Its motive power consists of two long chains of large buckets operating similar to the drive of the caterpillar tanks of war fame. These chains of paddles extend from bow to stern underneath the flat bottom of the boat and return through the hull. Each is driven by an electric motor which receives its current from a 200-horse-power Diesel-electric set. It is steered by varying the relative speeds of the two bucket chains and may be turned in its own length. See SHIPBUILDING, SHIPPING.

ELECTRIFICATION OF RAILWAYS

See ELECTRIC RAILWAYS

ELECTRONS. See ASTRONOMY, PHYSICS

ELEMENTS. See CHEMISTRY, PHYSICS

ELMIRA COLLEGE. An institution for the higher education of women in Elmira, N. Y., founded in 1852 and operating under its present charter since 1855. The enrollment for the autumn of 1929 was 593, distributed as follows: Seniors, 116; juniors, 145; sophomores, 141; freshmen, 190; unclassified, 1. There were 53 members of the faculty, including eight new appointees, who were filling vacancies left by retiring members and also one newly created position. The endowment of the college amounted to \$650,000, and the income for the year was \$379,340. There were 30,000 volumes in the library, President, Frederick Lent, Ph.D., D.D., LL.D.

EMBRYOLOGY. See ZOOLOGY

EMIGRATION. See GREAT BRITAIN, under Population

EMORY UNIVERSITY. A coeducational institution for higher learning in Atlanta, Ga., founded in 1836. The enrollment for the autumn

of 1929 was 1139, distributed as follows: College of arts and sciences, 509; school of business administration, 115; graduate school, 46; school of theology, 49; law school, 58; medical school, 196; library school, 40; junior college at Oxford, 59; junior college at Valdosta, 87. The enrollment for the 1929 summer session was 814. The faculty numbered 250, 95 of whom were full-time members. The endowment amounted to \$3,763,088, and the income for the year was \$761,082. On the death of Asa G. Candler, Sr., the \$2,000,000 annuity which he had set aside for the university became available for endowment. There were 100,000 volumes in the library. In 1929 the college of arts and sciences was divided into a junior college and a senior college, and a second junior college was established in Oxford. The Florence Harris Home for Nurses also was completed. President, Harvey W. Cox, Ph.D., LL.D.

EMPLOYER'S LIABILITY. See **WORKMEN'S COMPENSATION**

ENCYCLICALS. See **ROMAN CATHOLIC CHURCH**

ENDOWMENTS, COLLEGE. See **UNIVERSITIES AND COLLEGES**

ENGINEERING. See **BOILERS, BRIDGES, CANALS, DAMS, DYNAMO-ELECTRIC MACHINERY, FIRE PROTECTION, GARBAGE AND REFUSE DISPOSAL, PORTS AND HARBORS, RADIO COMMUNICATIONS, TUNNELS, ETC.**

ENGINES, GAS OR OIL. See **INTERNAL COMBUSTION ENGINES**

ENGINES, STEAM. See **STEAM TURBINES**

ENGLAND. The term in its strictest sense applies to the largest and most densely populated part of the Island of Great Britain. As employed in reference to the Government, it often indicates the United Kingdom and Ireland. See **GREAT BRITAIN**

ENGLAND, CHURCH OF THE. Established Church of England. Its faith is represented in the United States by the Protestant Episcopal Church (q.v.). The King is the supreme governor of the Church, possessing the right to nominate to vacant archbishoprics and bishoprics. The King and the First Lord of the Treasury also appoint to certain deaneries, prebendaries, and canons, and the Lord High Chancellor to certain canonries. For administrative purposes, the country is divided into two provinces. The Convocation of Canterbury and the Convocation of York, each under the control of an archbishop. The church assembly, established in 1920 "to deliberate on all matters concerning the Church of England and to make provisions in respect thereof," consists of three houses, composed of bishops, clergy, and laity, respectively, the laity being elected every five years by the lay members of the diocesan conferences, which consist of representatives elected by members of the church. Every measure passed by the church assembly must be submitted to an ecclesiastical committee, consisting of 15 members of the House of Lords and 15 members of the House of Commons. This committee reports on each measure to Parliament, and the measure becomes a law if it is passed by both Houses of Parliament. Parochial affairs are managed by parochial church meetings of parishioners and by church councils elected by such meetings. In 1927 the number of qualified electors on the electoral roll was 3,636,422; of Easter communicants, 2,528,393; of baptisms, 443,681; of incumbents, 12,890, of

dioceses, 43; of clergymen, between 16,000 and 17,000; of Sunday-school pupils, 1,841,359. Voluntary parochial contributions received during the year amounted to £7,113,844, total contributions from all sources were £9,910,683.

The events of 1927 and 1928 largely influenced the affairs of the church during 1929, and the bishops had to face many difficulties in dealing with the administrative problems arising from the rejection by the House of Commons in December, 1927, and June, 1928, of the Prayer Book Measures which had been approved by large majorities in all three houses of the church assembly. Recognizing that it was "impossible and undesirable to bring back the conduct of public worship strictly within the limits of the Prayer Book of 1662," they acted on principles which were embodied in a resolution endorsed by both houses of the two convocations in July, 1929, and which regarded the Book of 1928 as the standard of permissible deviation from the Prayer Book of 1662 "during the present emergency, and until further order be taken."

The question of the reunion of Christendom caused much discussion during the year, mainly as a result of the proposed union of churches in South India. The movement for some such union had been in progress for more than 10 years. In 1929 a proposed scheme of union was sent to the governing bodies of the churches concerned, the Church of India, Burma, and Ceylon, the South India United Church, and the South India Provincial Synod of the Wesleyan Methodist Church. The scheme met with both support and great objection, the latter being based mainly on the proposals to use clergy who for a time would not necessarily be episcopally ordained. Steady progress also was made during the year with the reparation of St. Paul's Cathedral in London. It was hoped that the whole of the cathedral would be ready for divine worship by June 25, 1930, the date fixed for the reopening service.

The four measures which completed their passage through the church assembly and ultimately received the royal assent during 1929 were: The parochial registers and records measure, the representation of the laity measure, the ecclesiastical dilapidations (amendment) measure, and the Westminster Abbey measure. The parochial registers and records measure makes provision for the better care, in certain cases, of parish registers and other records in ecclesiastical custody. The representation of the laity measure affects every parish in England, as it repeals the rules for the representation of the laity, which had been in force since 1922, and substitutes therefor a new set of rules which, while not differing in any very important particulars from the old rules, regulate a number of points for which these latter made no provision. The ecclesiastical dilapidations (amendment) measure is concerned mainly with matters of administrative detail and renders easier the working of the ecclesiastical dilapidations measure of 1923. The Westminster Abbey measure provides for the reapportionment of the annual income of the Dean and Chapter of Westminster.

Other proposals considered by the church assembly during the year included two ecclesiastical commissioners measures, the archdeaconry of Surrey measure, the pluralities measure, the ecclesiastical commissioners measures extend

the powers of the commissioners, one enabling them to grant pensions to the two paid church estates commissioners and the other empowering them to make grants for work in the Isle of Man. The archdeaconry of Surrey measure was necessitated by the financial adjustments consequent upon the formation of the dioceses of Guildford and Portsmouth. The object of the marriage measure is to make it possible for marriages to be solemnized in any church which is the usual place of worship of the persons to be married or of either of them. The pluralities measure extends the scope of the union of benefices measure, 1923, so as to permit of commissioners under the measure recommending that any two or more benefices may be held in plurality. The parsonages measure consolidates and amends the law relating to the sale, purchase, and improvement of parsonage houses.

The usual meetings of the Convocations of Canterbury and York were held in February and July, the latter being the first meetings of the eighth convocation of the present reign. Considerable changes in the membership of the lower houses were made by the proctorial elections which followed the dissolution. The Archdeacon of St Albans was elected prolocutor of the lower house of the Convocation of Canterbury, and the Archdeacon of Halifax, prolocutor of that of York. The Prayer Book the date of Easter the order of deaconesses and the distribution of man power in the church were among the subjects which engaged attention. Other gatherings included the Talington Clerical Conference which was held in Westminster in January and the Cheltenham Evangelical Conference which met in Oxford in April, the general subject for discussion being "Lambeth and Reunion." The Anglo-Catholic Congress anniversary meetings were held on July 5, when "Christian Internationalism" was considered. At the Conference of Modern Churchmen, held in Cambridge September 23-30, the prescribed subject was "Spiritual Authority in the Modern State." The annual Church Congress was not held in 1929.

Dr William Temple was enthroned as Archbishop of York in York Minster on Jan. 10, 1929. During the year, the following bishops were consecrated: Canon H. A. Wilson as Bishop of Chelmsford and Prebendary W. C. Streetfield as Bishop Suffragan in Lewes, in Westminster Abbey on January 23. Dr F. S. Guy Warman was enthroned as Bishop of Manchester in Manchester Cathedral on February 1. The sudden death on February 13 of the Rt. Rev. W. O. Burrows, Bishop of Chichester, was followed two days later by that of the Bishop of Lewes who had been consecrated only three weeks before. Dr G. K. A. Bell, Dean of Canterbury, was appointed to succeed Dr Burrows and was consecrated in Canterbury Cathedral on June 11. The Ven. H. M. Horden, Archdeacon of Lewes, was consecrated as Bishop of Lewes on November 1. The Rt. Rev. W. W. Perrin who had been Bishop Suffragan of Willesden resigned and was succeeded by the Ven. Guy Vernon Smith, Archdeacon of Colombo. The vacancy caused by the resignation of Bishop Hine, Bishop Suffragan of Grantham (who was however, to continue to act as an Assistant Bishop in the Diocese of Lincoln) was filled by the appointment of the Ven. E. M. Blarke, Archdeacon of Stow. Dr. B. O. F. Heywood, who had resigned the See of Southwell in 1928 on account of ill-health, was able to resume episcopal duties as Assistant

Bishop in the Diocese of York on the resignation of Dr. Gurdon, Bishop Suffragan of Hull.

There also were several changes in the overseas episcopate. On November 1, Canon F. W. Head was consecrated as Archbishop of Melbourne in succession to the Most Rev. Harrington C. Lees who died on January 10. The Archbishopric of Perth also was rendered vacant during the year by the death of the Most Rev. C. O. L. Riley, the vacancy being filled by the translation of the Rt. Rev. H. F. LeFanu, Bishop Coadjutor of Brisbane. The Very Rev. F. de Witt Battv was elected to the bishopric thus vacated. The Rt. Rev. E. J. Palmer resigned the See of Bombay in September, returning to England to act as Assistant Bishop in the Diocese of Gloucester. Canon R. D. Acland was consecrated as his successor on November 6. Three Chinese bishops were consecrated during the year. The Revs. Ho-lin Ku and Cheng Tzi Song as Assistant Bishops in Western China and the Rev. P. L. T'een as Assistant Bishop of Honan. The Rev. B. W. Pearcey was consecrated to Lehombo, the Rev. J. Frewer to Northwest Australia, the Rev. F. J. Western to Tinnevely, the Ven. H. W. Williams to Waiapu, and the Rev. C. A. W. Avlen to Zululand on the resignation of Dr. W. J. Vyvyan.

The church assembly budget for 1930, the income of which is contributed by the dioceses, was presented by Earl Grey at the summer session of the assembly and authorized the expenditure by the central board of finance of a sum not exceeding £145,903. Of this amount, £50,000 was required for the clergy pensions scheme and £32,700 was allocated for religious education. An appeal for sponsors for ordination candidates was again made in The London Times and elsewhere, and interest in the scheme was further stimulated by a radio address by the Lord High Chancellor on November 4. The year's contribution was £24,860, making £86,566 for the three years and enabling provision to be made for 450 candidates for ordination.

Officers of the church assembly in 1929 were: Chairman, the Archbishop of Canterbury, vice chairman, the Archbishop of York, treasurer, Col. Sir R. Williams, Bart., secretary, Sir Philip W. Baker-Wilbraham, Bart., chairman of the House of Bishops, the Archbishop of Canterbury, chairman of the House of Clergy, the Dean of Westminster, chairman of the House of Laity, the Earl of Selborne, K.G. Headquarters are at 8 Dean's Yard, Westminster, S.W. 1, London.

ENGLISH ARCHAEOLOGY. See ARCHAEOLOGY.

ENGLISH LANGUAGE. See PHILOLOGY, MODERN.

ENTOMOLOGY, ECONOMIC. The year was made notable in the field of entomology by the appearance upon North American shores of the dreaded Mediterranean fruit fly, *Ceratitis capitata*, a cosmopolitan pest that is probably the most destructive of all insect enemies of fruit, both citrus and deciduous. This insect for which the name "Medfly" is now quite commonly used, known to science for a hundred years, first appeared as a pest in Spain in 1842, since which time it has spread throughout the world until now the North American continent, with the exception of the peninsula of Florida, is the only large area upon which it has not become established. Its invasion of Florida citrus orchards with the threatened loss led to a period of uncertainty and business stagnation in the State

that was responsible for the closing of the doors of many banks. Its entrance constituted what was probably the most serious emergency ever faced by American horticulture.

On December 1, Dr. Charles L. Marlatt, who was responsible for securing the passage of the Plant Quarantine Act of 1912 and was placed in charge of its administration, relinquished the office of Chief to devote his entire attention to the work of the Bureau of Entomology. Lee A. Strong, a specialist in plant-quarantine work and long engaged in the administration of such work both in California and for the Federal Government, was appointed as Dr. Marlatt's successor. The year saw the passing of Dr. Frank H. Chittenden (q.v.) well-known entomologist who had been connected with the Federal Bureau of Entomology for more than 38 years. His death took place at Washington on September 15 at the age of 70.

MEDITERRANEAN FRUIT FLY The discovery of the occurrence of the long-feared Medfly for the first time on the North American continent was made at Orlando, Florida, on April 6. Just how it gained entrance was not determined, although it was known that since the passage of the Federal Plant Quarantine Act of 1912 there had been numerous interceptions of it by the plant inspectors stationed at maritime ports of entrance. Its threat to American horticulture was at once met by the State of Florida and by the Federal Government, the former by immediately making \$50,000 available and mobilizing its forces and the latter through the transfer of \$40,000 by the Plant Quarantine and Control Administration for eradication work. A State quarantine was at once placed upon the known area of infestation together with a wide protective zone, the restriction being applied to new areas as they were determined. Steps were immediately taken to determine the extent of its spread, to destroy all fruit in infested and surrounding orchards, and to spray the trees concerned with an attractive poison bait as a substitute for the natural food thus removed. This was closely followed by the transfer by the Federal Government through congressional authorization of \$4,250,000 from the pink-bollworm fund.

Dr. Wilmon Newell, Chief of the Florida Plant Board, an experienced entomologist and administrator, was placed in direct charge of the administrative work. In the first survey the Medfly was found to occur in an area about 12 miles North and South by 6 miles East and West. In the course of four months' scouting the pest was found in more than 980 localities in 20 counties of the central and northern part of the peninsula. Infested fruit shipped out prior to the placing of the quarantine, much of which belonged to the cull class and was transported by trucks, was intercepted in New York, Ohio, North Carolina, Georgia, Louisiana, Arkansas, and Texas. In investigations conducted, the pest was found to breed in all fruits, with a few exceptions, and also to attack peppers, tomatoes, eggplant, and Lima and broad beans. It demonstrated a special liking for grapefruit and sour orange among the citrus fruits and freely attacked guava, fig, Surinam cherry, mango, avocado, peach, and pear.

The work of eradication at the height of the season required the service of some 5000 men, of whom 300 or more were directors, and the use of all available trucks, spraying machinery, etc.

The programme successfully employed in eradicating the Mexican fruit worm in the lower Rio Grande Valley was followed in the work against the new invader. It consisted in the establishment of a summer starvation period within the infested and protective zones during which there was a complete elimination of all host fruit and vegetables in a stage of growth attractive to the fly, and in place of such source of normal food, a sweetened bait was sprayed on the trees in orchards and elsewhere at frequent intervals. The effectiveness of the method was considered to have been fully demonstrated. As a result of the work, but one infestation of fruit—that on November 16—was found in Florida after August 27, and no flies were taken in the 6000 or more traps distributed through the eradication area, after August 12.

The magnitude of the problem together with its nation-wide concern led the Secretary of Agriculture to seek the advice of a committee of seven representative specialists in entomology and horticulture from various parts of the country. After a field survey of the situation in Florida this committee submitted a report emphasizing their belief that eradication work is not only practicable but an economic necessity. They further recommended the very considerable enlargement of the work under way and the modifications which in their belief would permit, under a system of sterilization, the interstate movement of citrus fruits from areas which previously had been considered infested—without risk of spreading the pest. The research work having shown that eggs and larvae in the fruit could be controlled by refrigeration to 28° F. for 5 hours and held for 4½ days at 30° or by heating to 110° F. inside temperature for 8 hours under an air humidity of 90 per cent, this substitute for destruction of the mature fruit in the formerly infested areas, as recommended by the committee, was adopted—since no injury to the fruit was caused by these temperatures.

On December 18, both houses of Congress passed an emergency measure making \$1,200,000 immediately available for further work. President Hoover recommended to Congress on December 9 that an appropriation of \$15,381,000 be made to continue the control and eradication work until June 30, this amount being based upon the estimates of the Secretary of Agriculture and the Director of the Budget.

MEXICAN FRUIT FLY This fruit worm was first discovered in the spring of 1920 after the elapse of almost two years, or from June, 1927, to April, 1929, during which no infestations were found in the Rio Grande Valley of Texas. It was discovered in stored fruit after the commercial citrus crop had been harvested and largely shipped. The premises of 10 growers and two packing houses in Hidalgo County were found to harbor it. In two instances larvae were found in grapefruit on the trees where such fruit had previously been overlooked in the cleanup and inspection. It was believed that the new infestation had been completely eliminated and that it would not be carried over into the 1929-1930 crop.

ORIENTAL FRUIT MOTH. Considerable injury by this fruit moth was reported from the Middle Atlantic, Southeastern and East Central States from New Jersey to Georgia and from Michigan to Tennessee. The indications were that it would be the cause of serious losses in peach orchards of the Niagara peninsula of Ontario.

GIPIY MOTH. Measured by the acreage of woodlands defoliated, gipsy-moth infestation was much more severe in 1928, with 262,000 acres stripped, than it had been for many years, and an even greater acreage was defoliated in the summer of 1929. Intensive eradication measures were employed to stamp out all gipsy-moth outbreaks in the barrier zone, the number of which nearly doubled in 1928. Only one small colony was found in the infested area in New Jersey, where eradication work had been under way since 1920. Scouting in the Province of Quebec failed to reveal any evidence of its presence there.

BROWNTAIL MOTH. This introduced pest, formerly equal to the gipsy moth in the extent of injury caused through defoliation of trees in New England, has for a considerable period continued to decrease in numbers to such an extent as to lose much of its early importance and interest. This appears to have been largely due to control by natural means such as disease and parasitic enemies, many of which latter have been introduced from Europe. During 1928 and 1929, however, it had increased in numbers in many sections in southern Maine, New Hampshire, and eastern Massachusetts, particularly where no attempt has been made to remove the winter webs or carry out spraying of trees in early summer and considerable defoliation has resulted. The area under quarantine was not administered in connection with the gipsy-moth quarantine.

SATIN MOTH. This defoliator of willow and poplar trees accidentally introduced from Europe into both New England and the State of Washington, occurs in the former region entirely within the gipsy-moth area and the quarantine against its spread was being enforced under the gipsy-moth administration. In a survey made during the summer of 1928 it was found greatly to have extended its range including 1172 towns in five States containing about 5,116 square miles. It was reported for the first time in woodland districts in New England. In Washington State though limited to the counties west of the Cascade Mountains the intensity of its infestation was gradually increasing and the pest was slowly spreading. Severe outbreaks of it with the tent caterpillar resulted in the total defoliation of hundreds of acres of brush and cottonwood stands in the western half of the Lower Fraser Valley of British Columbia.

JAPANESE BEETLE. The spread of the Japanese beetle continued with an increase of 8 per cent in the territory infested in seven States and the District of Columbia—a total of 21,353 square miles. New outlying points of infestation discovered during the season of 1929 include Boston, Mass., Providence, R. I., and Norfolk and Cape Charles, Va., the spread to which appears to have been due to automobile, train, or boat movement. Japanese beetle traps set with the geraniol attractant were used quite successfully in the isolated points found to be infested, nearly a ton of beetles representing 7,500,000 individuals having been captured in this way in 500 traps set at Roxborough, Pa., between July 11 and August 23.

THE ASIATIC BEETLES. The two species of beetles introduced from Japan with shipments of nursery stock with soil—designated as the Asiatic beetle (*Anomala orientalis*) and the Asiatic garden beetle (*Aserica castanea*)—were on March 2 quarantined against in the States in Connecticut,

New Jersey, New York, Pennsylvania, and Virginia and the District of Columbia. These beetles are somewhat closely related to the Japanese beetle and, in general, correspond with it in larval and adult habits. Their economic importance is largely due to their capacity to injure and destroy lawns and grass lands. The Asiatic garden beetle is in addition an active leaf feeder and attacks a large range of crop and ornamental plants.

MEXICAN BEAN BEETLE. The spread of this beetle continued and by October it had extended its range well up into Michigan, New York, and Massachusetts. The spread to the South and West, however, was negligible. It was reported as equally destructive over the entire infested territory. In Alabama and Mississippi, its damage was reported to be much more serious than in several years.

THURBERGIA, OR ARIZONA WEEVIL. There was a very considerable increase of the thurbergia weevil in cotton during the 1928 crop season in the Santa Cruz Valley south of Tucson, Ariz. The quarantine measures of control were the same as those enforced for the control and eradication or prevention of spread of the pink bollworm.

ALFALFA WEEVIL. The alfalfa weevil continued slowly to spread eastward toward the Mississippi Basin and is now firmly established in western Nebraska. It was discovered in August at Medford, Oregon, near the Pacific Coast and it seemed inevitable that it would make its way into all the principal alfalfa-growing regions of the West. It was found in the course of the examination of 130 freight cars that had contained alfalfa hay from infested regions that more than half were infested with alfalfa weevils, and that such weevils might remain in the cars almost indefinitely and be carried to almost all parts of the United States, some having been traced as far as New York and Los Angeles.

EUROPEAN CORN BORER. In the western area of infestation, the year was generally unfavorable to commercial damage by the corn borer. In a few fields in Ohio and Michigan losses in yield estimated at from 10 to 30 per cent were observed. Traces of injury were evident in more fields than ever before. Injury took place in only a limited district in Rhode Island and in adjacent Massachusetts. The natural spread of the corn borer by flight was normal, or between 20 and 30 miles. The survey of the year disclosed two fairly distant points of infestation, one in Oldham County, Kentucky, and the other in the southern point of Ohio, both on the Ohio River. The work of parasite introduction progressed rapidly and satisfactorily. More than one million additional parasites comprising nine species were liberated, principally in the States of the middle West.

PINK BOLLWORM. The extensive outbreak of the pink bollworm in 1927 in cotton of seven counties of West Texas involving scattered infestation of nearly 400,000 acres of cotton land, appeared to have been practically suppressed, only a single infestation having been found in connection with the 1928 crop and that consisted of only a few bolls in a field near Odessa. This favorable outcome was accredited to an intensive clean-up of the entire section under the special emergency allotment of \$400,000 and the climatic conditions during the winter of 1927-1928 unfavorable to the survival of hibernating larvae. Similarly unfavorable weather conditions were indicated by

the reduction almost to the zero point of the pink bollworm in portions of Arizona and New Mexico and in the El Paso Valley of Texas. Brewster County in the Big Bend district of western Texas was established as a non-cotton zone in order to eliminate the possibility of spread by flight from that highly infested region to western Texas and New Mexico. All the areas in western Texas, New Mexico, and Arizona still invaded by the pest were held under quarantine restrictions requiring the disinfection of cotton seed at gins, fumigation and compression of lint and linters, etc. The discovery of an infestation near Phoenix, Arizona, resulted in the enlargement of the quarantine area in that State to include five counties.

DATE SCALE ERADICATION The eradication work with the date scale was continued by the Federal Department of Agriculture in cooperation with the States of Arizona and California under Federal and State funds amounting to \$121,700. In addition to the intensive eradication work in the Coachella Valley of California and in the vicinity of Phoenix, Arizona, surveys were made in the Imperial Valley of California and other date-growing areas in the Southwestern States in order to locate and map the points at which date palms are grown and to clean up any outbreaks discovered in the course of the work.

INSECTICIDES Ethylene oxide, a fumigant not hitherto used for exterminating insects, was found by the Federal Bureau of Entomology to be highly toxic to certain species. It was found that those which commonly infest stored food products, clothing, and furniture can be killed easily by its vapors in concentrations that can be used without danger of fire or injury to human beings. Comparative tests have shown that the vapors are somewhat more toxic than those of carbon disulphide and about thirty times as toxic as those of carbon tetrachloride. It was found by the Japanese beetle laboratory that acid lead arsenate applied uniformly over the surface of the soil at the rate of 35 pounds to 1000 square feet of lawn surface when new lawns are being made, would effectively protect from the beetle grubs for six years. Applied at the rate of five pounds to the same area, it will protect already established turf.

INSECT TRANSMISSION OF PLANT DISEASE It was found, first in Wisconsin and later in Kentucky and elsewhere, that the disease of alfalfa known as "yellows" is caused principally by the feeding of *Empoasca fabae*, a common and widely distributed leafhopper.

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Fly (Tampa, 1929); R. A. Wardle, *The Problems of Applied Entomology* (New York, 1929). See **HORTICULTURE**.

EPILEPSY. Professor G. Carrière of Lille, France, has for the past 10 years advocated the continuous use of luminal and boropotassee tartrate drugs in combination. The seizures are brought to a halt in 75 per cent of all cases, but it is advisable to continue the treatment for several years and then slowly reduce it over another long period until a minimum dose is reached. The doses are small save in severe cases when they are increased as much as necessary to check the fits and keep them checked. Unlike the bromides, the borax salt causes no unpleasant symptoms, so that the patients can persist in their use indefinitely. Carrière is by no means the only one who recommends this treatment, for it has been tested at his request by a large number of neurologists. His own material thus treated during 10 years amounted to about 800 cases and the patients were not interned in asylums but were seen in dispensary and private practice. The daily dose of the borax salt is about 20 grains and of the luminal about 2 grains until the disease has been brought to a prolonged quiescence, after which $7\frac{1}{2}$ grains of the first and one grain of the second will suffice. The author was silent as to the mental state, but the patients, as a rule, praise the treatment and are willing to continue it (*Bulletin de l'Académie de Médecine* Oct. 1, 1929).

EPYRUS. A geographical expression applied to a territory, the northern part of which belongs to Albania and the southern part to Greece. The boundaries are indefinite. The Greek portion corresponds to the departments of Janina and Preveza, with populations in 1928 of 180,418 and 79,620, respectively. Northern Epyrus had an estimated population of 250,000.

EPISCOPAL CHURCH See **PROTESTANT EPISCOPAL CHURCH**.

EPWORTH LEAGUE See **METHODIST EPISCOPAL CHURCH**.

ERGOSTEROL See **VITAMINS**, **VIOSTEROL**.

ERITREA. An Italian colony in Africa, on the coast of the Red Sea. It extends from Cape Dumeirah and the Strait of Bab-el-Mandeb to Cape Kasar, a distance of 670 miles. Area, 45,754 square miles, population, at the census of 1921, 402,793 natives and 4251 Europeans. The seat of government is Asmara, situated 7765 feet above sea level, with a population of 14,711, of whom 2500 were Europeans. Massawah is the principal trade centre, with a population of 12,275 in 1923. The natives are chiefly Coptic Christians and Mohammedans and, in the plateau region, they speak a dialect of Abyssinian. In the lowlands, Arabic. The local trade is almost entirely confined to camels, oxen, sheep, goats, and their products. Although there is abundant grazing land, the pastoral population is largely nomadic. There is considerable trade in palm nuts and pearl fishing is pursued at Massawah and in the Dahlak Archipelago. For the fiscal year 1928-29, the revenue and expenditure of the colony were estimated at Colonial revenue, 42,482,300 lire, expenditure for colonial administration, 25,497,050 lire, and for military purposes, 16,985,250 lire. Governor in 1929, Corrado Zoli (appointed in 1928).

ERYSIPELAS. Drs. David and Beatrice Seegal reported a study of 289 cases of facial erysipelas treated at the Massachusetts General

Hospital from 1870 to 1927 (*Journal of the American Medical Association*, August 16). During this long period there was no specific treatment of the disease, for the serum developed by Dr. Birkhaug had only recently been introduced. The mortality was within a fraction of 20 per cent, which is a high figure. The danger of infection to others is shown by the fact that the hospital personnel made up 13.5 per cent of the sufferers, while many cases of transmission from patient to patient were noted. No less than 48 per cent of the cases developed after admission to the hospital, about equally divided between medical and surgical patients. It was ascertained that in one group of patients, the untreated disease terminates spontaneously by a crisis which develops from the fourth to the seventh day—a fact which must be taken into account in any plan of specific treatment. Referring to the high mortality, the deaths cannot in the majority of cases be attributed solely to erysipelas, for many of the patients were suffering from other diseases, often serious, when the erysipelas developed. Cases of uncomplicated facial erysipelas should not have a mortality of more than 5 per cent, which can hardly be reduced under serum treatment, which naturally could not prevail against the underlying maladies.

ESKIMOS. See ANTHROPOLOGY

ESSAYS. See LITERATURE, ENGLISH AND AMERICAN, FRENCH LITERATURE, GERMAN LITERATURE, ITALIAN LITERATURE, SCANDINAVIAN LITERATURE, SPANISH LITERATURE, ETC.

ESTONIA. A Baltic state comprising the following portions of the former Russian Empire: The Province of Estonia, the islands of Moon Sound, the northern part of Livonia, part of the northwestern section of the district of the Pskov government, and a small portion of the Petrograd government, declared independent Feb. 24, 1918, and recognized by the League of Nations, Jan. 26, 1921 (Capital, Tallinn (Reval)).

AREA AND POPULATION. The total area is about 18,454 square miles, population, at the census of 1922, 1,110,538, of whom 92 per cent was Estonian, 1.5 per cent, German, and 6.5 per cent Russian and other nationalities. Five-sixths of the population are Lutheran, and the rest Greek Orthodox, Roman Catholic, etc. The population on Jan. 1, 1926, was estimated at 1,117,270 and in 1928, at 1,115,094. From 1923 to 1927, the average number of births was 20,783 and of deaths, 17,526, annually. Tallinn or Reval, the capital, had a population of 127,000 in 1926 (estimated 132,089 in 1929). Dorpat (Tartu), the seat of the university of the same name, had about 59,000 inhabitants in 1926 and 64,785 in 1929. Other large towns are Narva, a manufacturing town, with about 27,000, and Pärnu, on the Gulf of Riga, with about 21,063.

EDUCATION. Elementary education is free and compulsory. In 1927-28 there were 95,847 pupils in primary schools, 17,170 in secondary schools, and 9,124 in higher and professional schools. About 56 per cent of the adult population was illiterate in 1922. In 1925-26 there were 1356 elementary schools and 81 middle schools. Five teachers' seminaries, three navigation schools, commercial schools, agricultural schools, and industrial and art schools give higher and special education, and there are the University of Dorpat (founded in 1632), which had 4651 students in 1926, and the Technical Institute at Tallinn, with 484 students.

PRODUCTION. The chief pursuits of the people are agriculture and dairy farming. Arable land in 1927 totaled 2,528,000 acres, with 4,407,000 acres of permanent meadow and pasture, 2,220,000 acres of forests, and 1,632,000 acres of unproductive land. The total value of agricultural production in 1927-28 was \$65,800,000, of which \$29,300,000 represented field crops and \$36,500,000, animal products. The acreage and yield of the principal crops in 1928 were as follows: Wheat, 72,000 acres, 1,037,000 bushels, rye, 357,000 and 5,537,000, barley, 282,000 and 4,211,000, oats, 342,000 and 6,817,000, potatoes, 174,000 and 18,412,000, flax, 91,000 acres, 229,000 bushels of linseed and 17,200,000 pounds of flax fibre. Adverse weather reduced the crop yields. In the same year, Estonia had 651,000 cattle, 658,000 sheep, 327,000 swine, 869,000 fowls, and 228,000 horses.

Seventy-three per cent of the population resides in the rural and agricultural districts. The output of meat and meat products in 1928 was 20 per cent higher than in the previous year.

In 1927, 28,235 workers were employed in industrial enterprises, 8983 in textiles, 4054 in woodworking, 3553 in metals, and 2037 in paper manufacturing. In 1928 the manufacturing industries increased their production, the number of employees increasing 7 per cent, while wages remained stable. Other industries produce cellulose, matches, hides and skins, oil (from shale), window glass, and cement.

COMMERCE. Estonia enjoyed the largest volume of foreign trade in her history in 1928, but the favorable balance of trade in 1927 was reversed in 1928 by a 37 per cent increase in imports. The total value of imports was \$35,200,000, while exports were valued at \$34,000,000, 20 per cent higher than in the previous year. The large growth of imports during the year was due to deficient crops, which created a demand for foreign foodstuffs, and to increased demands for most raw materials, textile fabrics, and machinery. Leading imports in 1928, with figures for 1927 in parentheses, were cotton, \$2,946,000 (\$2,406,000), rye, \$2,552,000 (\$1,333,000), sugar, \$1,789,000 (\$1,894,000), wool fabrics, \$1,389,000 (\$998,000), wheat, \$1,370,000 (\$1,093,000), cotton fabrics, \$1,084,000 (\$771,000), herrings, \$794,000 (\$570,000). Other imports were foodstuffs, hides and skins, tobacco, leather, hemp and jute, wool, rubber footwear, coal, kerosene, gasoline, iron and steel, agricultural machinery, automobiles, and superphosphates.

The chief exports in 1928, with comparative figures for the previous year, were potatoes, \$11,042,000 (\$624,000), butter, \$8,861,000 (\$7,377,000), lumber, \$4,494,000 (\$2,941,000), cotton fabrics, \$2,525,000 (\$2,325,000), flax, \$2,450,000 (\$2,766,000), cotton yarn, \$1,247,000 (\$1,199,000), mine timbers, \$1,071,000 (\$636,000). Other exports were cattle, beef, bacon, eggs, fresh fish, hides and skins, leather, jute sacking, sailcloth, veneers, chair seats, newspaper paper, cement, linseed, and matches.

FINANCE. During the fiscal year ending Mar. 31, 1929, actual net revenues were 92,162,078 crowns (\$24,576,714) and actual net expenditures, 90,780,855 crowns (\$24,209,828), leaving a surplus of 1,375,823 crowns (\$366,886). The budget estimates had anticipated a deficit of 3,587,185 crowns. A similar unexpected surplus (\$673,000) resulted from financial operations in 1927-28, when receipts were 4.5 per cent higher

and expenditures 54 per cent lower than the budget estimates. In the 1929-30 budget, gross receipts were estimated at \$4,801,000 and gross expenditures at 80,093,000 crowns. In 1928 the State received 3,000,000 crowns from the Swedish Match Trust for a 28-year match monopoly concession. During a period of four years, the same trust is taking over long-term obligations of the State Land Bank, State Railways, and other institutions enjoying state guarantee for an amount of 7,000,000 crowns.

On Jan. 1, 1928, the public debt amounted to 110,696,000 crowns (\$29,667,000). The external debt was held by other governments as follows: United States, \$19,707,000, Great Britain, \$9,534,000; and Sweden, \$253,000. The internal debt amounted to \$173,000. The crown, or kroon, was established as the unit of currency on Jan. 1, 1928, with a par value of \$0.2680. This was one of a number of currency and banking reforms inaugurated at the same date under the auspices of the League of Nations, others being the reorganization of the Bank of Estonia as a real central bank of issue, the creation of the State Mortgage Bank, and the issue of a foreign loan.

COMMUNICATIONS In 1928 there were 1156 miles of railway line in Estonia, 6306 miles of telegraph wire, and 41,582 miles of telephone wire. All three systems are owned by the Government. In 1927, 2672 vessels of 849,996 tons entered, and 2729 vessels of 854,975 tons cleared the ports of the country. The merchant marine of the Estonian Republic in the same year consisted of 67 steamers of 32,298 tons and 303 sailing vessels of 23,676 tons.

GOVERNMENT According to the constitution of the Estonian Republic, passed by the Constituent Assembly on June 15, 1920, and put into force December 20 of the same year, executive power is in the hands of a State head or "State Elder" and a ministry, both chosen by and responsible to the State Assembly; legislative power, in the hands of the State Assembly of 100 members elected for three years on the basis of proportional representation and by direct, universal, and secret suffrage. The Assembly forms the government and accepts its resignation, promulgates the laws, passes the budget, decides the financial policy generally, ratifies treaties, etc. The principle of the referendum is recognized for the proposal or amendment of the laws, but not in relation to measures affecting the budget, or war, peace, or foreign affairs. State Elder in 1929, A. Rei (Socialist), who was succeeded in July by Otto Strandmann, Labor party.

HISTORY A Conservative Coalition cabinet, headed by Otto Straudmann of the Labor party, replaced the Radical and Socialist ministry of A. Rei on July 9, 1929. Other members of the cabinet were August Kerem, Minister of Agriculture; Jaan Humerson, Education and Social Welfare; Oskar Koster, War; Jaan Latik, Foreign Affairs; Toim Kalbus, Justice and Interior; August Jurman, Ways; Johannes Zimmermann, Economics. Its programme included the revision of the constitution, the furtherance of agriculture, and a more equitable distribution of tax burdens. After months of negotiation, an agreement was reached between the governments of Estonia and Latvia relative to the establishment of a long-contemplated customs union. The Estonian-Latvian Mixed Commission was authorized to take up the question at its next meeting. The prospect of improved economic relations with

Lithuania was enhanced during the year by the elimination of a clause in the Polish-Estonian commercial treaty of 1927 to which Lithuania had objected. It was reported that the complications arising from Estonia's land reform were approaching final settlement. The most serious question concerned the compensating of foreign landowners for losses sustained in connection with the reform. A heavy increase in customs duties on textiles, leather goods, and other imports took place in September.

ETHER DRIFT. See PHYSICS.

ETHIOPIA (formerly **ABYSSINIA**). A country in West Africa between the Anglo-Egyptian Sudan and the Red Sea, comprising the provinces of Harrar, Equatorial provinces, Gondar, Jimma, Wollo, Shoa, Sellale, Edjow, Wollaga, Gumira, Gojan, etc. Capital, Addis Abeba. Ruler in 1929, Ras Tafari Makonnen.

AREA AND POPULATION The area has been variously estimated at from 350,000 to 430,000 square miles. The most recent estimate of the population places it at about 10,000,000, although the Abyssinians, properly so called, number less than 3,500,000. They are Christians of Hamitic origin. Addis Abeba has a population of from 60,000 to 70,000, of whom several thousand are foreigners. The other chief city, Harrar, has a population of about 40,000. In March, 1924, an edict was issued by Ras Tafari, providing for the gradual emancipation of slaves beginning with the children born of slaves.

PRODUCTION Ethiopia is a strictly pastoral and agricultural country, possessing numerous cattle, sheep, and goats. There are small and crudely cultivated crops of grain, cotton, sugar cane, dates, coffee, and grapes. Hides, skins, wax, grain, and coffee are the only products of sufficient quantity for export. The forests abound in valuable timber and include extensive growths of wild coffee plants. Ethiopia contains extensive deposits of gold, coal, copper, phosphate rock, rock salt, and sulphur. Iron, lead, petroleum, platinum, mercury, mica, tin, and tungsten also are found, but only platinum, potash, and gold are mined commercially. Foreign enterprise is introducing the more extensive cultivation of cotton and coffee. Mining concessions are held by German, Italian, and American concerns.

COMMERCE Exports consist mainly of hides and skins, coffee, wax, ivory, civet, and native butter, imports, of gray sheeting, cotton yarn, artificial silk, corrugated sheets and bars, hardware, cement, kerosene and gasoline, glass, and salt. The foreign trade is estimated to reach about \$12,000,000 annually, but no reliable figures are available. In 1928 exports to the value of £351,079 went to Great Britain and imports valued at £19,955 were received from that country. France, India, Italy, Germany, Japan, and the United States are other chief sources of imports.

COMMUNICATIONS. Transport for the most part is still conducted over mere tracks by means of mules, pack horses, donkeys, and in some districts, camels. The only railway is French controlled and connects the capital with the port of Jibuti, over a distance of 488 miles. Trains run twice weekly in each direction. There are 2000 miles of telegraph line, telephone connections between Addis Abeba and the chief towns, and 10 post offices. A motor highway is projected from the port of Assab in Eritrea, where Ethiopia has been granted port facilities by the Italians, to Dessie in Ethiopia. In 1929 a British-Indian

firm, with headquarters at Jibuti, announced that it had obtained a concession to build a system of motor roads linking British Somaliland with the rich Harar Province in Ethiopia. Construction work would be under way within a year, it was said. Jijiga in eastern Ethiopia has been chosen as the central point in the system, with the roads radiating to the two British Somaliland ports of Zeila and Berbera and to the three Ethiopian cities of Harar, Aisha on the Franco-Ethiopian Railway, and Dagabbur.

GOVERNMENT Under the constitution adopted Oct. 31, 1907, and modified in 1919, the supreme power rests with the King, who, since 1907, has been assisted by a cabinet and, since 1910, by the Council of Elders. There is no popular representation, the governmental system being essentially that of a feudal monarchy, in which the Coptic Church plays an influential and conservative rôle. The present King has striven to modernize the medieval political institutions since his coronation. In 1923 Kithopia joined the League of Nations. King in 1929, Ras Tafari Makonnen (crowned Oct. 7, 1928, after serving as Regent since 1916).

ETHNOGRAPHY. See ANTHROPOLOGY.

ETHNOLOGY. See ANTHROPOLOGY, EXPLORATION.

EUROPEAN CORN BORER. See CORN, ENTOMOLOGY, ECONOMIC.

EVANGELICAL CHURCH. A denomination formed by the union of the Evangelical Association and the United Evangelical Church. The former was the outgrowth of a religious movement started in Pennsylvania in 1800 by the followers of Jacob Albright. In 1892 a number of ministers and members organized themselves into the separate denomination known as the United Evangelical Church. At length the growing conviction that the two churches should be reunited led to the appointment of commissions which drew up the so-called enabling act. The new organization was officially established in Detroit in 1922. At the time of merging, the Evangelical Association had 167,416 church members and the United Evangelical Church, 92,001. At the end of 1929 there was a total membership of 258,232, 13,223 of the 21,666 persons received into membership during the year coming on profession of faith.

In 1929 the denomination had 23 conferences in the United States, two in Canada, one in Japan, two in Germany, and one in Switzerland. There were 1948 itinerant preachers and 392 local preachers. Sunday schools numbered 2742, of which 602 were in Europe, chiefly in Germany and Switzerland. Of the total enrollment of 357,063 persons, 39,978 were in Europe. The Christian Endeavor Society membership was 11,529. There were also 1365 women's missionary societies with a membership of 39,989. The total value of all church property was \$34,024,242. The amount of money raised during the year totaled \$7,192,902, an average of \$27.81 per member.

The chief schools of the denomination are North Central College and Evangelical School of Theology in Naperville, Ill., Western Union College in Le Mars, Iowa, and Albright College and School of Theology in Reading, Pa. The denomination also maintains two orphanages and six old people's homes in the United States, as well as several hospitals. Official periodicals are the *Evangelical Messenger* (Cleveland, Ohio) and *Christliche Botschafter* (Harrisburg, Pa.). A

quadrennial general conference was to be held in Milwaukee, Wis., in October, 1930.

EVANGELICAL SYNOD OF NORTH AMERICA. The A religious communion strictly evangelical in principle as historically crystallized from the Reformation of the sixteenth century and as embodied in the Reformed and Lutheran doctrinal statements, accepting these statements as far as they agree. When they disagree, the Evangelical Synod adheres strictly to the passages of Holy Scripture bearing on the subject and avails itself of the liberty of conscience prevailing in the Evangelical Church. The communion was founded in 1840 at Gravois Settlement, Mo., and was consolidated in 1877 with similar communions. It is organized in 19 districts, its churches having extensive power of self-government. In 1929 it had 1400 congregations with 1126 pastors and 352,595 communicant members and 1300 Sunday schools with 192,234 members. The quadrennial conference, attended by presidents of districts and clerical and lay delegates, was held Oct. 8-16, 1929, in Rochester, N. Y.

Money raised by the denomination for all purposes in 1928 amounted to \$6,437,400. Church property was valued at \$41,301,740. Missionary work was carried on in the United States, India, and Honduras, the board of foreign missions reporting for 1928 an income of \$204,518. In the United States there were more than 100 missionaries, men and women, active in about 135 communities. In India there were 14 men, one of them a medical worker, and 18 women serving as missionaries, in addition to 333 native workers. In Honduras, there were 11 missionaries at two stations. The denomination maintains three institutions of learning: Eden Theological Seminary, Webster Groves, Mo., Elmhurst College, Elmhurst, Ill., and Oakwood Institute, Cincinnati, Ohio. It also published *The Evangelical Herald*, *Der Friedensbote*, and *The Light Bearer*. The Rev. J. Baltzer, D.D., of St. Louis was president of the Evangelical Synod in 1929.

EVOLUTION. See ZOOLOGY.

EXCAVATIONS. See ARCHEOLOGY.

EXCHANGE, FOREIGN. See FINANCIAL REVIEW.

EXHIBITIONS. See ART EXHIBITIONS.

EXPERIMENTAL PSYCHOLOGY. See PSYCHOLOGY.

EXPERIMENT STATIONS. See AGRICULTURAL EXPERIMENT STATIONS.

EXPLORATION. In addition to exploratory work in little-known areas, the year 1929 was noteworthy because of the number of collecting expeditions dispatched by museums anxious to preserve the indigenous fauna, flora, and native customs of undeveloped portions of the globe. Arctic, Antarctic, and anthropological expeditions are described under their separate headings. Expeditions in the Polar Regions are treated under POLAR RESEARCH.

NORTH AMERICA. Extensive explorations were undertaken by the U. S. Navy in completing the aerial survey of southeastern Alaska which was begun in 1926. In 20 flying days, four amphibian planes photographed 12,000 square miles of mountainous terrain, a feat which by the usual methods of ground survey would have taken years to accomplish. Surveys of the natural resources of Alaska were carried on by the Bureau of Fisheries, the Forest Service, and the Geological Survey. The Graves-Thorne Expedition col-

lected walrus and caribou specimens for the Field Museum. Father Hubbard of Santa Clara University visited the Mt Katmai area and found many changes had occurred there. In the Canadian north, the airplane has played an important rôle in exploration. Reconnaissance geological and topographical expeditions have been greatly expedited and the MacAlpine aerial prospecting party which was lost north of Baker Lake was later rescued by airplane. As in Alaska, aerial surveys have facilitated the mapping of the districts in Ontario and Manitoba, where innumerable lakes make travel by foot very arduous.

In the Great Slave Lake district, W. B. Hoare continued his study of the Musk Ox Sanctuary. The universities of Wisconsin and Chicago conducted surveys of the settlements in the Peace River Valley, a new region of pioneer development. Early in 1929, Bob North and his father made an 800-mile trek through little-known regions of Ontario and Manitoba to York Factory. Captain Bartlett spent the summer on a hunting cruise off the coast of Labrador and an English expedition under U. G. Watkins spent the winter of 1928-29 exploring in Labrador.

In 1929 much detailed explorational work was carried on in the United States, while State geological surveys continued their inventories of local resources, and considerable independent work was instigated by private institutions. Princeton geologists found three new faunal horizons in Wyoming, Barnum Brown hunted dinosaur remains in Nevada, and Dr. Simpson sought fossils in New Mexico for the American Museum of Natural History. The University of California sent one palaeontological expedition to Texas and another to the vicinity of Sacramento, while for the U. S. National Museum, Gilmore hunted Cretaceous fossils in New Mexico, Resser collected fossils in Montana, and Yale University cooperated in excavating an old fumarole in New Mexico for the remains of an ancient sloth.

CENTRAL AMERICA. William Beebe carried on extended studies of bathypelagic fish at Noonuch Island, Bermuda, and in the Bahamas, the Field Museum-Williamson Expedition studied undersea photography. The 1929 A. V. Arnoult scientific cruise was in Caribbean waters, while James Bond of the Philadelphia Academy of Sciences continued his ornithological collecting in the West Indies. The American Museum of Natural History dispatched collecting expeditions to Yucatan, Haiti, and Dominica, scientists at the research station at Barro Colorado Island, in the Canal Zone, continued their biological studies, and the mapping of the boundary between Colombia and Panama was entrusted to Dr. Eichen, to be aided in this difficult task by aerial photography. The volcanoes of Costa Rica were studied by E. Dunn of Haverford College and Dr. and Mrs. Britton continued the botanical survey of Porto Rico under the auspices of the New York Academy of Sciences.

SOUTH AMERICA. A biological reconnaissance of much of South America was the aim of the Otley-Anthony Expedition of the American Museum of Natural History. Mammals also were to be collected from key localities. Dr. Dickey's 1929 expedition for the Museum of the American Indian was wrecked on the Orinoco and his attempt to reach the Piaros Indians had to be abandoned. General Rondon, in the course of delimiting the Brazil-Guianas boundary, described considerable unexplored territory and the Oxford University

Exploration Club conducted a botanical expedition to British Guiana, while Dr. Hershkovits continued his study of the natives on the Surinam River. Coxy of the Philadelphia Academy of Sciences collected insects in Ecuador and a group from the California Institute of Technology reported the successful ascent of Sangay and other volcanic peaks in that country. Botanical expeditions were dispatched by the U. S. National Museum to the upper reaches of the Amazon, by the Field Museum to Brazil and Peru, by Harvard University to southern Brazil, and by the Brooklyn Botanical Garden to Brazil, while the birds of eastern Peru were studied by an expedition from the Philadelphia Academy of Sciences. Two German explorers reported finding a link between the Amazon and La Plata rivers.

AFRICA. In 1929 a determined assault was made upon the Sahara, that inhospitable region which makes so effective a barrier between the French colonies of North Africa and of the Niger. Automobile journeys from Algeria to the Niger were made by the Director of the Southern Territory, by Prince Sidi of Bourbon, by P. de Vailemont, by the Glovers on their search for mammals and commercial gums, and by Lieutenant Mjöberg for the Royal Swedish State Museum. Bureau de Laborie continued his studies in Mauritania and Yale University cooperated with the Freestone interests in a forest survey of Liberia. Central Africa was visited by a Swiss photographic expedition, Columbia University and the American Museum of Natural History united in a study of gorillas in the Belgian Congo, and Professor Bieman of the University of Lund visited Central Africa to collect plants. The Gray African Expedition of the Philadelphia Academy of Sciences collected mammals for exhibition purposes, as did also the Public Museum of Milwaukee, and the Colorado African Expedition under Hoeller made a photographic record of an automobile trip across central Africa, while in Angola, an ethnological collection was assembled for the Field Museum. The Abyssinian Highland was visited by the Harold White-John Coats Mammal Expedition of the Field Museum, by M. Graule of the French School of Oriental Languages, and by the Sanford-Legendre of the American Museum of Natural History. Eritrea was explored by Baron Franchetti and East Africa was visited by Hitchcock of the U. S. Dept. of Agriculture in order to collect native grasses, by Mrs. Straus in search of big game for the American Museum of Natural History, and by Bailey Willis in the interests of volcanology. Migeod of the British Museum collected dinosaur remains in Tanganyika, Love-ridge of the Harvard Museum of Comparative Zoology captured reptiles in the Livingstone Mountains, and the Martin Johnsons returned to East Africa to continue their photographic record of native and animal life. In Southwest Africa, the National Geographic Society and the Smithsonian Institution continued studies for solar radiation at Mt. Brukkaros and the Harvard University Observatory Expedition reported finding the world's largest meteor near Grootfontein in Madagascar, Dr. Swingle of the U. S. Dept. of Agriculture and Professor Humbert of the University of Algiers cooperated in botanical work. Palaeontological collections also were made there under the auspices of various British, French, and American museums.

ASIA The Morden-Graves Expedition of the American Museum of Natural History spent some time during 1920 in Kazakhstan hunting the big-nosed antelope and planned to continue to the Amur River. A general expedition to Central Asia under F. A. Waters was dispatched by the museums of Harvard and Pennsylvania universities. The Roerich Expedition, after having spent three years collecting information on the philosophy and culture of Central Asia, returned to the United States. A German expedition, under the Duke of the Karakorum Mountains; a party from the Berlin Ethnological Museum was engaged in Chinese Turkestan, and a German-Soviet expedition attained Peak Garmo, the highest in the Soviet Pamirs. The Dutch explorer, Visser, returned to the scene of his former expeditions in the Karakorum and a Swedish expedition under Sten Bergman traveled in Northeastern Siberia as did Professor Chernysukov of the Soviet Russian Academy of Sciences. In 1920 the discovery, in the vicinity of Vladivostok, of the oldest fossil plants known was announced, and throughout the whole of the Soviet territory scores of expeditions—too many to note separately—were studying the peoples and natural resources of the country. The Mongolian expeditions of the American Museum of Natural History were discontinued due to the Chinese insistence that a Chinese representative should accompany the expedition and that the collections should be retained in China, but a French expedition accepted even more stringent terms and shortly was to begin field work in western China. Sven Hedin, after a hurried trip to the United States, continued his explorations in the Gobi Desert. This expedition was honored by the printing of a special stamp by the Government at Nanking. Mt. Kinchinjunga in the Himalayas was twice assaulted—once by a lone American who perished and once by a party of German Alpinists who were turned back. The Roosevelt-Field Museum Expedition to Siam and China acquired specimens of the giant panda, as well as of many rare birds and mammals. Herman Norden explored the vicinity of the Mekong River and an ornithological collection was made by Schaumensee for the Philadelphia Academy of Sciences in Siam, Burma, and Sumatra.

OCEANIA In the Dutch East Indies, the *Snelhus*, of the Netherlands Meteorological Institute, pursued oceanographical studies, the All-American Radio Research Expedition reached the Murung River in Borneo, and Dr. Brouwer of Delft University continued his geological studies, this time in the Celebes. The Cornelius Crane-Field Museum Expedition visited many islands and brought back a wealth of material and former Governor Pinchot was accompanied by a number of scientists on a cruise which included the Galapagos Islands and eastern Polynesia. Rollo Beck of the American Museum of Natural History collected birds in New Guinea, as did Lee Candall of the New York Zoological Gardens.

OCEANS The nonmagnetic yacht *Carnegie*, of the Carnegie Institution, reported two submarine mountain ranges off the coast of South America and a new deep of more than five miles between Japan and Guam, on November 29, an explosion totally destroyed the ship and killed Captain Ault, its commander. The Danish research ship *Dana* continued to investigate the giant eels of the Pacific and the *Discovery II* began further investigations of whales in south-

ern waters. The Iselin Expedition from Harvard carried on salinity and depth studies of the Gulf Stream. See **ANTHROPOLOGY**.

EXPOSITIONS. Most conspicuous among these events in 1920 were the expositions held in Spain in Barcelona and Seville, and in Poznan, Poland. A convention concerning international expositions, at which representations of 40 nations were present, was held in Paris toward the close of 1920, when the following definitions were adopted. First, general expositions involving the construction by participating nations of buildings and displaying products of human activity in many branches of science and industry. These will be limited to not more than one every 15 years with a six-year period between any two of these expositions for any single nation. Second, expositions that do not involve the construction of national buildings will be limited to not more than one every 10 years in any one country. Third, special expositions concerning only one branch of science or industry will be limited to not more than one every five years. A permanent bureau was organized, the duty of which will be to authorize every exposition falling within the province of the convention. It will also be the work of the permanent bureau to see that expositions are properly located geographically, so that each part of the world receives its opportunity.

BARCELONA INTERNATIONAL EXPOSITION. This exposition was given full description in the *NEW INTERNATIONAL YEAR BOOK* for 1920, p. 244. Owing to the death of the Queen Mother, Maria Cristina, the opening of the exposition was postponed until May 15, when the King, Queen, and other members of the royal family, as well as the representatives of foreign governments and delegations representing all of Spain's important activities were present. The imposing approach to the National Palace, one of the permanent buildings, was the most striking artistic feature of the ensemble.

IBERO-AMERICAN EXPOSITION. Preliminary and other details concerning this exposition will be found in the *YEAR BOOK* for 1927, p. 280, and for 1928, p. 243. Owing to the death of the Queen Mother, Maria Cristina, the date of opening this exposition was again postponed until May 9, and then in the presence of King Alfonso, members of the royal family, Premier Primo de Rivera, and delegates from other nations, it was officially opened with appropriate ceremonies. The inauguration took place on the Plaza de España, which was decorated with the flags of all countries. It was there that the King received the foreign dignitaries and diplomats, including Ambassador Ogden Hammond, for the United States. Historical standards of Spain were among those floating over the Plaza which presented a colorful appearance in the bright sunshine.

The formalities were preceded by a procession in which the committee went to the Exposition grounds in the royal coaches escorted by the royal guard in full uniform. The exposition was blessed by Archbishop Illudam of Seville and his clergy. One of the finest of the pavilions at the exposition was constructed by the United States and that nation was particularly congratulated by the King and General Primo de Rivera, who thanked the delegates for their collaboration. The King visited the Exposition grounds accompanied by the Governor and in the evening

he presided at a great banquet in the principal casino at the Exposition, the entire royal family attending. There was a large attendance on the opening day. As is customary at expositions, special days were observed at both Barcelona and Seville, notably October 12, Columbus Day, or as it is called in Spain, "Día de la Raza," "The Day of the Race."

An industrial arts exposition was held in Toledo, Spain, during Holy Week. Ceramics, linens, artistic iron work, lanterns, glass, arms and armor, tapestries, rugs, silks, and furniture, all made and designed by artists of renown, were exhibited. The exposition was representative particularly of the art crafts of Toledo and vicinity.

POLISH NATIONAL EXPOSITION Celebrating the 10th anniversary of the restoration of Poland as a sovereign nation, this exposition was held in Poznan from May 15 to September 15. The scope of the exposition included every branch of Polish activity—agriculture, industry, commerce, municipal and other public utilities, and road building, as well as scientific, cultural, and social achievements. Americans of Polish descent had their own pavilion, showing their contribution to the progress of the United States. Although national in name, the exposition was universal in scope, affording an exceptional opportunity for Americans interested in developing exports to learn at first hand the potential market possibilities in Poland. Various meetings and conventions of international scientific and professional organizations were held concurrently. The programme included also a series of international athletic events, with automobile, air, and motor-boat races.

The exposition was formally opened on May 15, by President Mosicki with his cabinet and the diplomatic corps. After an inspection of the exhibition, the President visited the building donated by Polish Americans, where the Polish writer, Sieroczewski, greeted the President on behalf of the Polish National Union in the United States and the Chief Executive expressed delight in the splendid organization of the Americans. On the opening day the attendance was 30,000. The exposition was a decided success, the attendance being over 4,500,000 visitors, including nearly 330,000 school children and nearly 600,000 peasants. The liabilities amounted to 5,000,000 zlotys, covered by entrance fees and returns from the sale of the exhibition buildings, which are to be converted into schools, university laboratories, and dwellings. The closing ceremonies ended in a traditional "polonaise" through the exhibition grounds. The exposition revealed to the Poles and the outside world the great strides in the country's development and prosperity made in the first decade of its independence.

FUTURE EXPOSITIONS *Chicago* Considerable progress was made during the year in the plans for the World's Fair to be held in Chicago in 1933. As announced in the *YEAR BOOK* for 1928, p. 244, it was proposed to build islands along the lake front on which to erect the exposition buildings. Early in 1929, it was decided to construct the exposition buildings so that they will connect in the form of a "tree," the buildings branching out from a central building, connected by terraces, moving sidewalks, canals, and lagoons. The architects planned to avail themselves of the picturesqueness provided in the physical set-

ting of lake front and islands. The canals, which will be constructed when the islands are "made," will run directly through the various exposition structures and will be equipped with flatboats, in which visitors can rest and see the sights at the same time.

There was to be about 6,000,000 square feet of space for exhibition purposes, and the construction work was expected to cost between \$60,000,000 and \$70,000,000. In order that a financial standing should be secured, Gen. Charles G. Dawes took over the task of raising a \$10,000,000 fund to guarantee the fair, and his first day's work netted \$4,000,000 in guarantees from the leading business men. The day following he found subscribers for the additional \$6,000,000. In May, it was announced that Maj. Lenox Riley Lohr, a native of Washington and recently editor of the *Military Engineer*, had been named manager of the next Chicago World's Fair.

The formation of a special committee of national leaders in all fields of pure and applied science to cooperate with the trustees of "The Century of Progress," which was the name officially adopted for the international exposition, was announced in June. This body of eminent advisers was to be known as the National Research Council advisory committee to The Century of Progress. The committee was formed by the National Research Council and was to be the recognized national scientific body to aid in the organization of the scientific features of the project.

The dominant note of the exposition was to be scientific progress in industry. The executive group of the advisory committee, appointed by Dr. George K. Burgess of the University of Chicago, included Dr. Frank B. Jewett, C. I. Johnson, Dunn, Prof. M. I. Pupin, Dr. William Allen Pusey, Dr. George K. Burgess, Dr. Vernon Kellogg, and Dr. Max Mason, and assisting this group will be the large general committee. President Rufus C. Dawes announced in June that "the supreme feature, architecturally and educationally, will be the Science Building. It will be the dominating note in the grouping of structures and of the spirit of the exposition. It will exhibit discoveries in law, science, and the inventions. The fair will be more of an exposition of methods and problems in science, the arts, and the industries than an exhibition of bales of fabrics and trainloads of products."

A great pageant showing a century of progress in the transportation field—highway, waterway, railway, and airway—was to be one of the big features of Chicago's 1933 centennial celebration. A plan was being developed by Edward T. Fawcett, who was director of the Fair of the Iron Horse, which the Baltimore & Ohio Railroad staged in 1927, acting in an advisory capacity. Wagon and automobile manufacturers, airplane builders, and the railroads of the country were to combine in presenting a great spectacle peopled with characters costumed in the fashions of various periods from 100 years before up to 1933.

New York. In the autumn of 1929, it was decided that plans for an exposition in New York City had not been abandoned, and according to Joseph Brown, secretary of the Washington Exposition of 1932, Inc., members of the commission were making a tour of the State to ascertain public sentiment on the proposal for a fine

arts, commercial, industrial, and educational exposition in 1932.

Belgium. As noted in the YFAR BOOK for 1928, p. 244, Belgium was to celebrate the 100th anniversary of its independence as a nation in 1930 by an international exposition to be held simultaneously in *Antwerp, Brussels, and Liège*. The Antwerp exposition was to be devoted to the colonies, shipping, transport, as applied to commerce, and the Flemish art prior to 1830, while in Brussels, an exhibition of Belgian art since 1830 was to be shown. In *Liège*, the exhibition was to be devoted to a demonstration of what the sciences and applied sciences owe to research workers.

A site with connecting bridges on both sides of the River Meuse had been selected and it included about 165 acres on which separate exhibition buildings devoted to the physical sciences and mathematics, chemistry, mineral, medical, and industrial sciences, and scientific and industrial tuition, as well as separate buildings devoted to metallurgy and engineering, mining, electricity, mechanics, small arms, cycles and motorcycles, chemical industries, crystal glass and ceramics, textile industry, transports, and civil engineering and public works were in the course of erection, also, there was to be a woman's palace in which were to be exhibited all kinds of wearing apparel, jewelry, and objects pertaining to woman's activities. In *Liège*, there was to be also an exhibition of Walloon art prior to 1830. Active arrangements had been made for nineteen international congresses and many of the larger nations, notably Brazil, China, France, Great Britain, Italy, Japan, Peru, and Sweden, officially announced their adhesion to the exposition, which has received a subsidy of 10,000,000 francs from the Belgian government and will be under the patronage of their majesties, the King and Queen of the Belgians, and the presidencies of their highnesses, the Duke and Duchess of Brabant.

TRADE FAIRS. *Lyons.* The International Sample Fair in Lyons, France, was held Mar. 4-17, 1929. Exhibitors to the number of 3513 were registered. The exhibits included metal manufactures, building materials, chemical products, toys, foodstuffs, automobiles, jewelry, clocks and watches, leather articles, furs, furniture, ceramics, and almost all types of merchandise.

The *Bordeaux Sample Fair* was held from June 16 to July 12, 1929, and the fifth annual *Marseilles Fair* was held in the Parc de l'Exposition, Marseilles, from Sept. 14-29, 1929. Colonial products were a feature of the exhibits.

Leipzig. The usual spring fair was held in Leipzig Mar. 3-9, 1929, and occupied 46 buildings, housing a great variety of exhibits. Several nations erected their own buildings, and in many cases with the active support of their respective governments. The housing facilities of the fair this year were considerably expanded by the construction of new buildings, including the "Petershof," which contained the exhibits of applied arts and some toys and musical instruments; there was also a structure for the display of confectionery, with space for 200 exhibits. These new buildings added greatly to the 300,000 square meters of exhibiting area which had been available in 1928.

The toy section consisted of 817 displays, exhibits of glassware and ceramics numbered 720, while those of textiles reached 647 and those of

various household appliances, 535. The technical fair, also known as the engineering and building fair, remained open until March 13. This new hall, bringing the total number up to 16, added some 9300 square meters to the available exhibiting space. As the name implies, this part of the show was devoted to the display of technical products for all lines of industry. Among others, complete exhibits of machinery and machine tools attracted considerable attention, other important displays were those of iron and steel goods, electrotechnical appliances, etc. In 1929, in addition, there were held various meetings dealing with packing methods and factory technique.

The American participation was greater than ever before, both as to buyers and exhibitors. There were nearly 3000 buyers from all parts of the United States, representing a wide variety of interests, and more than 100 characteristic American products were on exhibition. Records of the fair show that the United States had co-operated for more than 100 years. In 1783, when Benjamin Franklin was envoy to Paris, Leipzig sent its representatives asking his interest in obtaining American exhibits.

The autumn fair was held Aug. 26-31, 1929. The number of exhibitors was about 8000, or 1000 less than the previous autumn, and included 670 foreign firms from 21 countries, among them, 70 from the United States. The total space covered by foreign firms was slightly increased to about 500,000 square feet, a great percentage of this space being occupied by exhibitors of motor cars from the United States. "Quality" seemed to be the slogan of the autumn fair, a majority of the exhibitors following that idea, there was an absence of the customary cheaply made goods. The early orders indicated that the business would reach a total of it of the previous year's by about

It was hoped that Americans would organize their own section at the Leipzig Fair. The French, English, Japanese, and other nations all began with separate sections, and were reaching the entire European market through Leipzig. Americans could do well in Leipzig, especially in lines where their manufactures excel, such as machinery and office equipment. See, also, CHEMISTRY, INDUSTRIAL TRIAL.

EXTENSION WORK IN AGRICULTURE.

See AGRICULTURAL EXTENSION WORK.

EXTRATERRITORIALITY. See CHINA, under *History*.

FAILURES. See BANKS AND BANKING, BUSINESS REVIEW, FINANCIAL REVIEW.

FAIRS. See EXPOSITIONS.

FALCON ISLAND. Located in the southwestern part of the Tonga or Friendly Islands in the South Pacific (20° 19' south latitude, 175° 25' west longitude). This volcanic island reappeared for the third known time in October, 1927, when a violent eruption caused the emergence of a volcanic crater which, in May, 1928, had a maximum diameter of about 2 miles and a height of 365 feet. Named for H.M.S. *Falcon*, which visited the spot in 1865 and reported a shoal, the island attained an elevation of 200 feet by 1885. So quickly did it disintegrate that by 1898 it had practically disappeared. Two years later, it was 10 feet high, but in 1913 a shoal was again reported. The eruption of 1927 was the most violent on record. Explanation lies in the fact that this island is the top of an active volcano.

which, at times, erupts large quantities of easily eroded lava and pumice.

FALKLAND ISLANDS. A colony of the British Crown, situated in the South Atlantic, 300 miles east of the Strait of Magellan consisting of East Falkland, 2580 square miles; West Falkland, 2038 square miles, including in each case various adjacent small islands, about 100 in number. In addition to these are South Georgia, with an estimated area of 1000 square miles, and other dependencies, including the South Shetlands, the South Orkneys, the Sandwich group, and Graham Land, together with all unknown seas and lands of the Antarctic Ocean extending as far as the South Pole. The estimated population in 1929 was 2271. In 1926 the birth rate was 25.98 per thousand and the death rate, 14.09. The chief town is Stanley, with 950 inhabitants in 1926. Education is compulsory. Sheep raising is the chief industry, although whaling was carried on with some success. In 1926 there were 605,075 sheep with about 2,248,000 acres of pasturage. In 1927 the imports were valued at £769,305 and the exports, at £4,125,498. The chief imports were groceries, coal and coke, hardware and machinery, the chief exports, wool and whale produce. The revenue in 1927 was £274,494 and the expenditure, £203,151. Governor in 1929, Arnold W. Hodson.

FAMILY ENDOWMENT. See CHILD WELFARE.

FARM ACTIVITIES. See AGRICULTURE, AGRICULTURAL EXTENSION WORK, AGRICULTURAL LEGISLATION, AGRICULTURE, UNITED STATES DEPARTMENT OF, COOPERATION, DAIRYING, HORTICULTURE, LIVESTOCK, ETC.

FARM BOARD. See AGRICULTURE, AGRICULTURAL LEGISLATION.

FARM BUREAUS, FARM DEMONSTRATION, ETC. See AGRICULTURAL EXTENSION WORK.

FARM COOPERATIVES. See AGRICULTURE.

FARMER'S COOPERATIVE ASSOCIATIONS. See COOPERATION.

FARMERS' INSTITUTES. See AGRICULTURAL EXTENSION WORK.

FARMERS' NATIONAL GRAIN COOPERATION. See AGRICULTURE.

FARM LAND BANKS. See FINANCIAL REVIEW.

FARM RELIEF. See AGRICULTURAL LEGISLATION.

FARMS, FARMING. See AGRICULTURE.

FARNUM, DUSTIN American actor, died in New York, July 3, 1929. He was born of a family of actors on May 27, 1876, in Hampton Beach, N. H. He made his debut with the Ethel Tucker Company in 1897. He played always in romantic and virtuous roles, achieving his greatest success in the title part of *The Virginian*. In motion pictures, also, to which he went from the stage, he portrayed a similar type of hero.

FAROE ISLANDS. A group of 21 islands belonging to Denmark and lying midway between the Shetlands and Ireland Area, 540 square miles, population in 1925, 22,835. See DENMARK, under *History*.

FARQUHAR, JOHN NICOL English educator and student of comparative religion died on July 17, 1929, in Manchester. He was born in Aberdeen, Scotland, Apr. 6, 1861, and was educated at the universities of Aberdeen, Manchester, and Oxford. He was a missionary in India from 1891 to 1923, and in his subsequent teaching, writing, and lecturing, he endeavored to

interpret Indian thought and religion. After 1924 he was professor of comparative religion in the University of Manchester. He was a lecturer at Hartford Theological Seminary, Hartford, Conn., in 1913, and at Oxford, after 1927. He wrote *A Primer of Hinduism* (1912), *The Crown of Hinduism* (1913), *Modern Religious Movements in India* (1915); *An Outline of the Religious Literature of India* (1920).

FASCISM. See GERMANY, AUSTRIA, ITALY, under *History*.

FEDERAL COUNCIL OF THE CHURCHES OF CHRIST IN AMERICA. An organization established in 1908 by 28 Protestant denominations to act for them in matters of common interest. At the end of 1929, it included most of the major Protestant denominations of the United States, as follows: Northern Baptist Convention; National Baptist Convention, Free Baptists, Seventh-day Baptists, General Convention of the Christian Church, Churches of God in North America (General Eldership), Congregational churches, Disciples of Christ; Evangelical Church of North America, Friends, Methodist Episcopal Church, South, African Methodist Episcopal Church; African Methodist Episcopal Zion Church, Colored Methodist Episcopal Church in America, Methodist Protestant Church, Moravian Church, Presbyterian Church in the United States of America, Presbyterian Church in the United States (South), Protestant Episcopal Church, Reformed Church in America, Reformed Church in the United States, Reformed Episcopal Church, United Brethren in Christ, United Presbyterian Church of North America, United Lutheran Church in America. Of these, all were full and official members with the exception of the United Lutheran Church, whose relationship was consultative, and the Protestant Episcopal Church, whose national council operates in certain specified areas of work.

The total number of local churches included in the constituency of the Federal Council, according to the Census of Religious Bodies issued by the United States Government in 1926, was 136,076, clergymen numbered 116,644 and the total communicant membership, 22,010,312. The council, made up of members designated by the several denominations to act for them, meets quadrennially, the last meeting having been held in Rochester, N. Y., in 1928. It has an executive committee, of about 100, meeting annually. An administrative committee, including one or more official representatives from each of the denominations, meets monthly in New York City. This committee includes cooperative agencies carrying on specialized work for the churches, among them being the Home Missions Council, the Council of Women for Home Missions, the Council of Church Boards of Education, the American Bible Society, the Student Volunteer Movement for Foreign Missions, and the International Council of Religious Education. The council also serves as a connecting link between the church and great social agencies, such as the American Red Cross, child-welfare agencies, and the U. S. Bureau of Public Health.

Special tasks of the council are carried on by a group of commissions. The commission on evangelism develops a united approach to the evangelistic work of the churches. The commission on the church and social service is the centre through which the churches deal unitedly with

social issues, giving particular attention to the developing of better relations in industry. The department of research and education issues a weekly information service bulletin in which contemporary social questions are discussed from the standpoint of Christianity, it also makes special studies from time to time, the outstanding ones in 1929 being a report on the textile situation in a group of Southern mills and a handbook of rural social resources. The commission on church and race relations furthers efforts of the churches in promoting cooperation and good will between the white and colored peoples in the United States. The commission on international justice and good will endeavors to mobilize the Christian forces to abolish war by building up effective international agencies for cooperation, devoting its attention during 1929 to such questions as the reduction of naval armaments and support of the Permanent Court of International Justice. Other commissions of the council deal with Christian education, relations with religious bodies in Europe, religious work in the Canal Zone, Army and Navy chaplains, relations with the Eastern churches. The Church and Drama Association was organized in 1927 for uniting all religious forces in support of the worthwhile productions on stage and screen.

The programme of the council is carried on with funds contributed in part by individuals interested in the work and in part by appropriations from the various denominations. The official organ of the council is the *Federal Council Bulletin*, issued monthly and furnishing general religious news. The officers in 1929 were President, the Rev. Francis J. McConnell, Methodist Episcopal bishop of the New York City area, chairman of the executive committee, the Rev. Walter L. Lingle, president of Davidson College, chairman of the Washington committee, the Rev. William F. McDowell, Methodist Episcopal bishop of the Washington area, chairman of the Western committee, the Rev. Herbert L. Willett. National offices are at 105 East Twenty-second Street, New York City, the general secretaries being the Rev. Charles S. Mactairland, the Rev. John M. Moore, and the Rev. Samuel McCrea Calvert. Offices also are maintained in the Woodward Building, Washington, and at 77 West Washington Street, Chicago.

FEDERAL FARM BOARD. See AGRICULTURE.

FEDERAL PRISONS. See CRIME.

FEDERAL RESERVE BANKS. See BANKS AND BANKING, also FINANCIAL REVIEW.

FEDERATED MALAY STATES. A group of states, constituting a large part of the Malay Peninsula, under the protection of Great Britain, comprising Perak, with an area of 7800 square miles, population in 1921, 590,063; capital, Taiping, Selangor, 3156 square miles, population, 1921, 401,009, capital, Kuala Lumpur, the largest city in the federation with a population of 80,000, Negri Sembilan, 2550 square miles, population, 1921, 178,762, capital, Seremban, Pahang, 14,000 square miles, population, 1921, 140,004, capital, Kuala Lipis. The total area is 27,506 square miles, the population in 1921 was 1,324,890, including 510,821 Malays, 494,548 Chinese, 305,219 natives of India, 5686 Europeans, and 3204 Eurasians. The males greatly outnumber the females (853,528 to 471,362), due to the large number of Chinese and Indian immigrants. The estimated population in

1928 was 1,533,611. During 1924-28 births averaged 44,389 and deaths, 30,980, annually. In 1927 there were 47 English schools, with an enrollment of 12,300 boys and 3332 girls. There were 1132 Chinese schools under the control of the educational department numbered 1132, with an average enrollment of 61,131. There are many vernacular schools for the Chinese not maintained by the Government.

PRODUCTION. Rice, coconuts, rubber, sugar, tapioca, pepper, gambier, and nipa palms are the chief products. The main industries are the raising of rubber and the mining of tin. In addition to valuable timber, the forests produce resins, canes, gutta-percha, etc. Besides tin, gold and coal are mined extensively, other minerals found but not worked in quantities are lead, iron, copper, manganese, silver, zinc, plumbago, mercury, arsenic, and scheelite. Coal production totaled 520,705 tons in 1928, tin and tin ore, 61,861,898 tons. The labor force engaged in mining at the end of 1927 was 122,888. The imports in 1927 totaled £20,309,979 and the exports £39,619,922. The chief imports were rice, opium, tobacco, cigars, cigarettes, cotton piece goods, petroleum, machinery, wheat flour, condensed milk, and sugar. The chief exports, rubber, copra, tin, timber, and hides. In 1928 net rubber exports totaled slightly under 300,000 tons. Advance estimates placed the 1929 production at between 300,000 and 350,000 long tons.

FINANCE. Revenues of the Federated Malay States have been well in excess of expenditures for some years, the revenues for 1927 totaling £12,297,187 (£11,963,163 in 1926) and the expenditures, £10,880,790 (£10,227,437 in 1926). Export duties on rubber and the opium excise taxes are the chief sources of revenue. The Government has contributed £2,000,000 toward the naval base at Singapore, payable in five annual installments. The public debt on Jan. 1, 1928, was £9,355,000.

COMMUNICATIONS. The railway system, which is government owned, embraces 1036 route miles, mostly single track. Due to intensive motor competition, the net earnings for 1928 dropped to £302,366, as compared with £420,701 in 1927. Freight receipts increased 171 per cent because of heavy rubber shipments, but passenger receipts dropped 94 per cent. In 1927 there were 2600 miles of metalled cart roads and 113 miles of unmetalled roads. In the same year, there were 2602 miles of telegraph and telephone lines.

GOVERNMENT. The states are under British protection and the British Government is represented by the Governor of the Straits Settlements, who is *ex officio* High Commissioner for the Federated Malay States. There is a native ruler, assisted by a British Resident, in each of the four states. High Commissioner in 1929, Sir Hugh Charles Clifford.

FEDERATION OF LABOR, AMERICAN. See LABOR, AMERICAN. FEDERATION OF.

FENCING. The splendid work of Frank S. Righmer, Jr., a Yale University star, and Boston A. A. member, and John, former Columbia University star and a member of the Fencers Club of New York City, was the feature of the 1929 season. Righmer captured both the indoor and outdoor national *épée* crowns with comparative ease, and also won third place in the national foil class, behind Joe Levin who captured both foil honors, and Lieutenant George C. Calnan, U. S. N., former titleholder, Leo Nunes,

New York Athletic Club, gained the national sabre title, with Cohn, second and John R. Huffman, third. Cohn, however, took the outdoor championship at Trevers Island, N. Y.

Mrs. Leon M. Schoonmaker of the Fencers Club won the national women's foils championship, while she and Miss Lloyd were also members of the leading international foil team Mrs. Harold Van Buskirk gained the national junior foil championship.

The Yale University fencers again gained the intercollegiate title, winning the team crown for the third successive year. R. G. H. was the star of the Eli squad, capturing, with the, in the foils and sabres events, and thus making intercollegiate history. The Navy and Army teams finished in that order behind the Yale swordsmen. Chicago University gained the laurels in the Western Conference competition at Chicago, nosing out Wisconsin by a narrow margin.

FERTILIZERS. The fertilizer industry made use of the rapid developments in the production of fixed nitrogen compounds and of concentrated fertilizers, thus benefiting agriculture by making available cheaper and more satisfactory sources of plant-food materials. This was reflected in the constantly increasing use of inorganic fertilizer materials, the tendency to eliminate low-grade fertilizers, and the increased use of synthetic fertilizer salts. Salts containing two and even three elements of plant food and representing concentrations as high as 85 per cent were developed as substitutes for salts containing only one plant-food element. The fitness of these materials both for the fertilizer trade and in the field was demonstrated. As a result, fertilizer mixtures containing as high as 60 per cent plant food are now being marketed successfully at a lower price and a greater profit.

The Report of the Secretary of Agriculture, 1929, states that the new nitrogen materials are characterized by high plant-food concentration, urea, for example, containing 46 per cent nitrogen, having been demonstrated to be a valuable nitrogen fertilizer of ready availability to plants. New compounds of phosphorus, such as double superphosphate containing 43 to 46 per cent of available phosphoric acid, were developed. Potash salts of high potash content also were available as fertilizers.

The direct treatment of potash or phosphate bearing raw materials with nitric oxide, for the production of materials containing two or more essential plant foods, also showed considerable promise. A number of both potassic and phosphatic materials were found suitable for this direct treatment. Treating a concentrated solution, obtained by passing water and nitric oxides in a counter current manner over phosphate rock, with the basic materials, accelerated the fixation of nitrogen oxides from ammonia oxidation as nitrates and the liberation of fertilizer elements in an available form.

Fertilizer consumption in the United States was estimated at approximately 8,000,000 short tons during 1929. This was considerably below the potential productive capacity of the factories, which was reported to be in the neighborhood of 12,000,000 tons of complete fertilizer per year. The United States also was below European countries in the profitable use of fertilizers. According to Director J. G. Lipman of the New Jersey Agricultural Experiment Stations (Pro-

ceedings of the Fifth Annual Convention of the National Fertilizer Association, 1929, pp. 123-129) the average annual applications of nitrogen, phosphoric acid, and potash in round numbers per acre reached 50 pounds in Germany, 20 pounds in France, 16 pounds in Great Britain, and 99 pounds in Holland; whereas in the United States they averaged only 5 pounds. This means that about three times as much plant food per acre was used in Great Britain, about four times as much in France, ten times as much in Germany, and nearly twenty times as much in Holland as in the United States. The annual removals of plant food from the soil per acre by crops and leaching in the United States were estimated roughly to be equivalent to 30 pounds each of nitrogen and potash, and 12 pounds of phosphoric acid. Thus the farmers of the United States are replacing only 3 per cent of the nitrogen, 25 per cent of the phosphoric acid, and 33 per cent of the potash removed annually from the soil by crops.

The latest available figures indicated a considerable increase in quantity and value of exports and a decided decrease in imports of fertilizers and materials by the United States during 1929, as compared with the previous year, the differences in quantities amounting to somewhat over 200,000 long tons in both instances. Exports of rock phosphate increased considerably, but exports of superphosphates showed a slight decrease. Imports of phosphates showed a marked decrease. Imports of nitrogenous fertilizers showed a decided decrease of over 100,000 long tons. Imports of both nitrate of soda and sulphate of ammonia decreased. There was a decided increase in imports of synthetic nitrogen compounds and like products. Exports of sulphate of ammonia increased considerably. Imports of potash fertilizers decreased decidedly. There was a slight increase in exports of fertilizer mixtures and other fertilizers.

All but about 320,000 out of several million tons of nitrogen going annually into the soils of the United States is produced as manure, by bacterial fixation or is carried down in rain. The necessary auxiliary supply now comes mainly from Chilean nitrate, by-product sulphate of ammonia, cyanamid, and other fixation products. The annual inorganic nitrogen supply of the United States totals about 400,000 tons of pure nitrogen. This amount varies from year to year, the tendency being toward steady growth in coke-oven production and more rapid growth in air-fixation output. The United States was still dependent in large measure upon imports for its nitrogen supply. Agriculture was by far the largest user of nitrogen and led also in the variety of forms used.

The growth in the world's fixed-nitrogen industry was marked. This advance has been made mainly under private auspices and initiative. The Italian nitrogen industry is now in a position to fix 67,500 metric tons of nitrogen annually, of which 44,000 tons are produced by the synthetic ammonia process, 20,000 in the form of calcium cyanamid, and 3500 as by-product ammonia. The bulk of the ammonium sulphate consumed in Italy is supplied by the domestic synthetic ammonia industry. The growth of the fixed nitrogen industry in Great Britain, especially of the synthetic ammonia process, has lowered the prices of all nitrogenous fertilizers. The contributions of Germany to the world's supply of nitro-

enous fertilizers are almost entirely of synthetic origin and include among other products, potassium nitrate manufactured by a new process. Shipments of ammonium sulphate during the first 9 months of 1929 from Germany to all countries amounted to 528,933 metric tons. It appears that synthetic nitrogen is now second only to Chilean sodium nitrate in its influence on the world's nitrogen supply. During the year, for the first time, nitrogen fixed within the United States became an important part of the total supply and for the first time domestic production went directly into fertilizer.

The phosphate industry was well stabilized during the year on the basis of well-known practical methods, and new methods were being developed and put into use which will have a direct bearing upon the concentrated fertilizer industry. A continuation of the study of fluorine compounds as by-products of the phosphate industry indicated that a general recovery of the fluorine in the manufacture of superphosphates would result in the production of compounds having a direct value of \$3,000,000 annually. Study was continued on cheaper methods of producing liquid phosphoric acid from phosphates, and tests of the reduction of phosphate rock in the blast furnace gave added evidence of the feasibility of this process. Discovery and exploitation of phosphate deposits in different parts of the world were reported. Notable among these was the opening up of the new deposits in former German South West Africa by a German concern.

The development of new sources of potash in different parts of the world continued. Notable among these is the Solikamsk deposit in Russia, estimated at about 500,000,000 tons of crude materials. American production increased, however, while rapid progress is being made in establishing an American potash industry, the United States exports annually \$18,000,000 for potash imported from Europe, mainly from German and French sources, according to the *Report of the Chief of the Bureau of Chemistry and Soils* for 1929. According to the latest available figures, about three-fourths of the world's output of potash (nearly two and a quarter million metric tons of K_2O) is produced in Germany.

The exports of fertilizer materials from the United States during 1927 to 1,535,000 long tons, valued at \$1,534,723, were more than one fourth greater than the 1928 tonnage and only 4000 tons less than in 1913, the year of maximum exports. The accompanying table shows the trend of the United States export trade in fertilizer materials during the year 1927-29.

UNITED STATES EXPORTS OF FERTILIZER MATERIALS

Commodity	1927	Long tons 1928	1929
Ammonium sulphate	138,692	93,015	145,189
Other nitrogenous materials	8,951	7,772	24,358
High grade phosphate rock	128,774	89,702	67,474
Land pebble and other phosphorous rock	789,437	809,062	1,075,272
Superphosphates	107,507	88,613	85,118
Mixed and other fertilizers	97,682	130,674	137,312
Total	1,271,043	1,218,838	1,534,723

Japan was the principal buyer of ammonium sulphate, taking 60,000 tons, or 41 per cent, of the total, followed by the Netherland East In-

dies, with 37,000 tons, the Philippines with 30,000 tons, and Cuba with 10,000 tons. Shipments of other nitrogenous materials reached 24,000 tons, with exports to Canada, Germany, the Philippines, and Japan doubled, the total sales to these four countries attaining nearly four-fifths of the entire foreign sales. Mexico, Cuba, and the Netherland East Indies also were purchasers.

BIBLIOGRAPHY. Sources of information regarding progress in the production and use of fertilizers are numerous. Attention is drawn especially to the following: Current progress in the fertilizer industry is recorded in *The Fertilizer Review*, published by the National Fertilizer Association at Washington, D. C. Statistics of the fertilizer trade and industry will be found in reports of the Bureau of Foreign and Domestic Commerce, especially in the weekly *Commerce Reports*, and of the Census Bureau of the Department of Commerce. A publication of special interest was "New Fertilizer Materials and Their Uses," by J. J. Skinner (North Carolina Experiment Station Circular 22). Recent books of interest are *Handbook of Fertilizers* by A. F. Gustafson (New York and London, 1928), and *A Bibliography on Concentrated Fertilizers and Fertilizer Materials*, by W. H. Ross (Washington, D. C., 1928).

FESTIVALS. See MUSIC.

FICTION. See LITERATURE, ENGLISH AND AMERICAN, FRENCH LITERATURE, GERMAN LITERATURE, ITALIAN LITERATURE, SCANDINAVIAN LITERATURE, SPANISH LITERATURE.

FIDELITY AND SURETY INSURANCE.

See INSURANCE.

FIELD ATHLETICS. See ATHLETICS, TRACK AND FIELD.

FIELDING, WILLIAM STEVENS. A Canadian statesman who died June 23, 1929, and was born in Halifax, Nova Scotia, Nov. 21, 1848. He was educated in the public schools of Halifax and in 1864 became a reporter on the Halifax *Morning Chronicle*, of which he was later managing editor. He resigned this position to represent Halifax in the Provincial Legislature, 1882-96. He was provincial Prime Minister, 1884-96, resigning to become Minister of Finance in the cabinet of Sir Wilfrid Laurier. He held the portfolio of Minister of Finance, 1896-1911, and again, 1921-25, and during these years secured the enactment of tariff regulations favorable to Canadian trade. He represented Canada at the Colonial Conference in London, 1902. He was one of the British plenipotentiaries for the negotiation of the Franco-Canadian Commercial Treaty in Paris (1907), the Supplementary Treaty (1902), the Franco-Canada Commercial Treaty (1922), and the Italian Canadian Treaty, London (1922). He effected commercial arrangements with Germany, the United States, Italy, and Belgium, 1909-10, and with Japan, 1911. He was a member of the British Royal Commission on Canada-West India (1909-10) and one of the Canadian commissioners who negotiated the Reciprocity Agreement with the United States in 1911. He was one of Canada's representatives to the League of Nations at Geneva, 1922.

FIJI ISLANDS. A British Crown colony, comprising a group of islands in the South Pacific about 250 in number (some 80 inhabited). Area 7083 square miles, population at the census of 1921, 157,266, of whom there were 84,475 Fijians, 60,834 Indians, and 3878 Eu-

ropeans The estimated population Jan 1, 1928, was 173,836, including 4480 Europeans, 90,263 Fijians, and 69,463 Indians The largest island is Viti Levu (4053 square miles) and the next, Vanua Levu (2130 square miles). The capital, Suva, on the south coast of Viti Levu, had a European population (including suburbs) of 1741 in 1927 Coconuts, sugar cane, rice, tobacco, maize, tropical fruits, and cotton are the principal products. Horses, mules, cattle, sheep, goats, and pigs are raised In 1927 exports were valued at £1,997,374 and the imports, at £1,223,303 The revenue in 1927 was £586,574, expenditure, £534,939, public debt, £153,550 The total tonnage which entered and cleared in 1927 was 1,278,757 tons A privately owned small-gauge railway runs 120 miles from Tavua to Sigatoka The executive power is vested in a governor, appointed by the Crown, aided by an executive council and a legislative council of which the governor is president The governor is also high commissioner for the Western Pacific Governor in 1929, Sir Eyre Hutson, appointed 1925

FINANCES See PUBLIC FINANCE, U S

FINANCIAL REVIEW. Business in the United States during the year 1929 passed through two distinct periods The first was characterized by very great activity and lasted until about midsummer, or a little later, in most industries It was then followed by decided recession, one feature of which was the outbreak of a severe financial panic during the latter part of the month of October The primary phenomena of the panic then continued throughout November and December and their reflex effect on business was almost immediately visible in a further reduction of activity and of employment Simultaneously, new financing sank to almost nothing, and enjoyed only a very slow recovery Rates of interest and discount had been exceedingly high, prior to the October panic, but, with the lessening of brokers' loans and the reduction of financial activity, a very great lowering of rates occurred in the open money market although there was no saving in the actual cost of capital to the ordinary business enterprise Public speculative buying, which had been attaining wholly unexampled proportions prior to the panic, was followed by a sharp fall after the recession by heavy selling in the market of the stock exchange being of a size and activity never before approached This was later followed by a reaction to subnormal conditions

STOCK EXCHANGE OPERATIONS The actual volume of operations on the exchange reached a figure close to 1,125,000,000 shares for the year, as compared with the previously unknown level of 920,000,000 shares in 1928 which itself was greatly in excess of the 577,000,000 shares of 1927 The total volume of bonds traded in 1929 which as well as their prices had a little off during the stock movement) was a little over \$3,020,000,000, as against \$2,939,000,000 the year before The extraordinary breadth of trading in stocks produced a series of remarkable days during October and November on one of which (October 29) the volume of transfers was 10,400,000 shares, while there was not a single day on which less than a total of 1,000,000 shares was transferred The exchange reported that there were 122 days which exceeded 4,000,000 each and 37 which exceeded 5,000,000, the tremendous buying followed by the even more tremendous selling after the panic kept the staffs of brokerage

houses feverishly employed, while, before the breakdown, the most active seats had sold as high as \$625,000 they all after the break to little more than half that figure

This recession, although most striking from and after October 23, when the market 'break' took place, did not come on as suddenly as many persons were inclined to believe For six or eight months prior to the break, there had been a decided tendency on the part of various groups of issues to fall into a quiescent condition and to tend either to become stabilized or actually receded In normal circumstances, the effect of such a tendency would have been to bring about a decided reaction throughout the whole list, but on this occasion, the situation merely caused the greater concentration of trading in a comparatively small group of some 50 or 60 favorite shares in which nearly all of the business came to be massed, and in which the turnover was tremendously heavy, at times highly abnormal The advances in price which were scored by this small list of stocks were, however, sufficient to offset the sections of the list which were either stable or reactionary, so that an index of 50 representative shares showed at the high point of the year a combined average of 311.90 for the week ending September 21, as compared with a low of 192.00 at the end of the week closing December 28 and 218.26 a year earlier, while a similar index of 40 representative bonds showed a quotation of 93.60 at high point in May, as compared with 80.24 during August, just before the panic had taken effect and had tended to drive funds out of the stock market and into bonds

Notwithstanding the fact that a great many financial authorities at the coming on of a breakdown, it had been impossible to shake the confidence of the average investor in securities and there had been a pretty general acceptance of the view that a new era in security investment had opened, during which it would be possible to ignore many of the warnings and symptoms which in former years had been regarded as decisive, it is probable that a primary degree of responsibility in this matter must be allotted to the banks which continued to furnish an almost unlimited amount of lending power The total of loans on securities made by all banks just before the panic was probably in the neighborhood of \$18,000,000,000 or more, estimating the total for all banks of the United States, while partly included in this total were about \$8,500,000,000 of brokers' loans, as reported by the New York Stock Exchange

It had been impossible to convince the banks of the country at large that they were not satisfactorily protected by the 50 per cent margins, which, in many cases, they had exacted, and there were few persons who were willing to admit that a positive shrinkage of one-half could possibly take place in the general average of the securities list This great confidence was partly supported by genuine prosperity in industry, including the development of a much higher degree of efficiency and a much larger output of goods per man than in former years, but it was also promoted by the same stock-jobbing methods that had been employed in 1928—the splitting-up of shares so as to issue a much greater number in exchange for those previously held, the declaration of stock dividends on a large scale, the actual payment of regular dividends in stock, and manipulation

designed to bring about artificial advances or to "peg" securities already issued at specified prices.

It is probable that even these manipulative methods would not have been in any degree as successful had it not been for the fact that, in addition to the maintenance of a fairly strong base of underlying business, with substantial prosperity on the part of numerous branches, foreigners, including many who had heavily borrowed in the United States during recent years, were induced to enter the speculative field and so to return to this market for the purchase of securities a great deal of money with which they could not very well afford to part.

It was almost inevitable that as a result of the general speculative mania and the real prosperity that existed here and there, there should have been considerable overproduction in certain directions. Thus, for example, the automobile trade which had been realizing large profits, became tremendously overproduced, so that at the end of the year a surplus of new cars said to be more than 500,000 was on hand, while enormous numbers of used cars were also seeking sale. In the oil industry, where overproduction had threatened for a number of years, conditions steadily became worse during the forepart of 1929, with the result that production control methods were introduced and began gradually to take effect during the latter part of the twelve months. Thus, however, did not prevent the development of a very large surplus stock in excess of what had prevailed the year before, while during the later weeks of the year, the stock of gasoline on hand also greatly exceeded consumption.

In copper, where rigid methods of control of production had been applied about a year before, prices were forced up to 24 cents a pound at the beginning of April, then fell back to 18 cents, at which point they were "stabilized" during the remainder of the year, but only at the cost of a very great increase in the stock of unused copper which was more than double (for the refined product) at the end of the year, what it was at the beginning. Copper shares, which had had a tremendous advance before the panic, lost very severely, dropping in many cases to little more than 50 per cent of their original prices.

The outstanding feature of the public utility market during 1929 was the continuation of the merger movement which carried further the process of reorganizing the industry that was already begun the year before and incidentally resulted in tremendous inflation of values, as compared with earnings or dividends, or even prospects of future success.

New Issues. New issues during 1929 were

were immensely overissued, and assumed a distinct place as a speculative element in the market. Industrial stocks increased during the year, as compared with the preceding year, when they were already very high, by 10 to 12 per cent, financial stocks, by well toward 100 per cent, while there was a reduction of marked character in the issuance of public utility shares. Bond issues declined in practically all branches of business, although there was an increase in the State and municipal field.

According to the compilations of the *Journal of Commerce* (New York), the new and refunding issues of 1929 classified by type of issue and compared with those for 1928 are as indicated in the accompanying tabulation.

SUMMARY OF NEW FINANCING [From *Journal of Commerce*, New York]

	1929	1928
FOREIGN		
Government and municipal Bonds	\$178,816,161	\$764,943,000
Corporate Bonds	251,000,000	599,860,000
Stocks	11,501,847	211,690,982
Total	281,501,847	811,550,982
Total foreign	461,120,008	1,576,491,982
DOMESTIC		
State and municipal Bonds	1,074,476,451	923,941,316
Railroad Bonds	466,418,000	440,115,000
Stocks	62,221,620	228,388,841
Total	528,659,620	668,503,843
Public utility Bonds	920,214,500	1,357,577,325
Stocks	618,910,226	1,072,572,892
Total	1,559,144,726	2,430,150,217
Industrial Bonds	579,998,700	768,544,877
Stocks	1,998,365,351	1,542,155,971
Total	2,578,364,051	2,310,890,808
Financial Bonds	119,569,500	202,557,890
Stocks	1,934,926,607	998,771,143
Total	2,271,496,107	1,201,329,011
Farm loan Bonds		43,925,000
Real estate Bonds	189,272,500	527,895,000
Stocks	87,099,235	11,194,500
Total	276,371,735	539,089,500
Domestic bonds, total	3,609,969,651	4,204,546,368
Domestic stocks, total	4,721,141,019	3,853,283,449
Total domestic	\$8,291,512,690	\$8,117,829,717
Grand total	\$8,754,832,698	\$9,694,323,699

PROPORTION OF REFUNDING

	New Capital	Refunding	Total
Foreign—			
Government and municipal	182,641,161	16,175,000	178,816,161
Corporate	251,053,817	33,450,000	284,503,847
Domestic—			
State and municipal	1,060,170,451	14,306,000	1,074,476,451
Railroad	501,159,620	27,500,000	528,659,620
Public utility	1,378,780,546	180,964,180	1,559,144,726
Industrial	2,205,562,950	372,801,101	2,578,364,051
Financial	2,247,755,107	26,741,000	2,274,496,107
Real estate	265,862,360	10,500,375	276,371,735
Total	\$8,072,986,042	\$681,846,656	\$8,754,832,698

heavy, so far as stocks were concerned, but showed a great falling off in the foreign field. Particular expansion occurred in the field of investment trusts and other financial stocks which

MOVEMENT OF GOLD. During 1929 the movement of gold into the United States which had vigorously set in at the close of the preceding year, was maintained up to the close of October

with the result that about \$250,000,000 was imported (net). The movement then turned, and about \$112,000,000 was exported during the remainder of the year. This change was due directly to the alterations which attended the panic of October and was attended by a very great change in the movement of international trade. The Federal Reserve statement for the year showed a decided gain of gold over the year 1928, but comparative figures for different dates during 1929 indicated steady loss of this gold, so that at the end of the year the actual increase was not more than \$300,000,000.

Especially noteworthy were the redistributions of gold among Federal Reserve banks, the Reserve Bank of New York losing during the autumn about \$300,000,000. The ingress of gold during the first 10 months of the year was primarily due, it would seem, to the heavy purchase of

full gold redemption of her currency and thus tended to lose gold somewhat. See JAPAN, under Finance, for announcement of proposed lifting of gold embargo on Jan 11, 1930.

Movements of gold between the United States and other countries remained about normal while the flow of silver to the Eastern countries continued on a large scale, the rapid decline in the value of silver (measured in gold) during the latter part of the year, tending to make it profitable to ship actual bullion in settlement of debts. Federal Reserve banks continued the practice of earmarking gold for the purpose of avoiding actual shipments but the utility of this particular method of dealing with the matter was less and less favorably viewed and lost the prestige that it had appeared likely to have. A survey of the movement of gold is furnished in the accompanying table.

ANALYSIS OF CHANGES IN MONETARY GOLD STOCK

(From Federal Reserve Bulletin)
(End-of-month basis In millions of dollars)

Month	Gold stock at end of month	Increase (+) or decrease (-) during month			
		Total	Through net gold import or export	Through normal banking operations	Through domestic production, etc.*
1927—November	4,451	- 89.7	- 53.2	- 40.0	+ 3.5
December	4,379	- 71.7	- 67.4	- 8.5	+ 4.2
Total (12 mos.)		-112.7	+ 6.2	-160.1	+41.2
1928—January	4,373	- 6.0	- 13.8	+ 5.5	+ 2.3
February	4,362	- 11.2	- 11.1	+ 2.9	- 3.0
March	4,305	- 57.6	- 94.9	+ 35.8	+ 1.5
April	4,266	- 38.7	- 91.2	+ 45.7	+ 6.8
May	4,180	-105.7	- 81.7	- 26.5	+ 2.5
June	4,109	- 51.0	- 79.9	+ 30.1	- 1.2
July	4,111	+ 1.4	- 63.9	+ 60.9	+ 6.4
August	4,123	+ 10.3	+ 7	+ 5.9	+ 3.7
September	4,125	+ 2.1	+ 5	+ 1.2	+ 2.8
October	4,142	+ 17.3	+ 13.4	+ 12	+ 2.8
November	4,128	- 14.0	+ 6.7	- 25.0	+ 4.1
December	4,141	+ 13.2	+ 23.3	- 15.7	+ 5.6
Total (12 mos.)		-237.9	-392.0	+134.6	+34.5
1929—January	4,127	- 14.4	+ 47.1	- 65.0	+ 3.5
February	4,153	+ 26.4	+ 25.5	-	+ 0.9
March	4,188	+ 34.4	+ 24.8	+ 7.5	+ 2.1
April	4,260	+ 72.4	+ 21.1	+ 48.6	+ 0.7
May	4,301	+ 40.6	+ 23.6	+ 16.1	+ 0.9
June	4,324	+ 23.4	+ 30.2	- 7.5	+ 0.7
July	4,341	+ 16.3	+ 34.7	- 22.0	+ 3.6
August	4,360	+ 18.9	+ 18.4	- 1.0	+ 1.5
September	4,372	+ 12.1	+ 17.6	- 6.6	+ 1.1
October	4,386	+ 14.4	+ 17.5	- 4.5	+ 1.4
November	4,366	- 19.8	- 23.2	+ 1.0	+ 2.4
December	4,284	- 82.3	- 64.4	- 22.0	+ 4.1
Total (12 mos.)		+142.4	+175.1	- 55.4	+22.7

* For detailed explanation of this figure, which is derived from preceding columns, see Federal Reserve Bulletin for December, 1928, p. 831.

securities which had been made in the United States by foreign speculative investors attracted by the stock-exchange movement, while the outflow of gold in the latter part of the year was fundamentally dictated by the withdrawal of capital on the part of foreigners.

Other elements which tended to work in the same direction were the reduction of the export balance of the United States during the latter part of the year, while during the forepart heavy claims upon foreign countries had continued to accumulate as a result of tremendous sales of goods abroad. Among those who drew most heavily on the United States for gold, the Bank of France continued to be the outstanding element, while Argentina, which had taken gold during the year before, now lost it to the United States and was eventually obliged to suspend payments in gold. Japan, on the other hand, resumed the

INTERNATIONAL BALANCE. Export business went ahead rapidly during 1929, especially during the forepart of the twelve months, but the same causes which were working toward the breakdown of the financial structure, and among them particularly, the fact that the high interest rates at home had practically cut off foreign borrowing in the United States, and had thereby prevented Americans from financing the foreigner's purchases, were working powerfully against the further development of American business. As a result, the months of October, November, and December showed great reductions in business, and although for the year we exported merchandise worth \$5,248,000,000, an increase of \$120,000,000 over the preceding year, and imported only \$4,400,000,000, leaving a net balance of \$848,000,000 in our favor, the last three months of the year had shown decided shrinkage, not merely as

FOREIGN TRADE OF THE UNITED STATES, 1929

1929	Merchandise			Gold			Silver		
	Exports	Imports	Excess of Exports	Imports	Exports	Excess of Imports	Imports	Exports	Excess of Exports
January	488,023	368,897	119,126	48,577	1,378	47,199	8,264	8,260	4
February	441,751	369,442	72,309	26,913	1,425	25,488	6,595	4,458	2,137
March	489,849	383,818	106,031	26,470	1,635	24,835	7,814	6,435	1,379
April	425,284	410,666	14,598	24,687	1,594	23,093	5,752	3,957	1,795
May	585,013	400,149	184,864	24,098	487	23,611	7,485	4,802	2,683
June	393,176	353,403	39,773	30,782	550	30,232	5,445	5,022	423
July	402,859	352,981	49,878	35,525	807	34,718	6,795	4,723	2,072
August	380,751	369,358	11,393	19,271	881	18,390	8,522	7,345	1,177
September	437,161	351,304	85,859	18,781	1,205	17,576	4,374	4,111	263
October	528,322	391,063	137,259	21,321	3,805	17,516	7,814	5,403	1,911
November	442,311	338,551	103,758	7,123	30,289	23,166	8,678	5,144	3,534
December	434,000	311,000	123,000	8,121	72,547	64,426	6,359	4,477	1,882
Total	\$5,248,488	\$4,400,634	\$847,848	\$291,649	\$116,588	\$175,066	\$83,397	\$69,937	\$19,460

compared with the earlier months of 1929, but also as compared with the corresponding months of a year earlier. In the accompanying table, showing the balance of international payments computed in 1929, for the year 1928, is furnished the background for these changes during the 12 months of 1929. The following figures also supply a survey of the export-import situation of the year 1929.

COMMODITY PRICES. The comparative stability of prices which had been noticeable during the years 1927 and 1928, continued during the year 1929, although with a tendency to recession toward the end of the year. This apparent stabil-

ity was viewed by the more conservative observers of the situation as being due to the general credit inflation which prevented the decline of prices that would otherwise probably have followed upon the great increase in the output of consumption goods which had been rendered feasible as a result of the steady increase in industrial efficiency during the previous few years. Still there was a good deal of fluctuation in individual commodities.

The prices of agricultural products were affected in a rather important degree by two factors—throughout the second half of the year by the policy of the Farm Relief Board, which had

ESTIMATED BALANCE OF INTERNATIONAL PAYMENTS OF THE UNITED STATES CALENDAR YEARS 1927 (REVISED) AND 1928
[In millions of dollars]

Classes of international transactions	1927 (revised)			1928		
	Credits	Debits	Balance	Credits	Debits	Balance
COMMODITY TRADE						
Merchandise exports and imports (as reported)	4,865	4,184	+ 681	5,129	4,091	+ 1,038
Silver	76	55	+ 21	87	68	+ 19
Bunker coal and oil sales to foreign vessels	60	29	+ 31	50	25	+ 25
Ship chandling, ship repairs, and tonnage dues	45	31	+ 14	45	34	+ 11
Sale of vessels	4	—	+ 4	1	—	+ 1
Unrecorded parcel-post shipments	22	22	—	20	20	—
Adjustments for differences in year end lags	19	—	+ 19	—	55	— 55
Other merchandise adjustments	—	179	— 179	—	201	— 201
Total commodity trade (as adjusted)	5,091	4,508	+ 583	5,334	4,497	+ 837
MISCELLANEOUS INVISIBLE ITEMS						
Freight payments and receipts	—	—	—	—	—	—
Overseas and Great Lakes traffic	125	149	— 24	129	167	— 38
Railway earnings on transit shipments	15	17	— 2	11	40	— 29
Foreign inland freight on United States imports	—	20	— 20	—	20	— 20
Tourist expenditures	—	—	—	—	—	—
Canada	83	199	— 116	87	232	— 145
Mexican border	6	32	— 26	6	32	— 26
Overseas (including West Indies)	74	465	— 391	75	518	— 443
Ocean borne passenger traffic (by "substitution")	89	—	+ 89	89	—	+ 89
Earnings of long-term private investments abroad	743	—	+ 743	817	—	+ 817
Received from American investments abroad	—	203	— 203	—	252	— 252
Paid to foreign investors in the United States	—	—	—	—	—	—
Earnings of short term interest and commissions	—	—	—	—	—	—
Collected from foreigners abroad	57	—	+ 57	65	—	+ 65
Paid to foreigners abroad	—	78	— 78	—	107	— 107
Immigrant remittances	35	241	— 206	28	217	— 189
War debt receipts of United States Treasury	160	—	+ 160	160	—	+ 160
Interest	46	—	+ 46	50	—	+ 50
Principal	—	—	—	—	—	—
Other United States Government receipts, United States Government payments, and foreign representations here	57	86	— 29	51	110	— 57
Missionary and charitable contributions, etc	75	49	+ 26	52	—	+ 52
Motion picture royalties	40	4	+ 36	70	6	+ 64
Insurance transactions	80	7	+ 73	80	70	+ 10
Miscellaneous minor items	—	—	—	—	—	—
Imports of Canadian electric power	—	5	— 5	—	3	— 3
Foreign subscriptions to American press	5	3	+ 2	5	3	+ 2
Patents and copyright sales and royalties	15	15	—	15	15	—
American telegrams and telephone services	22	10	+ 12	23	19	+ 4
Cablegrams and telephone services	22	18	+ 4	23	19	+ 4
Total commodity and miscellaneous items	6,780	6,192	+ 588	7,103	6,373	+ 730

**ESTIMATED BALANCE OF INTERNATIONAL PAYMENTS OF THE UNITED STATES CALENDAR
YEARS 1927 (REVISED) AND 1928—(Continued)**
[In millions of dollars]

Classes of international transactions	1927 (revised)			1928		
	Credits	Debits	Balance	Credits	Debits	Balance
MOVEMENT OF PRIVATE LONG-TERM CAPITAL						
New American investments abroad						
1 Foreign securities publicly offered here (par value) *		1,537	- 1,537		1,483	- 1,483
2 Deduct for "estimated refunding to Americans"	235		+ 235	237		+ 237
3 Deduct for American underwriters' commissions	63		+ 63	59		+ 59
4 Deduct for securities issued below par	56		+ 56	63		+ 63
5 Add new "direct investments" abroad by Americans		257	- 257		378	- 378
6 Add foreign stocks and bonds bought from foreigners in small lots *		166	- 166		568	- 568
Reductions of previous American investments abroad						
7 Bond redemption payments received from foreigners	200		+ 200	260		+ 260
8 Sinking fund payments received from foreigners	104		+ 104	101		+ 101
9 Resale to foreigners of direct investments	51		+ 51	50		+ 50
10 Foreign stocks and bonds resold to foreigners *	398		+ 398	442		+ 442
New foreign investments in the United States						
11 Direct investments	28		+ 28	70		+ 70
12 American stocks and bonds sold to foreigners *	861		+ 861	1,634		+ 1,634
Reductions of previous foreign investments in the United States						
13 Redemption and sinking fund payments to foreigners		70	- 70		70	- 70
14 Purchase of American properties from foreigners						
15 American stocks and bonds bought back from foreigners *		661	- 661		1,153	- 1,153
Total private, long-term capital items	1,996	2,691	- 695 *	2,916	3,652	- 736 *
MOVEMENT OF SHORT-TERM CAPITAL						
Net change in international banking accounts, as revealed by questionnaire					226	- 226
PURE CASH ITEMS						
Gold shipments	201	207	- 6	561	169	+ 392
Changes in earmarked gold	187	21	+ 160	68	188	- 120
United States paper currency						
Total gold currency	384	230	+ 154	629	357	+ 272
Grand total, all items	9,160	9,113	+ 47 *	10,648	10,608	+ 40 *

* Largely a deduction from American tourist expenditures.

* Issued outside our balance-of-payments area. Usually American statistics of public offerings include those of all Territories and possessions, although Hawaii, Porto Rico, and Alaska are parts of our customs area.

* One of four important items whose amounts are extremely uncertain. It is supposable that most of the net discrepancy in the entire statement (arising from errors and omissions) results from errors in this group of items. Accordingly, the original estimates of these items were all altered according to a uniform ratio which would eliminate 60 per cent of the net discrepancy in the entire statement. Before the items were thus altered, the net discrepancies for the years 1927 and 1928 were respectively +118 and +101.

* Estimated net export of long-term private capital.

* Discrepancy, due to net errors and omissions. Total errors and omissions would probably be much greater, since they tend to offset one another.

been organized in July, and during the last quarter of the year, by the reflex effects of the panic and business recession, which exerted a powerful effect in many directions, and offset the earlier - *See* Farm Board effort. Wheat (No. 2 Red) was reported at the close of 1929 as bringing approximately \$1.46½ in Chicago, as compared with \$1.54¼ a year earlier. Cotton was more stable, but showed a generally lower tendency at the close of the year than 12 months earlier. At the opening of the year 1929, Middling Upland Cotton had brought approximately 20.55 cents, while at the close of the year the price was 17.30 cents. Controversy about the cotton situation and the method of fixing prices in New York, continued active throughout the year, and resulted in various investigations some of which had not as yet been completed at the close of the year. These, however, had produced no distinct consequences, and no changes in the general situation of business. Unsatisfactory prices for meats continued to be realized.

Family beef, which had been \$30 to \$31 at the beginning of 1929, was quoted at \$27 to \$29 at the close, and mess pork, which had been \$30 to

\$31, at the beginning of 1929, was \$26.50 at the close. The general outlook in other agricultural products, however, was more favorable. In various branches of the commodity field, price control had, however, gained a strong footing. Copper, for example, was held firmly at 18 cents or higher (once rising to 24 cents). Restriction of the production of oil led to a kind of incomplete price control. On the other hand, rubber, which had previously been subject to the effects of the restriction policy of foreign countries, enjoyed for the first time a really free market, and fell as low as 15 to 16 cents toward the end of the year, although in earlier months not far from 20 cents.

In spite of all these changes, the index of wholesale prices, was not much altered, standing in January at 97.2, and in November at 94.4, while in December it was 94.2.

FOREIGN EXCHANGE. General conditions in foreign exchange showed continuation of the more satisfactory position which had been assumed by most currencies, during the preceding year. Striking alterations, except in a very few cases, were accordingly absent. The most important

episodes of the year, affecting the value of foreign currencies, were the suspension of gold export and gold conversion in Argentina and the resumption of free gold exports in Japan. Relations between Great Britain and the United States were somewhat affected by the flow of foreign capital into the New York market prior to the panic, and the sharp return which succeeded the panic exchanges, however, on the whole, followed the New York rates of sterling. The further withdrawal of gold by France did not produce any very great results, but the franc continued tolerably closely pegged. Canadian dollars showed great weakness during the year, due to the belief of many that official obstacles were placed in the way of gold exports. Sharp fluctuations in pesetas occurred, largely due to lack of confidence in the Spanish government policy, while the disturbance of coffee prices in Brazil unsettled the milreis quite seriously. At the close of the year there was nothing of great significance in sight, as a factor tending to change the exchange situation, except the possible policies of the new International Bank. The accompanying table sets forth the changes in several of the more important currencies, the first week in each month being selected as the basis of comparison.

FOREIGN EXCHANGE IN 1929

Week ended	London		Paris		Italy		Germany		Holland	
	High	Low	High	Low	High	Low	High	Low	High	Low
Jan 5	4 85 1/8	4 85	0 39 1/8	0 39 1/8	0 52 1/4	0 52 3/4	2 38 1/2	2 37 9/16	40 19	40 15
Feb 2	4 85	4 84 1/16	0 19 1/8	0 39 0 1/8	0 52 3/4	0 52 3/4	2 37 7/8	2 37 3/4	40 10	40 5 1/2
Mar 2	4 85 1/8	4 85 1/16	0 39 0 7/8	0 39 0 1/2	0 52 3/4	0 52 3/8	2 37 4	2 37 3/4	40 06	40 05
Apr 6	4 85 1/8	4 85	0 39 1/8	0 39 0 1/4	0 52 3/8	0 52 3/8	2 37 1/2	2 37 1/4	40 12	40 07
May 4	4 85 1/8	4 85 1/16	0 39 1/8	0 39 0 1/4	0 52 3/8	0 52 3/8	2 37 1/2	2 36 9/16	40 22	40 20 1/2
June 1	4 85 1/16	4 84 3/16	0 39 1 1/16	0 39 0 1/16	0 52 3/8	0 52 1/4	2 38 1/2	2 38 1/16	40 21 1/2	40 18
July 6	4 84 1/4	4 84 1/16	0 39 1 1/8	0 39 1	0 52 3/8	0 52 3/8	2 38 1/2	2 38 1/8	40 16	40 14
Aug 1	4 85 1/8	4 85 1/16	0 39 2 1/8	0 39 1 1/8	0 52 3/8	0 52 3/8	2 38 5/8	2 38 3/8	40 12	40 07
Sept 7	4 84 1/8	4 84 1/16	0 39 1 1/8	0 39 1 1/4	0 52 3/8	0 52 3/8	2 38 1/2	2 38 0	40 08	40 06
Oct 5	4 84 1/2	4 85 1/8	0 39 2 1/8	0 39 2	0 52 3/8	0 52 3/8	2 38 5/8	2 38 3/8	40 18 1/2	40 14
Nov 2	4 88	4 87 1/2	0 39 4 1/8	0 39 3 3/8	0 52 4 1/8	0 52 3/8	2 39 1/2	2 39 2	40 27 1/2	40 25
Dec 7	4 88 1/4	4 87 1/16	0 39 4 1/8	0 39 3 3/8	0 52 3/8	2 39 5	2 39 6	2 39 4	40 28	40 25
Range for 1929	4 88 3/4	4 84 1/16	0 39 4 1/8	0 39 0 1/8	0 52 4 1/8	0 52 1/4	2 39 7	2 36 1	40 39	40 04

MONEY RATES. Money rates underwent revolutionary changes during 1929. At the opening of the year money was scarce and high, and this condition was rendered worse by the policy of the Federal Reserve System in attempting to withdraw credit, followed by an advance in its rate to 6 per cent in August. Call money fluctuated at high levels, being frequently 10 per cent during the spring and summer. The Federal Reserve Board, which had previously adopted an attitude of comparative indifference on the whole subject began to show alarm early in the year, and issued a series of warnings, to the banks, not to allow their credit to become involved in speculation.

The outgrowth of this state of things was a tendency on the part of city banks to reduce commitments and place themselves in a better protected situation, but country banks were not able to do anything of the kind, and it is probable that the warnings of the Reserve Board and of the Reserve banks frightened the ordinary banker instead of incalculating more caution and wise handling of the general situation. At all events, no success was obtained in reducing the volume of outstanding bank credit, and brokers' loans continued to climb.

The panic which came in on the latter part of October led to great liquidation of brokers' loans, and in order to alleviate the state of things, the Reserve Bank of New York, cut its rates first to

5 1/2 and later to 4 1/2 per cent. Call money fell to 4 per cent in open market. At the close of the year, Secretary of the Treasury Mellon made a reassuring review of the credit situation and summarized conditions as follows:

"A review of the policy of the Federal Reserve Board during the past year shows that it has endeavored to guard against an undue extension of credit through speculative channels and to conserve the country's credit resources for the purpose of meeting future requirements of industry and trade. The gold that came into the country during the year ending June 30, 1929, was not added to member bank reserves and did not constitute the basis of expansion of the country's credit structure, but was used to liquidate reserve bank credit. Chiefly as a result of the inflow of gold, total reserves of all reserve banks increased by more than \$300,000,000 during the year. Since the banks' total note and deposit liabilities showed relatively little growth, the reserve ratio for all banks combined increased from 68 per cent to 74 1/2 per cent and the volume of reserves in excess of legal requirements increased by about \$300,000,000. At the end of the period, therefore, the reserve banks were in a stronger position than a year earlier, and were better prepared to meet any emergency demands that might arise, as well as to provide the basis for meeting the increase in the country's credit requirements growing out of year-to-year growth in the volume of industrial, commercial, and financial activity.

These reassuring words were not altogether accepted by the public as indicating a wholly satisfactory condition, particularly when it was

noted that the liquidation of brokers' loans had merely resulted in transferring a considerable proportion of them to the banks, so that at the close of the year the banks were loaning as much on securities as they had been just before the panic. The only real reduction of outstanding credit had taken place in the item of loans for the account of "others," which was probably reduced by \$2,000,000,000 gross. Toward the end of the year, the Federal Reserve banks also adopted a very free acceptance buying policy, at rates around 4 per cent as a result of which they speedily came to hold for account of themselves and of foreign banks about \$1,000,000,000, out of a total of \$1,750,000,000, a record high figure for acceptances issued in the United States. See BANKS AND BANKING.

In the investment field the tendency to a better yield on bonds and preferred stocks continued to maintain itself pretty well throughout the year, and tended more and more strongly to give to the holder of fixed-rate securities, a more satisfactory position. This relationship was somewhat changed after the panic on account of the decline in the quotation of common stocks, but by the end of the year, confidence had not yet been sufficiently restored to induce preferred stockholders or bond holders to part with their holdings, and to enter the common-stock field in much larger numbers. See also BUSINESS REVIEW, PUBLIC FINANCE.

FINE ARTS. See PAINTING; SCULPTURE, ART EXHIBITIONS, ART MUSEUMS, ART SALES.

FINLAND. An independent republic of Europe, bounded on the east by Russia, on the north by the Arctic Ocean and Norway, on the west by Sweden and the Gulf of Bothnia, and on the south by the Gulf of Finland. Formerly a grand duchy of the Russian Empire, it was declared independent Dec. 6, 1917, and became a republic under the constitutional law of July 17, 1919 Capital, Helsingfors.

AREA AND POPULATION. The total area exclusive of water is 132,608 square miles, population, according to the census of 1920, 3,364,807; estimated Dec. 31, 1927, 3,582,000. In 1927 the rural population was 2,962,000. The movement of population in 1927 was Births, 75,611; deaths, 51,727, marriages, 24,200, emigration, 6088. The principal towns with their populations in 1927 were Helsingfors, 221,000, Abo, 63,000, Tampere, 53,000, and Viborg, 50,000. The Evangelical Lutheran religion is that of the bulk of the population, but freedom of worship is granted to all.

EDUCATION. Primary instruction is free and compulsory between the ages of 7 and 15. For elementary education in 1927, there were in the country 4670 elementary schools with 219,053 pupils, 3081 lower elementary schools, with 70,292 pupils, and 867 infant schools under the superintendence of the church with 96,035 pupils. In the towns, there were 1257 classes of higher elementary schools with 38,261 pupils. For secondary education, there were 119 lyceums, leading to university, 2363 teachers and 30,302 pupils, 71 middle schools, with 653 teachers and 9562 pupils, eight training colleges for elementary-school teachers, with 112 teachers and 1680 students, 6 training schools for infant-school teachers, and 53 high schools for the people, with 368 teachers and 2838 students. There are three universities—one at Helsinki, with 309 teachers and 4032 students in 1927, and two at Turku, one Swedish, with 46 teachers and 200 students, and one Finnish, with 26 teachers and 290 students. There is also a great variety of agricultural, horticultural, forestry, industrial, and other technical schools.

PRODUCTION. Agriculture is the chief occupation of the people, although the area available for cultivation is comparatively small. In 1927, of the total area of Finland, 5,338,000 acres were devoted to crops, 2,953,000 to permanent meadows and pasture, 15,000 to orchard trees and shrubs and bushes, and 76,600 were forests and uncultivated land. Field crops were adversely affected by a cold spring and rainy autumn in 1928, the total value being estimated at about \$108,000,000, as against \$133,000,000 in 1927. The acreage and yield of the principal crops in 1928 were as follows: Wheat, 42,000 acres, 879,000 bushels, rye, 673,000 and 10,940,000, barley, 268,000 and 5,889,000, oats, 1,112,000 and 35,115,000, potatoes, 173,000 and 24,195,000, flax, 14,000 acres, 2,646,000 pounds of fibre, hay (acreage not available) 2,712,000 metric tons. In 1927 there were 1,871,865 cattle, 417,723 swine, 1,308,173 sheep, 11,021 goats, and 395,968 horses. In the same year, the production of butter was 49,207,000 pounds, and of cheese, 9,235,000 pounds.

The value of all manufactured products in 1928 was 9 per cent higher than in 1927, reaching a new peak of \$340,000,000. In 1927, when

the gross value of production was \$312,001,000, 3780 large manufacturing establishments employed 159,141 workers and 548,217 horse power; the value of the materials used was \$165,794,000. The chief industries, ranking according to the value of output in 1927, were woodworking, paper, food, drink, textile, and machinery manufacturing, shipbuilding, leather, clay and stone working, and light and power production.

Finland's forested area, which is exceeded in Europe only by that of Russia, is one of the chief economic assets. In 1928 Finland was again the largest timber producer in Europe, although a late snowfall, low prices, and a restriction of output, to stabilize the market, resulted in lower production than in the previous year.

COMMERCE. Imports in 1928 totaled \$201,900,000 and exports, \$157,300,000, leaving a large import surplus of \$44,600,000, as contrasted with a virtually even balance of trade in 1927, when imports totaled \$100,924,000 and exports, \$159,328,000. The increase in imports was attributed to the reduction of duty rates on coffee, sugar, wheat flour, and other articles of consumption, the poor harvest, and active building operations. Leading imports were machinery, wheat flour, sugar, coffee, rye, wool fabrics, automobiles, iron and steel products, and cotton. The chief exports were lumber and wood products, butter, newsprint, and hides and skins. Imports in 1929 were valued at 6,995,100,000 marks and exports, at 6,426,900,000 marks, leaving an unfavorable balance of 568,200,000 marks (about \$14,205,000).

FINANCE. Actual receipts in 1928 amounted to \$114,300,000 and actual expenditures, to \$127,000,000, leaving a deficit for the year of \$12,700,000. Of the revenues, \$62,400,000 was derived from taxation and monopolies, \$14,200,000, from the income tax, and \$34,700,000, from import duties. Chief items of expenditure were Debt service, \$27,300,000, defence, \$14,200,000, education, \$13,500,000, social service, \$2,500,000. The budget for 1929 estimated receipts at 4,197,000,000 Finnish marks (1 mark equals \$0.0252) and expenditures at 3,501,000,000 marks. The budget for 1930 balanced at 4,595,650,000 marks (\$115,810,000). The public debt on Jan. 1, 1929, totaled 2,640,000,000 Finnish marks, or \$87,400,000, of which \$78,700,000 was external, including \$8,712,000 due the United States Government. The debt increased by \$2,000,000 in 1929. As a result of the economic crisis in Finland during 1928 (attributed to overinvestment of capital in industry, expansion of credit, and high money rates), the balance of 118,000,000 Finnish marks held abroad, by the Finnish commercial banks in 1927, was changed in 1928 to an indebtedness of 245,000,000 marks. The discount rate of the Bank of Finland was twice raised in 1928 in an effort to check speculation, reaching 7 per cent on November 15.

COMMUNICATIONS. The State Railways of Finland constitute the only important railway system in that country, there being less than 200 miles of private lines. The length of the state railway lines at the end of 1928 totaled 2992 miles, with 4013 miles of track. Gross receipts for 1928 totaled \$22,475,000. For the five-year period, 1926-1930, the Diet passed a scheme of construction, which when completed would cover 840 kilometers of new railways. During 1929, 130 kilometers, or 81 miles, of new line was completed. An extensive chain of lakes, connected with one another and with the Gulf of

Finland by canals, forms one of the principal means of communication. In 1926, 50,787 vessels and 13,318 timber rafts passed along the canals. The merchant marine in 1928 consisted of 354 vessels with a capacity of 280,580 gross tons. In the same year, there were 15,613 miles of highway and (in 1922) 16,162 miles of secondary roads. The telegraph system, which had 3504 miles of line in 1926, and part of the telephone system are state owned. In 1926 the state owned 9906 miles of telephone wire, as compared with 175,693 miles of privately owned wire in 1927.

GOVERNMENT. According to the constitutional law of July 17, 1919, Finland is a republic. Executive power is vested in the President elected for six years by the votes of the citizens and in a ministry appointed by him but responsible to the Diet, legislative power, in the Diet consisting of 200 members chosen by direct and proportional representative election, all citizens who have reached the age of 24 possessing the right to vote. The composition of Parliament following the election of July 1-2, 1929, was 60 Agrarians, 59 Social-Democrats, 28 Union party representatives, 23 Communists, 23 Swedish People's party representatives, and 7 Progressives. President of the Republic in 1929, Dr. Lauri Relander, elected Feb. 16, 1925. The Council of State, appointed on Dec. 22, 1928, consisted of Dr. Oskari Mantere, Progressive party, Prime Minister, H. J. Procopé, nonpartisan, Foreign Minister, A. Kotonen, nonpartisan, Justice, T. M. Kivimäki, Interior, A. K. Cajander, Defense, U. Brander, Agriculture, with K. E. Luoma as his Assistant Minister, H. M. J. Relander, nonpartisan, Finance, L. Ingman, Coalition, Education, J. Castrén, Coalition, Communication, K. Jarvinen, Coalition, Commerce, and N. A. Mannio, Social Affairs. The party of nonprogressives only is given.

HISTORY. The Mantere ministry which assumed office Dec. 22, 1928, soon found itself in difficulties over its bill to increase the salaries of state employees. The cabinet was defeated on the question by the combined Agrarians and Socialists and Parliament was dissolved April 19 by President Relander. The election held on July 1-2 was marked by the complete defeat of the Mantere ministry and the unexpected gains of the Communists and the newly organized Small Farmers' party. The Mantere cabinet resigned August 3 but remained in office until the formation of the new cabinet, headed by M. K. Kallio, Agrarian, on August 16. H. J. Procopé remained as Foreign Minister, the other members being A. Lanturi, Interior, J. Nuukkanen, Defense, T. Reinikka, Finance, A. Kukkonen, Education, M. K. Ellila, Agriculture, M. J. Lahdensuo, Communications, M. P. Heikkinen, Commerce, M. J. Leppala, Social Affairs (temporary). The new ministry, as formulated, includes the stimulation of the economic life of the country, vigilance against Communist and other radical activities, and strict enforcement of the prohibition law.

Prohibition in Finland continued to run much the same course as in the United States. On August 21, it was reported that no less than 18 "rum-running" vessels, most of them German and Estonian, were lying off the Finnish coast. Convictions for violations of the liquor laws from Jan. 1 to Sept. 30, 1929, totaled 7775, as compared with 6153 convictions during the same period in 1928.

The vigorous opposition of the Swedish element of the population to efforts of Finnish Nationalists to weaken their position of linguistic, social, and educational equality in the country continued during 1929 and played a considerable part in the July elections. The Finns outnumber the Swedes nine to one, but Swedish remained the language of public intercourse in Finland until the beginning of the present century. The Swedes were rewarded for their support of the bourgeois parties in the war against the Communists in 1917 and 1918 by having Swedish declared a national language on an equal footing with Finnish in the constitution of 1919. Since then, the Swede-Finns have jealously guarded their prerogatives in and out of Parliament. The two language groups have continually quarreled over place names, inscriptions on railway tickets and trucks, the percentage of Swedish professors in the university, and like matters. Politically, the Swede-Finns have worked in cooperation with the Social Democrats in the past, but in 1929 it appeared that this alignment would be broken up due to a difference of opinion between the two parties over the introduction of German technical experts in connection with the development of extensive timber holdings in Finland by German capital.

A revival of Communist activities late in the year caused the Government to appeal to Parliament for increased authority to suppress Communist propaganda through restrictions on the press and the right to hold meetings. A wave of anti-Communist feeling was reported sweeping the country in December and some fear of the establishment of a Fascist régime was expressed by the Social Democrats.

FINLAY, ROBERT BARNATTYNE, VISCOUNT OF NAIRN. English jurist, died Mar. 9, 1929, in London. He was born July 11, 1842, the son of an Edinburgh physician. He himself studied medicine, taking his degree at the University of Edinburgh. He turned to law, however, and was called to the bar in 1867. During the years 1885-92 and 1895-06, he was a member of Parliament for Inverness Burghs, solicitor-general (1895-1900), attorney-general (1900-06), member of Parliament from 1901-06, and St. Andrews universities (1916-18). In 1916 he was raised to the peerage as a baron, and in 1919 he was created the first Viscount of Nairn. Lord Finlay was appointed the British member of the Permanent Court of Arbitration at The Hague in 1920, and in 1921 was made a member of the International Court of Justice established by the League of Nations Assembly.

FIRE INSURANCE. See **INSURANCE.**

FIRE PROTECTION. The accompanying statistics indicate the continuing menace of the fire hazard throughout the United States, and it was gratifying to record that continued efforts were being made to arouse the authorities and citizens of the larger cities to the seriousness of this danger.

According to the statistics of fire losses in the United States and Canada, compiled by the *Journal of Commerce* (New York), the 1929 total amounted to \$332,426,000 or approximately 10 per cent increase over the \$301,267,560 loss of 1928, which it may be said was the lowest figure reported since 1919. The *Journal of Commerce's* fire loss statistics were based on estimates

of fires involving a loss of \$10,000 or over, with a percentage added to cover small and unreported fire losses. These figures were not so accurate as the statistics computed by the Actuarial Bureau of the National Board of Fire Underwriters, which hitherto had been published later in the year, and usually run about a third smaller. They are of interest as affording a basis of comparison from year to year and also from month to month.

During the year the National Board of Fire Underwriters arranged to secure from its members shortly after the first of each month the total of losses reported during the previous month. These figures when received are combined and a loading added, for losses on insured property and property insured in mutual companies, reciproals, and in stock companies which are not members of the National Board.

The annual fire losses for the United States, as compiled from monthly statements secured by the National Board of Fire Underwriters from its members, numbering approximately 250 stock companies, of the losses reported to them during the previous month are tabulated herewith. The losses so compiled aggregate for the United States alone about \$80,000,000 more than the losses for the United States and Canada, as compiled from the daily records of *The Journal of Commerce*. The National Board's compilation of fire and lightning losses month by month for 1929 is as follows:

January	\$44,713,825
February	41,520,290
March	41,277,814
April	36,845,795
May	32,129,408
June	33,605,661
July	31,985,493
August	30,446,893
September	29,249,355
October	31,652,385
November	29,061,869
December	39,726,338
Total	\$422,215,128

(Classified by States the fire losses for the United States in 1928 are given in the accompanying table from the National Board of Fire Underwriters.)

REPORTED FIRE LOSSES—1928 ACTUARIAL BU REAU, NATIONAL BOARD OF FIRE UNDER WRITERS

Alabama	\$5,018,250	Nebraska	\$3,078,234
Arkansas	5,153,984	Nevada	287,320
Arizona	1,250,067	New Hamp	2,409,508
California	19,191,422	New Jersey	14,429,161
Colorado	2,128,957	New Mex	797,243
Connecticut	4,577,505	New York	46,096,581
Delaware	346,685	North Car	6,848,123
District of Co-		lumbia	1,532,200
Florida	5,750,643	Oklahoma	5,916,802
Georgia	6,127,660	Oregon	3,805,934
Idaho	1,223,376	Penn	25,007,634
Illinois	26,018,706	R I	2,511,645
Indiana	9,162,604	South Car	3,883,396
Iowa	5,018,066	South Dak	1,428,841
Kansas	5,814,344	Tenn	8,364,477
Kentucky	6,196,713	Texas	18,087,207
Louisiana	7,666,351	Utah	1,029,062
Maine	3,666,892	Vermont	1,054,919
Maryland	5,186,973	Virginia	5,617,637
Massachusetts	20,376,808	Washington	6,592,812
Michigan	13,498,649	West Va	4,283,366
Minnesota	7,064,107	Wisconsin	7,609,312
Mississippi	5,135,013	Wyoming	434,022
Missouri	12,287,782		
Montana	2,451,831		
United States Total			\$371,685,682

STRICTLY PREVENTABLE CAUSES

	1928	1927
Defective chimneys and flues	\$19,588,878	\$19,523,904
Firecracks, firecrackers, etc	693,996	893,693
Gas, natural and artificial	2,561,984	3,100,828
Hot ashes and coals, open fires	4,953,769	5,171,491
Ignition of hot grease, tar, wax, asphalt, etc	2,109,299	1,699,208
Incendiarism	27,902,919	29,345,929
Petroleum and its products	4,908,708	3,578,701
Rubbish and litter	12,207,297	12,891,718
Sparks on roofs	2,939,182	1,035,454
Steam and hot water pipes	12,032,562	11,256,303
Stoves, furnaces, boilers, and their pipes	407,319	184,931
	19,311,169	17,986,432

PARTLY PREVENTABLE CAUSES

Misuse of electricity	\$14,905,816	\$12,360,558
Explosions	1,147,631	4,725,857
Exposure (including conflagrations)	41,219,494	45,082,747
Sparks from machinery	3,474,454	5,812,466
Incendiarism	2,466,034	2,403,615
Incendiarism	7,708,530	9,084,630
Unknown causes	3,397,498	3,408,359
Sparks from combustion	4,401,368	4,121,148
Spontaneous combustion	12,112,461	13,640,804

UNKNOWN CAUSES

Unknown causes (probably largely preventable)	\$170,330,314	\$171,038,429
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An interesting compilation was made during the year of fire losses on American farms classified on the basis of causes for the year 1928 compared with the average for a five-year period. This is indicated in the accompanying table.

FIRE LOSSES ON AMERICAN FARMS

Causes	1928	5 years 1924-1928
Chimneys, flues, cupolas, and stacks overheated or defective	\$ 5,014,429	\$26,343,759
Fireworks, firecrackers, balloons, etc	20,595	136,696
Gas—natural and artificial	76,382	308,964
Hot ashes and coals—open fires	594,100	3,427,671
Hot grease, oil, tar, wax, asphalt, ignition of	99,971	729,448
Incendiarism	2,085,882	10,412,246
Petroleum and its products	120,060	631,163
Petroleum and its products	1,502,097	8,303,502
Rubbish and litter	58,989	240,165
Sparks on roofs	1,246,102	17,218,929
Steam and hot water pipes	3,887	6,594
Stoves, furnaces, boilers and pipes	1,467,566	7,814,804
Electricity	476,948	1,806,341
Explosions	122,212	709,617
Exposure	1,245,996	4,241,816
Friction, sparks occasioned by running machinery	27,501	395,285
Incendiarism	176,012	975,623
Lightning—buildings, rodless and not rodless	2,967,428	17,727,780
Miscellaneous, cause known but not classified	251,199	1,477,494
Sparks arising from combustion	514,084	1,901,361
Spontaneous combustion	1,285,196	8,670,371
Unknown	12,198,751	65,710,800
Totals	\$33,545,619	\$178,804,409

Important work in the field of fire protection in the United States is carried on by various technical committees of the National Fire Protection Association. These committees are useful in such fields as building construction and restriction of spread of fire in general, fire detection, extinction, and salvage, prevention of fire in general, special hazard processes and occupan-

cies, aviation and marine activities, safety to life and protection of records, and other fields. They are subdivided as occasion warrants and are constantly studying the various conditions and preparing reports which are of advantage to the industries concerned, as well as to fire-protection work in general.

One of the notable developments of the year was the preparation and publication by the city of Boston of the first complete municipal survey of fire hazards and fire defense ever undertaken by an American city and probably by any city in the world. The technical side of this survey, published under the title *A Report on the Problem of Fire Waste and Fire Insurance Rates in the City of Boston*, by the Albert Russel Erskine Bureau of Harvard University, Miller McClintock, Director, was prepared by the field engineering department of the National Fire Protection Association.

This fire-hazard report sought to furnish a comprehensive treatment of the fire problem of Boston, and as similar conditions were prevalent in other American cities the document and the method of its preparation naturally attracted wide attention. The chapter headings, which illustrate the nature of this study, were as follows:

1 What there is to burn in Boston 2 The effect of the building code on structural conditions 3 What is burning in Boston? 4 Fires in buildings 5 Other fires and alarms 6 A thirty-year study of Boston's fire losses—comparison of losses with business conditions 7 The fire department 8 Mutual aid among fire departments of Greater Boston 9 Water supply, fire alarm, traffic conditions, and salvage 10 Automatic sprinklers and other private fire protection 11 Investigation of fires 12 Fire prevention inspection 13 A technical analysis of the fire prevention laws and regulations governing Boston 14 Authority for inspection work 15 A recommended legal programme 16 Plan for a State wide attack on the fire waste

Such a report was of considerable interest not only from the insurance point of view and the study of local fire losses and insurance rates, but also for the various improvements that were indicated and which applied with more or less urgency in every American city. Although a report of this nature naturally involved considerable cost on the engineering side, it was the opinion of those directly interested that they are well worth the cost and effort as they bring to responsible governments and organizations a desired and comprehensive study.

During the year the National Fire Protection Association sponsored a conference on spontaneous heating and ignition of agricultural and industrial products, in cooperation with the U. S. Departments of Agriculture and Commerce, which was held in the Hotel Raleigh, Washington, Nov. 14-15, 1929. This led to the organizing of a committee after a series of interesting reports on research in this field had been presented and the problem discussed from the standpoint of specific interest.

During the year 1929 there were a considerable number of serious fires involving nitrocellulose films. This hazard has been present and realized for a number of years by fire underwriters, but the year under review witnessed the outbreak of serious disasters from this cause. The unfortunate loss of life for which motion-picture or other film was responsible was headed by the serious catastrophe in the motion-picture theatre in Paisley, Scotland, on December 31 in which 72 or more lives, mostly of children, were lost. This disaster was stated to be due to improper ar-

rangements for film projection, inadequate exits, and a resulting panic. The National Fire Protection Association and other fire-prevention authorities had for a number of years recommended the use of safety measures in connection with nitrocellulose film which was realized to be an extra-hazardous material. When it was not possible completely to safeguard a nitrate film, a cellulose-acetate film was available as a safe substitute so that with proper precautions this hazard could be reduced to a minimum.

Another serious fire was, in the Pathé Sound Studio in New York City on December 10, resulting in the loss of 10 lives. This building was of fire-resistant construction with an ample number of exits and contained a stored quantity of motion-picture film, which, however, did not contribute in any way to the loss of life. Inflammable scenery used in connection with a film production was responsible for the rapid spread of the fire. The stage used for the "set" did not have the protection required for an ordinary theatre and suffered particularly by the absence of automatic sprinkler protection. The loss of life was largely in or near the dressing rooms of the young men and among the men who perished in attempting to rescue them.

Another case in which highly flammable materials contributed to the spread of the flames was the Detroit "Study Club" fire which occurred on September 20. The night club was frequented by about 100 persons, of whom 22 lost their lives and 45 were seriously injured in attempting to escape. The fire was believed to have been caused by a lighted match carelessly thrown against a wall diaphy. In addition, proper fire prevention precautions, such as providing a rear exit and fire escape, had not been taken.

The greatest catastrophe of the year was the fire at the Cleveland Clinic Foundation of Dr. Cline on May 15, caused by certain ignition of nitrocellulose X-ray films. The larger number of the 121 victims died from the effects of gases containing carbon monoxide and nitrogen peroxide, formed by the burning films. Three theories were advanced as to the origin of the fire:

(1) Decomposition of the films caused by rise in temperature brought about by an uncovered steam line, (2) decomposition on account of the heat from an incandescent lamp in front of the shelves on which the films were stored, and (3) ignition of the films by a lighted match or cigarette stub dropped on or near them. The failure of three of the fire doors to close properly enabled the fumes to pass from the film room into the stair and elevator shafts and thence to the upper floors of the building menacing the lives of inmates and rescuers.

A fire of unusual interest was that in the executive office section of the White House in Washington on December 24. This fire, involving two hours active fighting by the District of Columbia Fire Department, endangered priceless records, although actually the destruction was confined to material easily replaceable and of limited value. The source of the fire was located in a wood stud against a fireplace, the construction of which was revealed as of faulty design. After a fire had been kindled in this fireplace, the wood stud ignited and after smouldering for several hours finally burned into the attic above, where it burst into flames. The attic was burned out and considerable damage was done, the entire roof and attic floor requiring rebuilding. Numerous

deficiencies in the construction and protection of this building were recorded in the survey made following the fire.

FISKE, HALEY An American insurance official, died suddenly in New York, Mar. 3, 1929. Born at New Brunswick, N. J., Mar. 18, 1852, he was graduated from Rutgers College in 1871, receiving the A. M. degree in 1874. After working on various newspapers, he studied law and in 1879 was admitted to the bar. In the first years of his practice, Mr. Fiske became connected with the legal work of the Metropolitan Life Insurance Company. When John Roger Hegeman assumed the presidency of the company in 1891, Mr. Fiske was made third vice president. In that capacity, he devoted his energies to increasing the importance of the company's ordinary insurance, which had suffered during an attempt to develop the industrial side of the business, the success of his endeavors did much to establish the finances of the company. Mr. Fiske also was influential in having a bill passed by the New York Legislature which insured to the policyholder certain rights in the management of the company. About this time, the public was prejudiced against child insurance, and bills prohibiting the practice were pending in several States, in an address before the State Legislature of Massachusetts, which contemplated the passage of such a bill, Mr. Fiske argued in favor of the practice, the bill was defeated and opposition subsequently diminished. At Mr. Hegeman's death, 1919, Mr. Fiske was made president of the Metropolitan Life Insurance Company, at that time the largest financial institution in the world. In an effort to further improve public health, he instituted several campaigns, such as radio broadcasting of setting-up exercises, and sending trained nurses to visit private homes, and under his presidency, the Metropolitan Company supported a number of improved housing projects. Mr. Fiske, who remained the position of president until his death, was also a director of the Metropolitan Life Insurance Company, and of numerous other important firms. He was active in the work of the Protestant Episcopal Church, being one of the leaders of the high-church wing. He was a trustee of Rutgers, of St. Stephen's College, and of the Cathedral of St. John the Divine. Rutgers University conferred on him the LL. D. degree in 1921.

FISK UNIVERSITY. A coeducational institution for colored people in Nashville, Tenn., founded in 1866. It consists of a liberal arts college, a music school, and a graduate department. The total enrollment of 489 for the autumn of 1929 included 206 men and 283 women. The total enrollment in the summer school of 1929 was 172, including 54 men and 118 women. The faculty numbered 42, and there were 44 administrative officers and assistants. The productive endowment for 1928-29 was \$1,065,232, and the total income was \$251,059. The library contained approximately 24,000 volumes. Thomas Elsa Jones, Ph. D. was president, Ambrose Calver, A. M., dean, and Jesse F. Beals, treasurer.

FIXED NITROGEN See FERTILIZERS.

FLAX. The flaxseed production in 1929 of eleven countries reporting to the International Institute of Agriculture, Rome, was estimated at 35,154,000 bushels, which was 10 per cent below the yield of 1928 and nearly 33 per cent below the average yield for the five years 1923-27. The crops of some of the more important producing countries were estimated as follows: India, 12,-

880,000 bushels, Canada, 2,007,000; Lithuania, 1,665,000. Poland in 1928 produced about 3,000,000 bushels and the Soviet Republics, according to a preliminary estimate, 22,755,000 bushels. Argentina, the leading flaxseed-growing country of the Southern Hemisphere, which produced 82,810,000 bushels on 7,297,000 acres in the crop year 1928-29 reported an area of 7,090,000 acres for the crop year 1929-30, and a preliminary estimate placed the yield at 55,627,000 bushels, a decrease of nearly one-third below the crop of the preceding season and the smallest yield since 1924-25. Uruguay, ranking next in South America, yielded 2,284,000 bushels in 1928-29.

The U. S. Department of Agriculture estimated the flaxseed crop of the United States in 1929 at 16,838,000 bushels, compared with 19,928,000 bushels in 1928 and a five-year average of 23,243,000 bushels. The acreage harvested was increased more than 12 per cent over the preceding year but drought in some States resulted in yields averaging only 5.6 bushels per acre, as against 7.4 bushels in 1928. On the basis of average farm prices per bushel on December 1 of \$2.84 this year and \$2.01 in 1928, the total value of the crop was \$47,871,000 and \$40,098,000 for the two years, respectively. Of 10 States reporting flaxseed production in 1929, the yields of the four States producing over 95 per cent of the crop were as follows: North Dakota, 6,876,000 bushels, Minnesota, 4,707,000 bushels, South Dakota, 3,758,000 bushels, and Montana, 938,000 bushels. The average yields in these States were 4.7, 9.5, 9, and 3.2 bushels per acre, respectively. During the fiscal year ended June 30, 1929, the United States exported 279,000 tons of linseed-oil cake, 900 tons of linseed-oil cake meal, and 2,020,000 pounds of linseed oil and imported 23,438,000 bushels of flaxseed and 6,677,000 pounds of linseed oil.

The estimated flax fibre production of 10 European countries, not including the Soviet Republics, as reported by the International Institute of Agriculture in Rome, was 291,482,000 pounds, which was 12.6 per cent above the yield of 1928 and 2.6 per cent above the average for the five years 1923-27. The 1929 yields of the principal fibre-producing countries were estimated as follows: Lithuania, including hemp fibre, 79,367,000 pounds, Belgium, 60,303,000, Latvia, also including hemp fibre, 42,527,000, Netherlands, 27,117,000, Czechoslovakia, 25,513,000, Estonia, 23,369,000, Austria, 17,505,000, and Northern Ireland 12,320,000. The Soviet Republics, which produce the greater part of the world's supply, reported a yield of 763,000,000 pounds in 1928. During the fiscal year ended June 30, 1929, the United States imported 5000 tons of unmanufactured flax fibre. About 2,200,000 tons of flax straw are produced annually in the United States and efforts were being put forth to find means of utilizing this material to good advantage industrially.

FLEMISH NATURALIST PARTY. See BELGIUM, under *History*.

FLINT, FRANK PUTNAM An American lawyer and former United States Senator from California, died Feb. 11, 1929. He was born July 16, 1862, in North Reading, Mass. In 1869 he was taken by his parents to San Francisco, Calif., where he attended the public schools. He studied law and in 1888 was admitted to the bar in Los Angeles and began practice there. From 1882 to 1892, he was a clerk in the U. S. Marshal's office, and assistant United States attorney in

1892-93. During 1893-95 he practiced law with Judge M. T. Allen From 1897 to 1901, he was United States district attorney for the southern district of California, and in 1905 he went to the United States Senate as a Republican from California. In 1911 he resumed his law practice with the firm of Flint & Mackay.

FLONZALEY QUABTET. See Music.

FLOODS. An unusual combination of snow, frozen ground, ice, high temperatures, and rain, resulted in sudden and destructive overflows of the interior rivers in Ohio during the latter part of February, with over \$3,000,000 damage. Of these floods, the most outstanding was that of the Miami River, the rise was comparable with the one in 1898, reputed to have been next to the greatest Miami flood on record.

Heavy rains which fell during February 26-28 brought the rivers in Georgia, Alabama, and northwest Florida to flood, and the torrential and almost unprecedented rainfalls of March 13-15 on the already saturated soil led to destructive overflows. The greatest of these floods were those in the Choctawhatchee and the Conecuh-Escambia systems of Alabama and Florida, where the rivers have very small slopes and were already bank full from earlier rains in February, the streams reached stages far beyond any previously recorded, and the damage amounted to nearly \$5,000,000. The floods in the other river systems involved were responsible for about \$3,500,000 damage. Overflows also occurred in the Cumberland River, and the tributaries of the Tennessee, with several million dollars damage, and 18 lives were lost along the Emory River.

Due to heavy rains, severe floods took place in central and eastern Texas during May, particularly along the Trinity and the Brazos rivers and their tributaries. The total damage amounted to about \$8,000,000. The highest stages since 1879 were reached in the Buffalo River and White Oak Bayou, and \$1,000,000 damage was caused in Houston. Several million dollars damage resulted from rises in the upper Mississippi, lower Missouri, and lower Arkansas basins in May. Following heavy rainfalls over central Kansas on July 8, 9, and 11, destructive rises occurred in the rivers of the region, particularly along Cow Creek, the upper Little Arkansas River, and the Cottonwood and upper Neosho rivers, the losses along Cow Creek alone amounted to \$3,750,000.

A tropical storm which crossed the extreme southeast United States resulted in two periods of particularly heavy rainfalls over this region on September 26-27 and September 30-October 1,

and brought disastrous floods to Georgia and the Carolinas. The most conspicuous of these was the double flood in the Savannah River at and below Augusta, the central and lower river reaching the highest stages of record with great rapidity. The losses in Georgia and South Carolina probably exceeded \$1,000,000. In the Altamaha Basin, the damage amounted to \$500,000, and in the Santee Basin, to over \$1,000,000.

Except for the lower Mississippi flood discussed below, the great number of other floods that occurred in the United States during 1929 were for the most part either comparatively unimportant or of a more moderate and less widespread character, though in the aggregate they resulted in large losses.

THE LOWER MISSISSIPPI FLOOD OF 1929 In height, duration, and resultant damage, the flood of 1929 in the lower Mississippi River ranks among the greatest Mississippi floods on record. The lower river remained above flood stage for a longer time than ever before recorded except during the 1927 flood. The loss aggregated \$10,000,000. An important feature of this flood was that the levees, though subjected to an unusually long period of soaking and pressure, withstood the strain with only one crevasse.

The crests were unusually late, because the flood was in reality an upwardly progressive series of three floods, no one of which by itself would have been very severe. The first rise, brought about by waters from the upper Mississippi and the Ohio combining at Cairo, raised the lower river to flood stage in the latter part of March, the last and greatest rise, due to water passing into the already full lower Mississippi from the Missouri, the upper Mississippi, and the Ohio, about May 20, brought the crest, the lower Mississippi continued in flood into June. The area overflowed amounted to 1,830,550 acres, the greatest overflow and largest losses occurred in the Memphis and the Vicksburg districts.

The flood problem which had been brought to the fore by the Vermont and the Mississippi catastrophes, continued to be a major engineering problem during the year. Not only have there been important floods, apparently in unprecedented succession, in various areas of the United States, but the Mississippi problem also continued to keep the flood question in the public eye.

MISSISSIPPI FLOOD CONTROL Perhaps the most important development during the year in the Mississippi Flood Control plans was the decision handed down by Judge B. C. Dawkins in the U. S. District Court at Monroe, La., that floodway lands may not be subjected to the risk of destructive flood discharges unless the owners are compensated for their loss. It will be remembered, as noted in the 1928 Year Book, that the chief item making up the great difference in the estimated cost of these flood works, as figured by the Chief of Engineers of the Army and by the Mississippi River Commission, lay in the fact that the former had made no allowance for compensation to the owners of land in the special emergency flood channels which the plan provided for. It was recognized that the land within these proposed emergency floodways could be cultivated in most years, but that a flood might occur which would cause owners or operators to suffer serious loss. The decision states that "when the Government departed from the policy of building levees and other public works

LOSSES BY FLOOD IN THE UNITED STATES
DURING THE CALENDAR YEAR 1929

Drainage	Reported Losses *	Lives
Atlantic	\$ 8,450,680	11
Gulf (except Mississippi River)	16,370,556	0
Mississippi (except Ohio River)	16,111,851	5
Ohio	12,995,850	34
Great Lakes	171,000	
Pacific	100,000	
Total	\$51,899,937	56

In addition to the above, 20 lives were lost and damage to an indeterminate amount (at least \$100,000) resulted directly or indirectly from several heavy thunderstorms during July in the Middle West and Rocky Mountain regions.

* Probably about 75% of actual

for the purpose of commerce and navigation alone and expressly entered the field of controlling floods for the protection and reclamation of private lands, then it became engaged in activities which make it responsible for the invasion of private rights."

While this decision was to be expected, it will naturally alter completely the economics of the floodway plan. It is difficult to see how any other scheme than the emergency floodway could be economically developed, but the total cost of the project will now be increased by hundreds of millions, and it will probably prove economical to narrow the emergency floodways by levee construction and thus reduce the areas subject to flood damages. It may also bring up again the matter of what share the States involved were to pay in meeting the cost of this enormous project.

An amusing situation developed in connection with the Mississippi plan of flood protection by diversion, when Attorney-General Mitchell ruled that the engineering features of the flood control plan are not subject to review or change and that the approval by President Coolidge of the report of the special board on this project fixed the general features and characteristics of the plan. Apparently, therefore, the floodway problem will have to be solved and alternative plans, involving substitutes, are out of the question.

MIAMI FLOOD WORKS. These notable flood works received their most severe test since construction on February 25 and 26, when a high flood, which would have caused serious damage under the conditions which prevailed before the construction of the works (1915-1922), was experienced. Although the flood of 1929 was not as severe as that of 1913, which resulted in the formation of the Miami conservancy district and the building of the flood works, it is estimated to have equaled that of 1898. At that time, the levees at Dayton, Ohio, were almost topped and a considerable portion of the city inundated. In the February flood of 1929, the peak reached a gauge height of only 14 1/4 feet, whereas the previous peak was about 22 feet.

DALLAS, TEXAS. A project under construction will reclaim some 9940 acres of land in the valley of the Trinity River which, subject to overflow, has constituted a barrier between the city of Dallas on the east bank and Oak Cliff and West Dallas on the west bank. Rapid business and industrial development is expected to follow this improvement as flooding has occurred too frequently in these lower lands to permit their profitable development, and the city has been held back to the higher lands back of this area. Flood waters will be confined, by means of levees, within a main flood channel some 7 miles long and 2000 to 3000 feet wide. Some 26 miles of floodway levees are required, involving about 10,500,000 million yards of embankment. The channel construction will require about 2,660,000 yards of excavation. A total of about \$13,000,000 was to be expended.

NEW MEXICO. In August, the Rio Grande rose above its banks and inundated 30,000 acres. Before the damages could be repaired, another and greater flood, September 22-26, occurred. This was said to have been the greatest in 300 years of record. The valley for 52 miles in length and averaging a mile in width was covered with water which upon receding left a silt deposit of

from 4 to 10 feet. It was said the town of San Marcial was covered to a depth of 7 feet and would be abandoned. Plans of the middle Rio Grande conservancy district for flood control were held up by legal difficulties connected with a proposed bond issue. It was probable that affected corporations and districts in this area might go ahead with flood protection rather than await the outcome of these legal difficulties as the flood menace was pressing.

ALABAMA. A rainfall of remarkably high intensity, 13 to 27 inches falling in 24 hours, following a prolonged wet season, resulted in the worst floods on record in Southern Alabama March 14-15. One town, Elba, with a population of 1800, was practically wiped out, highways totaling 1350 miles were damaged and the railways in the area were hard hit.

NEW ORLEANS. An unusual article appeared in the *Engineering News-Record* (New York) of May 2 which called attention to the fact that the city of New Orleans runs a grave risk of inundation by Gulf storm tides. Comment followed under the caption "A City is Warned," and it was advised to look to its "backyard defenses quite as much as to those more spectacular ones on the riverfront." In the past, it had usually been necessary for a city to experience a disastrous flood before public opinion could be aroused to the point of providing flood protection. A new era of planning for the future was indicated in this important warning.

FLORIDA. POPULATION. A State census was taken in 1925. The result showed a total population of 1,263,549, compared with 968,470 by the Fourteenth United States Census of 1920, an increase of 295,079 in the five-year period. The estimated population of the State on July 1, 1928, was 1,411,000. The capital is Tallahassee.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Oranges	1929		9,500,000 *	\$26,125,000
	1928		15,000,000 *	29,100,000
Grapefruit	1929		6,500,000 *	19,825,000
	1928		10,500,000 *	18,900,000
Corn	1929	625,000	8,438,000 *	7,172,000
	1928	607,000	7,891,000 *	7,891,000
Potatoes	1929	23,000	2,711,000	4,885,000
	1928	31,000	3,875,000	5,812,000
Sweet potatoes	1929	29,000	3,190,000	1,750,000
	1928	28,000	2,464,000	2,834,000
Tobacco	1929	12,300	11,070,000 *	3,454,000
	1928	12,000	9,216,000 *	2,682,000
Cotton	1929	95,000	29,000 *	2,422,000
	1928	95,000	19,000 *	1,700,000
Hay	1929	90,000	64,000 *	1,116,000
	1928	92,000	67,000 *	1,261,000
Peanuts	1929	208,000	121,800,000 *	4,263,000
	1928	194,000	111,550,000 *	4,685,000

* Boxes. * Pounds. * Bales * Tons

MINERAL PRODUCTION. The leading State in the production of phosphate rock, Florida profited in 1928 by an improvement in this industry. In 1927 the State produced about four-fifths of the country's total of this product, there were produced 2,637,420 long tons, in value, \$8,646,162, in 1926, 2,708,207 tons, \$8,683,508. The increase in annual stone production continued, the quantity produced in 1927 was 7,437,580 short tons, as against 6,785,430 for 1926, value of stone produced was lower in 1927, however, being

\$6,138,767, to \$7,411,506 for 1926. The yearly output of clay products, \$402,190 for 1927, was little changed. Sand and gravel production was considerable in 1927, but decreased, especially in value. Among the minor products, wiron was especially active, there being produced, in 1927, 3646 short tons, of the value of \$364,600, in 1929 1292 tons, in value \$129,200 had been produced. This product had risen steadily from a total of 10 tons in 1922. The aggregate mineral production of the State for 1927 was \$18,095,961, for 1926, \$19,700,522.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 5738.07. There were built, in 1929, 9.57 miles of additional first track.

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to operations of 1927, there were in the State, in 1927, 1912 manufacturing establishments. These employed 61,219 wage earners, whose wages for the year totaled \$56,671,574. Materials and supplies used in production cost \$91,715,524. Manufactured products attained the combined value of \$218,790,152.

EDUCATION The failure of the Legislature to approve the recommendations of a report rendered by the State school survey commission was attributed to a lack of a general realization of the State of the need of State wide

in school matters. The school population of the State was reckoned according to the census of 1925, which gave it as 391,299. There were enrolled in the public schools, in 1928, 361,357 pupils, of whom 320,433 were in elementary and 40,924 in high-school grades. Expenditures for public school education in 1928 totaled \$27,124,091. The average monthly salary of public school teachers was \$121.80. It varied greatly, being \$178.60 for white men teachers, \$124.40 for white women, \$89 for Negro men and \$63.80 for Negro women.

CHARITIES AND CORRECTIONS The central organization of the State dealing with matters affecting the care and custody of persons in 1929 was the Board of Commissioners of State Institutions, consisting of the Governor and six other of the chief State officers. Under control of this Board were five institutions: the Florida Industrial School for Boys, Marianna; Florida Industrial School for Girls, Ocala; Florida State Hospital (for the insane), Chattahoochee; Florida State Farm (the State penitentiary), Raiford; Florida Farm Colony (for feeble-minded children), Gainesville.

LEGISLATION The regular biennial session of the State Legislature convened on April 2. It adjourned on June 1, at the end of the 60-day term, but Governor Carlton immediately summoned the Legislature into successive special sessions on the ground that matters of appropriation, finance, taxation, and education had not been settled, and eventually the measures that he sought were enacted. Among the chief measures passed were those levying a series of taxes. A gasoline tax of 6 cents a gallon was enacted with provisions applying two of every six cents so raised to the liquidation of road and bridge indebtedness of the counties, totaling approximately \$161,000,000, one and two-thirds cents to the counties' expenditures for common schools, and one-third of a cent to local road and bridge construction. A tax was placed also upon petroleum

products stored within the State. An occupational license tax, brought into being, was designed in part for revenue and in part as a safeguard to business practice. It required among other things that a tax be levied on all bankrupt, fire, wreck, and water-damage sales of goods. The occupations subjected to license were required to pay \$250 in each county where their business was conducted.

Bank laws were enacted to meet the situation produced by the difficulties of certain of the banks of the State. Amendments of bank charters were forbidden save on the vote of at least three-fourths of the stock and the approval of the Governor. The minimum bank capital was raised to \$25,000, from \$15,000, and to \$50,000, except on special approval of the comptroller, save in places of not over 3000. Loans to any of the bank personnel in excess of 10 per cent of an institution's capital and surplus were forbidden, secured loans to others up to 25 per cent were permitted. Bank and trust company investments were limited. Dividends were limited to 10 per cent and made conditional on the transfer of one-tenth of profits to surplus. One-half of profits thus transferred were to be invested in specified types of security and deposited with the State Treasurer, up to an amount equal to that of the capital stock, for withdrawal and use as the comptroller might direct. A new official, the bank liquidator, was created charged with winding up banks of which the impaired capital could not be made good by the assessment of stockholders.

It was made unlawful to ship from the State between August 31 and December 1 green citrus fruit, except tangerines, unless bearing certificate of inspection and maturity. Improvement projects of drainage districts were made subject to the approval of 60 per cent of the property owners. A resolution for a constitutional amendment to authorize an issue of \$50,000,000 of State bonds to stabilize county finances were proposed.

POLITICAL AND OTHER EVENTS With the discovery that the Mediterranean fruit fly had gained a hold in the citrus orchards of Florida, there followed early in 1929 a time of trial for the citrus-fruit growers of the State. In April, the Federal Department of Agriculture organized a force under Dr. Wilno, the State plant commissioner, to check the spread of the pest. A Federal quarantine was maintained. An area was described, largely in Orange and Lake counties, in which all citrus fruit was to be destroyed, and strict inspection was maintained in the surrounding zone for a distance of 9 miles from the infected region. It was estimated in July that 34 per cent of the land area of the State and some 72 per cent of the citrus-bearing trees had then been included within the infected district. The possible loss for the year, in citrus fruit and other affected vegetation, was reckoned at about \$60,000,000, this estimate excluding the threatened depreciation of a capital investment of some \$300,000,000 in the infected area. The situation had a bad effect on banking within the State.

Early in July, many of the small banks suspended, and on July 17 two of the larger banks of Tampa and some twelve smaller banks, with aggregate deposits of about \$22,000,000 ceased payments. The quarantine was somewhat alleviated by a revision of its terms that went into effect on September 1. The Federal Farm Board

made on August 8 its first loan, an advance of \$300,000 to the Florida Citrus Exchange, in an effort to relieve the growers' difficulties.

A movement was started early in the year to induce the Federal Government to undertake a part of the cost of drainage work in the Everglades and received some support from General Jadwin, Chief of Engineers, U S A. The city of Lake Worth was enjoined by Federal court order on May 29 from expending the proceeds of paving and sewer certificates in its possession, otherwise saved to pay interest on its municipal obligations in arrears. The project for the purchase of the East Coast Canal by the Florida Inland Navigation District, a creation of the Legislature of 1927, including 11 counties, and the transfer of the canal to the Federal Government, was advanced by the Legislature's act validating the issue of \$1,887,000 authorized in 1928 by the district, and by a decision of the State Supreme Court sustaining the act. The city of Miami opened a municipal airport on January 8. The Florida cane-sugar industry was advanced by the enlargement of the sugar mill of the Southern Sugar Company, at Clewiston, to increase its capacity to 4000 tons a day by the end of the year, the mill's previous capacity had been 1500 tons a day.

OFFICERS Governor, Doyle E Carlton Secretary of State, W M Igou (succeeding H Clay Crawford, deceased), Attorney-General, Fred H Davis, Comptroller, Ernest Amos; State Treasurer, W V Knott, State Superintendent of Public Instruction, W S Cawthon, Commissioner of Agriculture, Nathan Mayo.

JUDICIARY Supreme Court Chief Justice, Glenn Terrell, Associate Justices, W H Ellis, James B Whitfield, Armstead Brown, Rivers Buford, L W Strum.

FLORIDA, UNIVERSITY OF A State institution of higher education for men in Gainesville, Fla., founded in 1905. In the autumn of 1929, the registration totaled 2148, distributed as follows: Arts and sciences, 517, commerce and journalism, 464; teachers, 316, engineering, 275, law, 231, agriculture, 161; pharmacy, 52, architecture and allied arts, 52, graduate, 80. The registration for the summer session of 1929 was 1613 men and women. The faculty numbered 151 (exclusive of student assistants and research men). The cost of operating and maintenance was \$2,330,276, the annual endowment was \$315,488. The library contained 90,000 volumes. A dormitory costing \$150,000, an artillery unit, and a radio broadcasting station were completed in 1929. President, John James Tigert, LL D.

FLORIDA STATE COLLEGE. An institution for the higher education of women in Tallahassee, Fla., founded in 1905. The enrollment for the autumn of 1929 was 1594, distributed as follows: Graduate school, 12, college of arts and sciences, 654, school of education and normal school, 710, school of home economics, 145, school of music, 73. The enrollment for the summer session was 766. The faculty numbered 147 members. The income from endowment for the year was \$6150, State appropriations amounted to \$539,180. There were 30,578 volumes in the library. During 1929 a new gymnasium was erected and the library was enlarged so as to serve the needs of the college during a long period of expansion. President, Edward Conradi, Ph D.

FLOTATION. See **METALLURGY.**

FOCH, MARSHAL FERDINAND French military leader, Generalissimo of the Allied and Associated Powers in France during the World War, died in Paris, Mar 20, 1929. He was born on Oct. 2, 1851, at Tarbes in the Pyrenees, educated at St Clement's at Metz and L'Ecole Polytechnique, and commissioned in the Artillery in 1873. In 1896 he was appointed professor at the Ecole Supérieure de Guerre, later becoming director of the school. When the World War broke out in 1914, he was in command of the 20th Corps at Nancy, known as the "Tron Division." This position was followed by command of the 9th Army, which fought itself at the Battle of the Marne. In the course of the battle, Foch sent to Joffre the famous message "*Mon centre cède et ma droite recule. Tout va bien. L'attaque.*" epitomizing his daring methods of warfare, his refusal to admit defeat. When, in 1917, Pétain was made commander-in-chief of the French Army, Foch succeeded him as chief of the staff. In the same year, also, he was appointed president of the Inter-Allied Executive War Board established at Versailles. When the necessity for a unified command was felt early in 1918, at a conference at Doullens, Foch was chosen, at the proposal of Lord Milner of England and with the acquiescence of Field Marshal Haig and General Pershing, Generalissimo of the Allied and Associated Powers in France. In August of 1918, as commander-in-chief, he began the offensive that brought about the Armistice of November. He agreed to an armistice instead of pushing on into Germany because he believed that he had no right to shed one drop of blood after it was no longer necessary. At the Peace Conference of Versailles, he advocated the establishment of the French military frontier along the Rhine, believing that the League of Nations did not offer France a sufficient guarantee. In recognition of his service, France bestowed upon him the Grand-croix de la Légion d'honneur, the Médaille militaire, and the Croix de guerre, made him Maréchal de France in 1918, and elected him to membership in l'Académie Française and l'Académie des Sciences. England gave him the British Order of Merit, made him Knight of the Grand Cross of the Bath, and Oxford gave him an honorary D.C.L. Both England and Poland made him a field marshal. From the United States, he received the Medal for Distinguished Service, and when he visited that country in 1921, he was acclaimed with enthusiasm. On his death, France accorded him a state funeral such as had been given previously only to Léon Gambetta, Victor Hugo, President Carnot, Louis Pasteur, and President Faure in the history of the country. Foch's military memoirs were left unfinished, but in his previously unpublished works, he had set forth his philosophy of warfare, which in great part was formed on the teaching of Napoleon. He wrote *Les Principes de la Guerre* (1903), *De la Conduite de la Guerre* (1904); and *Éloge de Napoléon* (1912). Consult *Foch Speaks*, by Major Charles Baguet (English translation, 1929).

FOGG MUSEUM. See **ART MUSEUMS.**

FOLWELL, WILLIAM WATTS American educator, died in Minneapolis, Minn., Sept 18, 1929. He was born in Romulus, N Y, Feb 14, 1833, was graduated from Hobart College in 1857, and after teaching a year at Ovid Academy, N Y, returned to Hobart as professor of mathematics, 1858-60. In 1860-61 he studied in Berlin, return-

ing to the United States to join the 50th New York Engineers, where he was promoted, during the course of the Civil War, from first lieutenant to major, and at the close of the war was breveted lieutenant-colonel. After the war, from 1865 to 1869, he was in business in Ohio, but in 1869, he became professor of mathematics at Kenyon College. In the same year, he was elected to the presidency of the University of Minnesota, serving in that capacity until 1884, when he resigned to devote himself exclusively to teaching political science. In 1907 he retired from active work in the University of Minnesota, becoming president emeritus. Professor Folwell was the author of four volumes of Minnesota history.

FOOD AND NUTRITION. Food Prices. *United States.* The index number of wholesale prices of foods reported by the Bureau of Labor Statistics, U. S. Department of Labor (*Mo Labor Rev.*, vol. xxiv, p. 216) was 101.2 for October, as compared with 102.3 for October, 1928 (1926 = 100). Among the principal food groups, meats were considerably lower, 106.7 as compared with 116.4, milk and dairy products slightly lower, 106.2, as compared with 108.4, and all other foods combined higher, 95.8, as compared with 91.2 for 1928. *Bradstreet's* food index number based on the wholesale prices per pound of 31 articles of food was \$3.12 for the week ended December 28, as compared with \$3.26 for the week ended Dec. 27, 1928.

The combined retail prices of 42 articles of food, as reported by Bureau of Labor Statistics (*Mo Labor Rev.*, vol. 29, p. 195), were 2.3 per cent higher on Oct. 15, 1929, than on Oct. 15, 1928. Increases of 1 per cent or more were shown in 12, and decreases in 21 of the individual food items. Navy beans were 1.4, potatoes 73, and pines 23 per cent higher, onions 1.3 and oranges 30 per cent lower on Oct. 15, 1929, than on Oct. 15, 1928. The combined index number for all of the articles included was 160.5, as compared with 156.8 for the preceding year (1913 = 100). The drop in wholesale prices of meats was not reflected in the retail index numbers which, on the contrary, increased from 188.9 in 1928 to 189.2 in 1929. Dairy products decreased from 151.1 to 149.3 and cereals from 163.9 to 163.5.

Other Countries. The general trend of retail food prices throughout the world may be seen from the accompanying table compiled from data reported in the *Federal Reserve Bulletin* of December, 1929 (p. 808). The index numbers, which have been constructed by the various foreign statistical offices, are based on the prices of a number of articles of food weighted according to different standards, but unless otherwise noted referable to the original pre-war basis of 100. England alone showed a slight decrease in retail food prices and New Zealand no change. All of the other countries listed showed increases in retail food prices over the corresponding period in 1928.

FOOD SELECTION AND EXPENDITURE. In a comparison by Woodhouse (*J. Polit. Econ.*, vol. 38, p. 552) of the standards of living of a professional man's family in Washington, D. C., in 1816-17 with that of a similar family in 1926-27, as determined by household accounts kept by both families, interesting facts were brought out concerning changes in dietary habits which have taken place in the past century. The total expenditures for food in the two families, which were practically the same size, were strikingly similar, \$916 for the 1816-17 and \$914 for the 1926-27 family. The distribution of the total food budget for the principal food groups, however, was quite different. The 1816-17 family spent 36.3 per cent of the total for meat, poultry, and fish, 16.4 per cent for milk and dairy products, and 10.6 per cent for fruits.

Corresponding figures for the 1926-27 family were 17.8, 34.1, and 23.7 per cent, respectively. The main factors responsible for these wide variations were thought by Woodhouse to be the advance in scientific knowledge of diet and the improvement in transportation and marketing facilities which have taken place during the century. Applying the Sherman rules that, whatever the level of expenditure, at least as much should be spent for milk and dairy products as for meats, poultry, and fish and at least as much for fruits as for meat, poultry, and fish (*Food and Nutrition*, 3d ed., p. 599), it will be seen that the 1816-17 figures fell far short of and the 1926-27 figures were well above these standards.

These were professional families living in a city. A recent investigation by McKay (*Ohio Agr. Expt. Sta. Bul.*, 433) of food consumption and expenditures for rural families in Ohio showed that 16.62 per cent of the total expenditure for food was for milk, cream, and cheese, 25 per cent for fruits and vegetables, and 23.39 per cent for meat, fish, and poultry. These diets were thus above the standard for fruits and vegetables and only slightly below for milk and dairy products. The diets of Utah farm families were found by Brown (*Utah Agr. Expt. Sta. Bul.*, 213) to be above the standard for milk and dairy products and slightly below for fruits and vegetables as calculated in terms of percentage distribution of total calories. Hawley (*U. S. Dept. Agr. Circ.*, 89), from an analysis of a large number of dietary records at institutions housing college students, concluded that in these institutions milk and dairy products and fruits and vegetables played too small a part in the diet, but that the diets planned by trained dietitians were more nearly adequate in every respect than those planned by persons untrained in food values.

No direct comparison is possible for the cost of the diets in these various studies, since different price levels were used. In the Ohio study, the estimated average cost per man per day based on 1928 price indexes was 41 cents. Hawley, using 1926 prices, estimated the average cost of the food served to the college students in the various institutions studied to be from 40 to 45 cents per man per day.

The growth of the cafeteria system of feeding in institutions and elsewhere and the expansion of drug-store soda fountains into lunch rooms has made the question of food value received for money spent in such eating places of importance to those who are trying to live on a minimum allowance. Benedict and Farr (*New Hampshire Agr. Expt. Sta. Bul.*, 242) have determined the energy value and protein content of a large number of individual foods and food combinations regularly eaten in college cafeterias and restaurants and at soda fountains and have calculated their results in terms of servings and amount purchasable for 10 cents. Their figures emphasize the wide variations in food value of different combinations of equal cost and the high caloric value of many of the between-meal and soda-fountain foods. Sandwiches, while vary-

ing widely according to their filling, averaged about 200 calories and from 5 to 10 grams of protein for 10 cents. Package sandwiches consisting of crackers with various fillings averaged about as many calories for 5 cents as most of the regular sandwiches for 10. Half-pint servings of ice cream, generally sold for 15 cents, furnished about 500 calories and 7 grams of protein, one pint of chocolate milk from 450 to 500 calories and from 14 to 15 grams of protein, and candies such as sold in 5-cent packages averaged about 450 calories for 10 cents.

The high calorie value of 5-cent package sandwiches and candies should be kept in mind by those interested in the proper diet for their children or in avoiding obesity for themselves. The committee on nutritional problems of the American Public Health Association in its annual report (*Am J. Pub Health*, vol 19, p 1205) called attention to the advertising claims made in behalf of a larger use of sweets as food not only for adults but even for children. Reviewing briefly the nutritional significance of each of the different types of food materials, they pointed out that sugar contributes nothing of food value except as a source of calories and that consequently "the proper place of sugar in the food supplies and eating habits of children is not in such concentrated forms as candy, nor in the indiscriminate and excessive sweetening of all kinds of foods, but rather as a preservative and flavor to facilitate the introduction into the child's dietary of larger amounts of the fruit and the milk, the importance of which to child health has been increasingly emphasized with each year's progress in our knowledge of nutrition."

This caution against the excessive use of sweets might well be extended to adults, particularly from the standpoint of avoidance of obesity. Adams (*J Nutrition*, vol 1, p 339) compared the weight with reference to age of 673 diabetic patients at the Mayo Clinic with values from actuarial tables with the conclusion that 91 per cent of the patients were overweight before the onset of diabetes and that, as far as could be judged by case reports, in over half of the entire group the obesity was the result of overeating and thus preventable. Emerson and Manny (*J Amer Med Assoc*, vol 93, p 457) from medico-actuarial tables plotted the mortality figures for various ages against weight with the finding that above the age of 35 the mortality figure increased about 1 per cent for each pound above the optimum weight. This should not be considered as an argument for the present fad of excessive weight reduction through such means as the "fast diet" but rather for moderation in the use of foods which furnish nothing but calories and for greater emphasis on the so-called protective foods such as eggs, milk, fruits, and vegetables. In the opinion of Langstroth (*J Am Med Assoc*, vol 93, p 1607) a diet containing a high percentage of non-protective foods conduces to early degenerative diseases such as hypertension, arteriosclerosis, arthritis, and chronic gastrointestinal disease, and conversely a diet containing a high percentage of protective foods presumably is capable of modifying and of preventing such a condition.

INFANT FEEDING.—The importance of safeguarding the health of the child through the mother during pregnancy and lactation received new emphasis from the demonstra-

tion both in laboratory experiments and clinical experience of the very large requirements of the mother for the vitamin-B complex (vitamins B and G), if her milk is to be the sole source of these vitamins for the breast-fed child. Specific recommendations for diet during pregnancy and lactation were made by Macy and West (*Am J. Diseases Children*, vol 37, p 379) and by West (*Arch. Pediatrics*, vol 46, p 640). The diet recommended by the latter includes daily one raw citrus fruit or tomato, one raw and two cooked green vegetables, one quart of milk, and one tablespoonful of wheat-germ sugar (Vita-vose) added to the milk or sprinkled on the cereal.

The remainder of such a diet should consist of palatable foods such as cereals, eggs, meats, vegetables, and simple desserts, with calves' liver, kidneys, or sweetbreads in place of meat at least once a week. It is said that many breast-fed babies formerly fretful and irritable, with poor appetite and unsatisfactory growth, have done well after the mother has been given this vitamin-rich diet, showing that the breast milk has increased in quality and quantity. If the results are not entirely satisfactory, supplementary feedings are given the babies of from $\frac{1}{2}$ to $1\frac{1}{2}$ oz of the wheat-germ sugar or $\frac{1}{2}$ teaspoonful of dried brewers' yeast in a 20-oz formula.

In many hospitals some source of the vitamin-B complex is now being used in the routine feeding of babies. Dennett (*J Am Med Assoc*, vol 92, p 769) reported improvement in appetite, cessation of fretfulness and prompt increase in weight in babies receiving wheat-germ sugar in amounts varying from 1 to 4 level tablespoonfuls per day in simple dilutions of fresh, boiled, or dried cow's milk. Blossom (*Am J. Diseases Children*, vol 37, p 1161) reported such improvement in babies receiving supplements of brewers' yeast daily that their stay in the hospital was considerably shortened, as compared with that of babies not receiving this supplement.

Mariotti and Schoenthal (*Arch Pediatrics*, vol 46, p 135) found evaporated milk in suitable modifications to be especially satisfactory for premature infants and for those suffering from nutritional or gastrointestinal disorders. Bienneman (*J Am Med Assoc*, vol 92, p 364) attributed the success of both evaporated milk and lactic-acid milk in infant feeding to the attenuation of the curd, as compared with fresh milk. Ashton, Springfield, and Martin (*Arch Pediatrics*, vol 46, p 75) reported success in the use of dried whole milk in place of fresh whole milk modifications in infant feeding.

Irradiated milk has come into extensive use on the continent of Europe in the prevention and cure of rickets. In England, Watson and Finley (*Lancet*, 1929, II, p 704), as the result of an investigation of the therapeutic properties of irradiated fresh milk, stated as their opinion that "the cure of the disease is established more quickly, effectively, and economically by the use of irradiated milk than by various irradiated commercial preparations." Hess, a leading authority on rickets, considers that irradiated fluid or dried milk is a promising preventive measure, but that "it has been used for too short a time to warrant its being singled out as the method of choice."

NUTRITION OF CHILDREN. The striking arrest in dental caries, noted in last year's report as

occurring in children under rigid dietary control for diabetes, was also obtained by Boyd, Drain, and Nelson (*Am J Diseases Children*, vol. 38, p. 721) in several groups of nondiabetic children. One group received the low-carbohydrate, high-fat diet of the diabetic children, another, diets furnishing carbohydrates, protein, and fat in liberal amounts, and a third, diets high in carbohydrate and protein, and with practically no fat. The dietary factors in common in all of the groups were liberal allowances of vitamins and minerals and at least a gram of protein per pound of body weight. In all cases, dental caries was definitely checked. Boyd and his associates were of the opinion that the arrest of caries was due to the adequacy of the diet in all essential factors rather than the limitation of the amount of any of the foods commonly used. "However, the use of any component in excessive amounts may lead to the omission from the diet of other essential foods, and such omission may render the teeth susceptible to decay. If extensive use of sugars and starches is found associated with caries, it is probably to be explained on this basis."

The condition of the teeth of children thus appears to be an important index of nutritional status. Davies (*J Home Econ*, vol. 21, p. 106), in presenting suggestions for evaluating data on dental conditions emphasized the fact that no one index of health can be used to the exclusion of others in judging the nutritional status of children, but suggested that when dental conditions are bad the search for the cause may well begin in a study of the content of calcium and of vitamins A and C in the diet.

Daniels and Hejman (*Am J Diseases Children*, vol. 37, p. 1128) reported that in male infants from 2 to 8 months of age, the relation between creatinine excretion and body length appeared to be a more accurate measure of the child's physical development than the height-weight relationship. While admitting that many more data were needed to confirm these findings and to determine the norms of children of different ages, they were hopeful that the establishment of such norms might be accomplished and "lead to a more rational method of evaluating and treating the so-called undernourished child."

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INDEX NUMBER OF RETAIL FOOD PRICES IN PRINCIPAL COUNTRIES
[Pre-war = 100]

Year and month	United States (51 cities)	Australia	Austria (Vienna)	Belgium *	Bulgaria	Canada *	England *	France (Paris)
1928, Sept	155	150	120	210	2,682	150	156	110
1929, Sept	158	162	122	227 *	2,789 *	157	154	122
Year and month	Germany	India (Bombay)	Italy (Milan)	New Zealand	Norway	Russia *	South Africa	Switzerland
1928, Sept	153	141	140	147	164	210	115	157
1929, Sept	154	146	146	147	160	230 *	114	155

* 1921 = 100

† August 15

‡ First of month figure

§ April 15

The use of standard height-weight tables for estimating the nutritional status of children received considerable criticism during the year. Turner (*Am J Pub Health*, vol. 19, p. 969) pointed out various sources of error in the use of such tables, with the conclusion that they give average values rather than normal weight and that it is "unscientific and unfair to set average weight as a goal for all children." In his opinion, emphasis should be placed upon regular gains in weight rather than upon the child's underweight status. Franzen (see *Bibliography*), from a statistical study of measurements of about 7500 public-school children of the fifth and sixth grades concluded that the correlation of height and weight was not nearly as high as that of other skeletal combinations with weight and recommended as the most accurate index of nutritional status for the ages represented in his study "the actual amount of subcutaneous tissue over the biceps minus the amount of subcutaneous tissue over the triceps to be expected from height, chest dimensions, width of hips and bisacromial width."

FOOT AND MOUTH DISEASE See VETERINARY MEDICINE

FOOTBALL The season of 1929 found many football eleveners playing a brand of game far above what had been shown the year previous. Once again did football prove that it had the greatest hold on the affection of the sporting public of any game. The meeting between two of the strongest teams—Notre Dame and Southern California—in Chicago was witnessed by the largest crowd in the history of the sport. One hundred and twenty-three thousand people thronged the Soldiers' Field and saw Notre Dame win, 13 to 12.

Some of the more important teams that showed a distinct improvement in their play in 1929 were Notre Dame, Purdue, Pittsburgh, Fordham, Colgate, Harvard, Vanderbilt, North Carolina, St. Mary's, Utah, Texas Christian, Western Maryland, and Bucknell. No real champion could be selected although the Notre Dame eleven was generally recognized as the equal or superior of any other team. The Knute Rockne coached aggregation, the Purdue and Pittsburgh eleveners were undefeated and untied in the regular season.

and had the best records in the matter of defeating high-class opposition.

Approval of the Fumble Rule was withheld and there was much discussion and dissension concerning this statute which makes a ball which is fumbled and has touched the ground a dead ball. This rule does away with all uncertainty when a man might win the game by picking up a fumble and running for a touchdown. A development of the season was the expulsion of Iowa University by the Western Conference. The Big Ten convicted Iowa of making illegal arrangements with some of its best athletes, football players, and an aftermath of that was an earnest desire by Iowa to make a change for the better. The ethical standing of football and other sports at some of the universities suffered a blow from the findings of the Foundation report, published in November.

Some of the outstanding players of the season were Booth, Yale, quarterback; Cagle, Army, halfback; Donchess, Pittsburgh, end; Saunders, So California, quarterback; Carideo, Notre Dame, quarterback; Wood, Harvard, quarterback; Siano, Fordham, centre; Ticknor, Harvard, centre; Marsters, Dartmouth, halfback; Banker, Tulane, fullback; McKiver, Tennessee, halfback; Welch, Purdue, fullback; Wakeman, Cornell, tackle; Uansa, Pittsburgh, halfback; Nagurski, Minnesota, tackle; Cannon, Notre Dame, guard; Lom, California, halfback, and Schoonover, Arkansas, end.

The scores of some important games follow:

Stanford, 21-California, 6; California, 15-Southern California, 7; Pittsburgh, 34-Carnegie Tech, 13; Notre Dame, 7-Army, 0; Yale, 21-Army, 1; Illinois, 17-Army, 7; Fordham, 7-Boston College, 0; Navy, 13-Dartmouth, 6; Yale, 14-Dartmouth, 14; Dartmouth, 34-Harvard, 7; Yale, 16-Dartmouth, 12; Fordham, 14-Bucknell, 0; Fordham, 26-New York University, 0; Georgia, 15-Yale, 0; Notre Dame, 26-Georgia Tech, 0; Detroit, 14-Georgetown, 13; Yale, 13-Maryland, 13; Harvard, 14-Florida, 0; Lehigh, 13-Lafayette, 12; Pennsylvania, 10-Lehigh, 7; Navy, 0-Georgetown, 0; New York University, 27-Georgia, 19; Notre Dame, 13-Southern California, 12; Notre Dame, 14-Navy, 7; Notre Dame, 26-Northwestern, 6; Oregon State, 14-Detroit, 7; Pennsylvania, 20-Columbia, 0; Penn State, 19-Pennsylvania, 7; Pennsylvania, 7-Navy, 2; Pittsburgh, 20-Penn State, 7; Pittsburgh, 12-Nebraska, 7; Princeton, 7; Yale, 11-Princeton, 0; Yale, 6; Purdue, 32-Indiana, 0; Santa Clara, 13-Stanford, 7; Tennessee, 6-Kentucky, 6.

FORD COLLECTION. See ART SALES.

FORDHAM UNIVERSITY. A Roman Catholic institution for higher education, under the Society of Jesus at Fordham, New York City, founded as St. John's College in 1841. It is the largest Roman Catholic educational institution in the United States. The enrollment for 1929-30 totaled 9939 students, including 2748 in the teachers' college and 760 in the graduate school, and a distribution among the other colleges as follows: Law, 1318; pre-law, 532; college, 1322; business administration, 225; pharmacy, 566; social service, 313; Irish studies, 135; preparatory school, 603; the registration for the summer session of 1929 was 1417. There were 376 faculty members. The endowment fund on June 30, 1929, amounted to \$141,290. There were 110,000 volumes in the library. President, the Rev. William J. Duane, S. J., Ph.D.

FOREIGN EXCHANGE. See FINANCIAL REVIEW.

FOREST FIRES. See FORESTRY.

FORESTRY. Perhaps the outstanding feature in American forestry during the year 1929 was

the continued development of a saner attitude on the part of the people toward commercial enterprises. A live-and-let-live attitude of mind became increasingly apparent, recognizing the fact that lumber producers have their own large problems, such as increased taxation and increased inaccessibility of the raw materials, etc. Both parties, the conservationists on the one hand and the lumbermen on the other apparently realized that the careful study of problems and the development of broad, far-reaching policies were better in the end than bitter controversy and unreasonable regulations.

The year 1929 was marked by a notable increase, especially in the eastern part of the country, in the number and size of State, county, and town-owned forests. In addition to esthetic reasons, these forests were often purchased with a view to increasing public revenues and providing work for local citizens in the dull winter season. In several States, legislation was passed to encourage the purchase of forest lands, in fact all signs indicated that people are becoming more and more forestry minded. No longer is the forest considered as merely an area of waste land but rather as a source of valuable products and from the recreational viewpoint as a necessary adjunct to the public welfare. The forest conservationist is no longer looked upon as a dreamy idealist but rather as a far-sighted and patriotic citizen.

LUMBER PRODUCTION. Despite the growth of the national population, there has been, according to the U. S. Forest Service, a consistent decline in per-capita consumption of lumber in the United States from a maximum of 525 feet in 1906 to a minimum of 280 feet in 1927, the last year for which figures are available. The decline in per-capita consumption accompanied a decline in total production, making earlier forecasts of impending shortage inaccurate. The U. S. Forest Service (*Report of the Forester* for year ended June 30, 1929) estimates that the remaining stands of virgin timber in California and in the northwestern States include approximately 1,000,000,000 board feet which, on the basis of the present output of 15,000,000,000 feet per year, would last over 60 years, even with new growth. Apparently considerable and cry raised by conservationists in the past has been ill-founded. The U. S. Forester declares that too rapid cutting, with consequent flooding of markets, is more of a problem at present than an impending shortage. In the rush to liquidate the vast holdings in order to meet current expenses, the lumber owners are forced at times to sacrifice much material which, though now unprofitable, would in time be commercially valuable. That the lumbermen themselves fully appreciate the evils of the situation was evident in an appeal on the part of the directors of the National Lumber Manufacturers Association to the U. S. Congress for legislation looking to the control of production of lumber in the same manner proposed for coal, oil, and other natural resources.

THE FOREST-FIRE PROBLEM. As a result of long continued droughts in the Pacific Northwest, 1929 had the unfavorable distinction of being one of the worst forest-fire years in recent times. Information released by the Forest Service on October 9 stated that a total of 842,000 acres had been burned over in the National Forests up to that time. The immediate loss in timber in the Pacific Northwest and Inland Empire region

alone was roughly estimated at \$3,000,000. The serious rôle played by lightning was indicated in a record of 239 lightning-caused fires in a single day, August 29, in the northern district alone. Incendiarism was also a serious problem in certain areas, there being 51 such fires in a single day in the Klamath National Forest in northern California. The U. S. Forester, Major R. Y. Stuart, in his above-mentioned annual report, pointed out the need of greater protection facilities, including more men, better equipment, and, above all, roads and trails enabling the fire fighters to rapidly reach the danger zones before the fires had gained full momentum.

A study by the Forest Service showed that in the four Western districts there was a total of 17,757,331 acres (an area equal to one-half the State of Iowa) without roads and trails. Obviously, quick control is impossible under such conditions. Reforestation becomes almost useless under conditions of inadequate fire protection. The Forester adds that with present resources, approximately 37 years will be required to develop a satisfactory road and trail system. Means of communication, such as telephone and radio, also are sadly deficient in many areas. The possibilities in adequate protection are shown in a Forest Service statement that fire losses in 1928 on the protected 68.5 per cent of total forest area in the United States were less than one-eighth of those on the unprotected remainder.

THE NATIONAL FORESTS. According to the 1929 report of the U. S. Forester, the net area of the National Forests was 159,750,520 acres at the close of the fiscal year, June 30, 1929, representing a net gain during the year of 269,664 acres. A clearer idea of the immense area of these properties is gained by comparison with that of our largest state, Texas, which includes 167,934,720 acres, less than 5 per cent more than the National Forests. Indicative of the economic importance of the National Forests, the cash receipts from sale of timber, grazing privileges, etc., amounted to over \$6,000,000 in the same period. Receipts from timber sales increased over \$783,000 above those of the preceding year. A total of 18,825 acres were replanted with young forest stock, raised in the National Forest nurseries, with the expectation of greatly expanding this activity in the future so as to render productive the millions of acres of cut-over lands now yielding little or no valuable timber and, in many instances, subject to destructive erosion. Purchases of forest lands in the states east of the Mississippi were increased, important accessions being made to the National Forests in Pennsylvania, Georgia, and New Hampshire, in some instances with a view to better protection of water sheds of important streams and in other cases the preservation of scenic areas for the benefit of present and future generations.

STATE AND MUNICIPAL FORESTS. According to the official record of the U. S. Department of Agriculture of Apr. 25, 1929, the total area of State forests was at that time 6,556,735 acres and of municipal and county forests 726,577 acres, presenting concrete evidence of the growing importance of this phase of forestry. New York State, with its large Adirondack and Catskill public forests amended its laws to permit the purchase of new areas outside these forests. Indiana, New Jersey, Ohio, South Carolina, and Vermont authorized forest land purchases or the acceptance of gifts of such properties. Tax legislation

was enacted by Connecticut, North Carolina, Maine, Idaho, Minnesota, and Oregon, making it easier for private owners to carry forest lands during the growing stage, thus encouraging reforestation and the holding of forest crops until mature.

RESEARCH AND EDUCATION. No better sign of the improved public attitude toward scientific forestry is needed than that of the very material progress along research and educational lines. The regional forest experiment station programme begun by the U. S. Department of Agriculture in 1921 and now well under way, with stations already established in most of the important forest areas, has been a most notable undertaking and one that is already showing profitable returns. The equipment of each station with a well-balanced staff of technical workers is in process with the objective in view of being able to attack problems from all angles. Concrete results are already forthcoming and it is quite evident that this systematic research plan is going to be a mighty factor in the advancement of forestry in the near future.

Forest economics received greater consideration in 1929 in the realization that the development of sources of forest land use must be founded on scientific principles and forces. A nation-wide forest survey was undertaken by the U. S. Forest Service to secure an accurate, detailed, and comprehensive appraisal of the national resources at present and probable developments in the future. Forest product investigations at the laboratories at Madison, Wisconsin, and in the field continued to yield important results, especially in the utilization of inferior tree species, of lower grades of lumbers, and in the preservation of wood.

Research in private institutions also progressed favorably. Yale University was the fortunate recipient of a fund of more than \$200,000 donated by the well-known benefactor of forestry, Charles Lathrop Pack, as a foundation for the advancement of applied forestry. Oregon State College received a gift of 2400 acres of cut-over forest land in Columbia County to be used in research and teaching. At the University of California, a change was made in the curriculum of the forest school, providing for the degree of doctor in forestry.

A considerable increase in student enrollment in forestry schools throughout the country gave promise of an abundant trained personnel for the future. The State School of Forestry at Mont Alto, Pa., was combined on June 15, 1929, with the forestry department at Pennsylvania State College as a step in strengthening and coordinating the forestry education work of the State.

MISCELLANEOUS. The seventh congress of the International Union of Forest Experiment Stations was held in Stockholm, Sweden, July 21-27, under the presidency of Henrik Hesselmann, well-known head of the Swedish Forest Experiment Institute. Among Americans attending were E. N. Munna, Joseph Kittledge, Jr., and Alfred Stamm of the U. S. Forest Service, and Professor James W. Toumey of the Yale School of Forestry. Important progress was made in providing for an international forestry congress.

William T. Cox and Dr. J. M. Matthews were employed by the Brazilian government to organize a federal forest service for the care of the immense forest areas of Brazil, approximating a billion acres in extent and containing vast quantities of valuable timber.

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FORESTS, NATIONAL See FORESTRY

FORMOSA or TAIWAN. An island belonging to Japan off the Chinese Province of Fukien, formerly belonging to China but ceded to Japan, May 8, 1895. Area, 13,889 square miles, excluding the adjacent Hokoto or Pescadores Islands, which have an area of 48 square miles. The population in 1926 totaled 4,241,759, of whom 3,023,752 were natives, 195,769, Japanese, 86,733, aborigines, and 35,505, foreigners. In the same year, there were 183,360 births, 93,720 deaths, and 46,778 marriages. Capital, Taihoku, with a population of 195,555 in 1925. Other large towns are Tainan, Kagi, and Taichu. In 1926-27 there were 132 primary schools for the instruction of Japanese, with 780 teachers and 25,895 pupils, and for the instruction of the natives there were 329 schools with 5154 teachers and 216,011 pupils.

Formosa produces in commercial quantities nearly every tropical, subtropical, and temperate-zone product. The island supplies all the world's Oolong tea and produces nearly all the world's natural camphor. The sugar industry, however, is the most important. The production of raw sugar amounts to more than 1,000,000,000 pounds annually. The entire output is shipped to Japan, with the exception of that used in local consumption and an inferior grade shipped to China. The production of tea averages about 21,600,000 pounds annually, of which the United States takes about 10,000,000 pounds. The yield of rice is over 25,000,000 bushels. Indigo, hemp, pineapple, grapefruit, papaya, sweet potatoes, peanuts, beans, cereal, and ramie are also important crops. Gold, silver, and copper are mined in considerable quantities, and coal and sulphur are exported. Some petroleum has been found. The exports to foreign countries in 1928 were valued at 33,495,688 yen and the imports at 58,333,729 yen. Imports from Japan in the same year totaled 132,318,204 yen and exports to Japan, 214,521,597 yen (1 yen equals \$0.4984).

The revenues and expenditures of Formosa have grown enormously under Japanese rule and at the present time amount to about 100,000,000 yen annually. The budget has never shown a deficit. Revenues and expenditures for the fiscal year beginning Aug 1, 1929, were estimated at 126,125,881 yen. The principal expenditures are for communications and transportation, for the management of the Government's monopolies, for forestry, and for maintenance of various administrative bureaus. The island is under a governor-general, who is supported by a well-organized force of Japanese police. A frontier zone, marked for a considerable distance by charged barbed wire, is maintained to prevent raids by

the as yet unsubdued aborigines. The Governor-General in 1929 was Takeji Kawamura.

FOUGITA COLLECTION. See ART SALES

FOUNDATIONS. With deep and difficult foundations almost a matter of every-day routine of modern engineering construction, one would be led to believe that there was little opportunity for invention or improvement. The degree of standardization and the complete control which have been achieved in the pneumatic process, for example, is certainly extraordinary. Hardly a year passes in which the limit record for pressure or depth in pneumatic work is not touched—a limit which is set by human ability to withstand pneumatic pressure. This year a pressure of 52 pounds per square inch was reached in the construction of the piers of the Vicksburg Bridge (see BRIDGES). In 1928 it was a bridge in Maine. Yet the development during the year under review of a modification of the so-called "fougitization" process into an ingenious combination of dredging and cofferdam construction shows clearly that every new foundation project presents its own problems and that there is still ample room for the ingenious man in modern construction.

STEEL CYLINDER FOUNDATIONS. A novel and interesting form of construction was used in founding the piers for two long highway bridges completed in 1929 for the Florida State Highway Department over arms of St. Andrews Bay on the Gulf coast. Some 56 steel cylinders of 16-foot diameter, 1/2 inch thick, and reinforced every 5 feet with angles, and two cylinders of 30 feet in diameter were sunk in deep water. The cylinders were shipped in quarter-section rings. They were riveted to form full circles and were lowered between timber guide pile frames from special supports erected over the pier locations. Section by section was added as the lowering progressed until the tube rested on bottom. Excavation was then carried on inside each tube by clamshell bucket and jettling until the tube sank to final position. Piles were then driven in the bottom, 50 feet under water, by means of an under-water steam pile hammer working from special leads. Concrete was deposited around the piles by tremie tube so as to seal the bottom of the tubes and sufficient in depth to counterbalance external pressure. The cylinders were then unwatered, the projecting pile-tops cut off and the rest of the cylinders were concreted in the dry. Each pier was formed of two of these cylinders, the concrete shafts above water being connected together with a concrete web wall with a concrete cap over all.

CAISSON ACCIDENTS. A fatal accident occurred in sinking the pneumatic caisson for Pier 10 of the Cooper River Bridge under construction at Charleston, S C, on Dec 1, 1928. Unfortunately, one of the guide piles, used in holding the caisson in position while it was being sunk, had not been driven vertically but had deflected into the caisson area. This condition was unknown to the contractor and when the caisson was sunk, one edge was held up by this pile. Air was put on in the working chamber of the caisson and excavation was under way when the caisson suddenly tilted about 15 degrees. The workmen all escaped. Later, however, when the caisson had shown no further movement and while the true cause of the trouble had not yet been discovered, excavation was again started in the working chamber under the high side of the caisson. Another sudden list

of about 11 degrees additional occurred, and seven men were trapped under the caisson and killed. The caisson was later refloated, the difficulty remedied, and it was successfully sunk in position.

The sudden failure of a welded connection between the shaft and an air lock in a pneumatic caisson caused the loss of six lives on the Hackensack River Bridge near Jersey City, N. J. The caisson was being used in sinking a pier for this Pennsylvania Railroad-State of New Jersey highway structure. When the air pressure failed, the caisson suddenly settled or dropped, and the men were smothered in the river mud below.

See also article on BRIDGES, under *Nassau Bay, Lackaburg, Lake Champlain, and Plougastel bridges*.

FOUNDATIONS, EDUCATIONAL. See **UNIVERSITIES AND COLLEGES**.

FOWLER, ELLAN THORNEYCROFT (MRS. A. L. FELKIN) English novelist, died June, 1929, in Bourne-mouth, Hampshire. She first wrote short stories and poetry (*Verses Grave and Gay*, 1891; *Verses Wise or Otherwise*, 1895; *Cupid's Garden*, 1897), but her initial success was a novel, *Concerning Isabel Carnaby* (1898). Among her many works are *A Double Thread* (1899), *The Farringtons* (1900), *Fuel of Fire* (1902), *The Wisdom of Polly* (1910), *Her Ladyship's Conscience* (1913), *Beauty and Bands* (1920), *Signs and Wonders* (1926).

FOWLS, FOWL DISEASES, ETC. See **LIVESTOCK, VETERINARY MEDICINE**.

FRANCE. A republic of western Europe, lying between 42° 20' and 51° 5' north latitude and 7° 15' and 4° 45' west longitude. Capital, Paris.

AREA AND POPULATION. The area before the World War was 207,054 square miles, total area in 1928, 212,659 square miles. The additions obtained under the Peace Treaty, and corresponding to Alsace-Lorraine under the German Empire, comprise the new departments of Bas-Rhin, 1848 square miles, Haut-Rhin, 1354 square miles, and Moselle, 2403 square miles. According to the census of 1926, the population was 40,743,851, but not including 178,534 citizens comprising the military and naval forces and the crews of merchant ships abroad. The estimated population in 1928 was 40,920,000, in 1921 it was 40,209,518. During the period 1924-28, the average number of births was 758,804, and of deaths, 690,257. In the same period, foreign workers entering the country outnumbered those who left by 426,652. The cities with a population of over 200,000 at the census of 1926 were as follows: Paris, 2,871,429; Marseilles, 652,196; Lyons, 570,840; Bordeaux, 256,026; and Lille, 201,921.

EDUCATION. Primary education is free and compulsory between the ages of 6 and 13. Statistics for 1926-27 showed 3690 public and private infant schools, with 393,652 enrolled pupils, and 80,183 public and private primary schools, with 3,853,431 enrolled pupils. In November, 1926, there were 282 higher elementary schools for boys and 209 for girls. The numbers of pupils were 37,900 boys and 36,680 girls. Secondary education is provided by *lycees* supported by the state, colleges supported by the communes, and free schools supported by individuals and associations. In November, 1927, there were 125 *lycees*, with 74,492 pupils, and 237 communal colleges for boys in France and Algeria, with 39,004 students, and 205 secondary schools for

girls, with 52,459 pupils. Higher education is supplied by the state universities, special schools under the direction of the state, and various private schools and faculties. On July 31, 1927, 60,960 students were enrolled in the 17 universities and professional schools, distributed as follows: law, 17,125; medicine, 11,182; sciences, 12,820; letters, 13,343; pharmacy, 3300; schools of medicine and pharmacy, 2944; theology, 255.

Other institutions dependent upon the Ministry of Public Education include: *Collège de France*, Museum of Natural History (which gives instruction in the sciences), *Practical School of Higher Instruction*, with its seat at the Sorbonne, offering courses in history, philology, and science, *Ecole des Beaux Arts*, and various others. Dependent upon the other ministries are various institutions of technical instruction, including schools of commerce, agriculture, mines, forestry, military and naval science, etc., and finally, there are numerous technical schools of a lower grade dependent upon the Ministry of Public Instruction.

AGRICULTURE. About 40.8 per cent of the total land area of France (54,823,000 acres) was devoted to crops in 1927. Of the remaining area, 28,158,000 acres were used for permanent meadow and pasture, 5,796,000, for orchards and vineyards, 25,841,000 were covered by woods, and 11,315,000 were waste and uncultivated land. The area and production of the chief crops in 1927 and 1928 are shown in the accompanying table from the *Commerce Year Book*.

CROPS AREA AND PRODUCTION

	Area (thou sands of acres)		Production (thousands of units—bushels except as indicated)	
	1927	1928	1927	1928
Wheat	11,065	12,795	276,126	277,655
Rye	1,921	1,949	31,957	35,362
Barley	1,747	1,817	50,328	53,102
Oats	8,544	8,572	343,282	336,257
Corn	861	844	20,721	14,559
Potatoes	3,700	3,619	641,991	400,240
Sugar beets	590	588	6,002 *	5,168 *
Beet sugar			850 *	881 *
Grapevines	3,393	3,417	1,300,399 *	1,543,161 *

* Unit, metric ton

* Unit, gallon of wine

The value of the principal crops in 1927 was as follows: Wheat, \$439,000,000; rye, \$411,000,000; oats, \$206,000,000; barley, \$53,000,000; potatoes, \$245,000,000; grape vines, \$371,000,000. Cultivation of olives, hay, flax, fodder beets, green forage, and fruits also is extensively practiced. Crops were only fair in 1928 due to dry weather and the unsatisfactory condition of the farmers grew more marked as prices continued to decline. In 1929, however, the agricultural situation was reported improved, with the prices of foodstuffs advancing and most of the crops showing good yields. Silk culture is carried on with assistance from the government in 24 departments of France, the total production in 1928 being 2,871,000 kilogrammes, valued at 52,399,000 francs, as compared with 3,556,000 kilogrammes, valued at 74,728,000 francs in 1927. On Jan. 1, 1928, there were 2,927,230 horses, 182,720 mules, 259,800 asses, 14,940,900 cattle, 10,693,120 sheep, 6,019,450 swine, and 1,405,050 goats.

MINING. With the exception of coal, the total output of which dropped slightly in 1928, virtually all of the other minerals produced in France

showed an increased production in 1928, as compared with 1927, as indicated in the accompanying table

MINERAL AND METAL PRODUCTION (Thousands of metric tons)

	1927	1928
Coal and lignite	52,848	52,428
Coke (metallurgical)	4,044	4,404
Briquets	3,900	4,068
Iron ore	45,672	49,332
Iron pyrites	204	202
Potash (K ₂ O content)	372	410
Bauxite	540	598
Pig iron	9,298	10,096
Steel (ingots and castings)	8,275	9,384
Iron and steel (finished products)	5,102	

Lower consumption and more severe foreign competition forced the coal mines to cut down their production, personnel, and accumulated stocks in 1928. Toward the end of the year, conditions improved and in 1929 the situation of the leading coal companies became unusually favorable, with profits high and orders numerous. Iron-ore extraction in 1928 exceeded the record 1927 production by 8 per cent and exports increased in even greater ratio, going principally to Belgium, Luxembourg, Germany, and the Netherlands. Potash production reached a new peak in 1928 and the production of bromine, a comparatively recent industry, was 50 per cent greater than in the preceding year.

MANUFACTURES. As indicated in the accompanying table from the *Commerce Year Book*, manufacturing industries on the whole had a favorable year in 1928, the output of most important manufactures showing considerable gains over 1927 and 1926. In the iron and steel industry, production was greater, domestic consumption larger, and prices remunerative, although exports decreased slightly and production costs were higher. The shipyards were only slightly more active than in 1927, few new vessels being produced despite a government subvention to ship companies of 1,000,000,000 francs, to be distributed in five annual installments. Metal-working industries and automobile factories made fair profits, cotton- and wool-textile

cent for men and 8 per cent for women in 1928.

COMMERCE. The value of exports continued the tendency of the previous two years and declined by more than 6 per cent in 1928, while the value of imports increased by less than 1 per cent. Imports for consumption were valued at 53,448,000,000 francs (\$2,095,000,000) in 1928, as compared with 53,050,000,000 francs (\$2,080,000,000) in 1927. Domestic exports were valued at 51,347,000,000 francs (\$2,013,000,000) in 1928 and 54,925,000,000 francs (\$2,153,000,000) in 1927. Comparison of 1928 trade figures with former years is materially affected by the exclusion from 1928 statistics of pearls and precious stones imported on consignment and returned when not sold. France's heavy "invisible" balance of trade, resulting from expenditures by thousands of foreign tourists, was variously estimated by French authorities at from 9,000,000,000 francs (\$353,000,000) to 10,000,000,000 francs in 1928. The expenditures of American tourists in that year were estimated \$200,000,000. In 1929 there was a decrease of about \$40,000,000 in American-tourists' expenditures and the amount spent by other foreigners in France declined in about the same ratio. In the same year, the unfavorable visible balance of trade was 8,212,000,000 francs, as against 2,000,000,000 francs in 1928. The figures for 1929 were: Imports, 58,284,624,000 francs (\$2,331,384,000), exports, 50,072,348,000 francs (\$2,002,893,000).

Wheat imports in 1928 were about half those of 1927, purchases of manufactured articles increased about 30 per cent, and raw materials imported remained about the same as in the previous year. Raw wool and cotton imports declined considerably in quantity but increased in value. Coal and meat imports declined in quantity and value, while petroleum products, crude copper, machinery, automobiles, chemicals, hides and skins, sawn wood, and table fruits increased in both quantity and value. Among the exports, wool and silk fabrics increased in value and weight, and those of cotton fabrics decreased in value, along with iron and steel and automobiles. Exports of various metal manufactures declined in weight but remained about the same in value.

MANUFACTURING PRODUCTION

Product		1926	1927	1928
Silk (conditioned at Lyons)	1000 lbs...	14,577	12,751	15,609
Wool (conditioned at Roubaix-Tourcoing)	1000 lbs.	223,864	228,049	226,371
Wool (conditioned at Maset)	do	46,008	55,337	55,704
Cotton consumption *	do	770,740	721,843	692,240
Cotton cloth	million yds	1,356	1,355	1,387
Artificial silk	metric tons	11,500	15,000	17,000
Boots and shoes (estimated)	1000 pairs	80,000		75,000
Alcohol	1000 gals.	39,217	44,847	56,989
Vessels launched	gross tons	121,342	44,385	81,416

* Including waste

plants experienced a less satisfactory year than in 1927, while the demand for silk products improved, and there was an increase in practically all chemical products.

In 1929 industrial conditions remained generally satisfactory. A lessening of activity in iron and steel, automobiles, shipping, and a few other branches was attributed to the disturbed internal political situation, uncertainty over the reparations settlement, and nervous world-wide commodity and security markets. There was a shortage of industrial workers in France in 1928 and 1929, the total number of unemployed on Nov. 30, 1929, being only 577, as compared with 895 on Dec. 31, 1928. Wages increased 4.5 per

Machinery exports, and sales of chemicals, dyes, fertilizers, perfumery and soaps, skins, and hides were higher, but sales of leather manufactures declined in both weight and value.

The United States remained the leading source of origin of French imports in 1928, although the percentage of American imports fell from 13.3 per cent of the total in 1927 to 11.6 per cent. In 1929 imports from, and exports to, the United States increased, totaling \$265,655,805 and \$171,490,548, respectively. The value of American imports was \$243,000,000 in 1928 and \$277,000,000 in 1927. Great Britain, Germany, Belgium-Luxembourg, Algeria, and Argentina, in the order named, were the leading sources of imports. Great

Britain was the heaviest purchaser of French exports, taking 15.9 per cent, followed by Belgium-Luxemburg, Germany, Algeria, and Switzerland. Exports to the United States in 1928 were valued at \$131,000,000, as compared with \$142,000,000 in 1927. A feature of the year's trade was the important decline in trade with, and particularly in exports to, Great Britain. There was a large increase in imports from Germany and an even greater decrease in exports to that country. In the colonial trade, the export surplus was larger in 1928 than in the previous year, while trade with foreign countries showed a large excess of imports. The colonies and protectorate supplied 12.6 per cent of the imports in 1928, as against 12.4 per cent in 1927, and took 16 per cent of the exports, as compared with 14 per cent in 1927.

FINANCE Preliminary estimates of the Finance Minister for the 1930 budget placed receipts at 48,722,000,000 francs and expenditures at 48,066,000,000 francs. These figures, however, were considerably revised during the parliamentary debate on the budget, in which the proposed expenditures were raised 342,000,000 francs and the proposed revenue was reduced by 417,000,000 francs. Chief items of expenditure in the Finance Minister's Proposals were for debt service, 13,506,000,000 francs, pensions and related payments, 9,027,000,000 francs, national defense, 8,752,000,000 francs, instruction and arts, 3,250,000,000 francs, public works, 2,033,000,000 francs. The government placed expenditures on the home army for 1930 at 4,500,000,000 francs (\$180,000,000), for the defense of colonial possessions at 1,750,000,000 francs (\$70,000,000), for the navy, 2,583,000,000 francs. The opposition deputy, Edouard Daladier, however, calculated that the expenditures for the army alone would amount to 8,450,000,000 francs (about \$338,000,000) and that exceptional military expenditures would bring the real army budget to 14,000,000,000 francs, not counting 2,000,000,000 for civil services connected with the army.

The budget also contained an item of 30,000,000 francs (\$1,200,000) for "the encouragement of tourists," 700,000,000 for public roads, 630,000,000 for port extension, 400,000,000 for combating tuberculosis, and 500,000,000 for the construction of public schools. Another appropriation of 50,000,000 francs was for the creation of a broadcasting system to end, so far as possible, the "intellectual isolation" of the country districts. In connection with the debate on the 1930 budget, Premier Tardieu presented a bill changing the date for the beginning of the financial year from January 1 to April 1. The change, which had been advocated by Finance Ministers for over a century, was intended to end the difficulty now experienced in getting the budget approved during the extraordinary session of November and December. M. Tardieu supported the adoption of the measure for 1930 by pointing out that the surplus from 1929 and other funds held by the Treasury would be sufficient to meet all expenditures during the first three months of 1930. Actual revenues of the general budget in 1929 totaled 47,800,000,000 francs, of which 47,100,000,000 were derived from normal and permanent sources.

Receipts for 1929 were estimated at 45,430,717,000, and expenditures, at 45,366,000,000, francs. In 1928 the actual revenues were 53,294,-

000,000 francs, or 11 per cent more than estimated in the budget, and the expenditures were 42,455,000,000 francs. Increases in the 1929 estimated receipts over those for 1928 resulted from the inclusion in the latter budget of 1,000,000,000 francs, representing the net amount anticipated from reparations payments and of 529,000,000 francs, representing the expected repayments of advances made to posts, telegraphs, and telephones (see **YOUNG PLAN, REPARATIONS**). The original proposals for the 1930 budget showed substantial increases in both receipts and expenditures over the 1929 estimates. Provision was made for the reduction of taxes through raising the income-tax limit and the lowering of luxury and other taxes and registration charges. Higher tax yields were expected to result, however, from an increased volume of business and the budget again included 1,000,000,000 francs from reparations payments. The revenues estimated in the general budgets for 1929 and 1930 and their sources are shown in the accompanying table.

RECEIPTS IN FRENCH GENERAL BUDGETS

[In millions of francs]

	1929, (esti- mated)	1930, (pro- posed)
Direct taxes and centimes d'Etat	9,636	9,802
Registry dues, transfers of property, etc.	3,709	4,257
Stamp taxes	1,893	2,019
Tax on revenue from securities	3,524	3,623
Customs	4,277	5,031
Excises	6,352	6,588
Business turnover tax	7,480	8,365
All other taxes	2,574	3,121
State monopolies (gross)	464	460
All other receipts	5,523	5,436
Total	45,431	48,722

The distribution of expenditures in the 1930 budget, with comparative figures for 1929, is shown in the accompanying table. The internal debt on Dec 31, 1928, stood at 288,055,000,000

EXPENDITURES IN FRENCH GENERAL BUDGETS

[In millions of francs]

	1929, (esti- mated)	1930, (pro- posed)
Debt service	15,007	13,506
Pensions and related payments	8,119	9,027
National defense	8,231	8,752
Instruction and arts	2,941	3,250
Public works	2,274	2,033
Collecting revenue (including gross expenditure and monopolies)	1,197	1,193
All other expenditures	7,594	10,905
Total	45,366	48,666

francs. The external debt was divided as follows: United States Government, \$2,912,000,000, United States, commercial debt, \$673,000,000, British Government, £170,000,000, Great Britain, commercial debt, £1,000,000. The total debt, in dollars, was \$14,776,000,000, as compared with \$15,097,000,000 on Dec 31, 1927. At the end of 1929, the gold reserve of the Bank of France was larger by 9,500,000,000 francs, or 37 per cent, than at the end of 1928, and larger by 12,700,000,000, or 44 per cent, than at the date of official stabilization in June, 1928.

COMMUNICATIONS The length of railway line in operation in 1927 was 26,876 miles, of which 6905 miles were state owned. Passengers carried

by all railways during the year numbered 746,037,000, by state railways, 253,298,000, gross receipts of all railways, 13,534,000,000 francs, of state railways, 3,004,000,000 francs. The state owns the seven large railway systems of the country, operating the Northwestern and the Alsace-Lorraine systems and leasing the remaining five to private companies. In 1928 railway receipts were 121 per cent above the previous year, the gain being largely due to a 119 per cent increase in rates on Mar. 1, 1928. Only two of the seven state-owned railways reported deficits in 1928.

Extensions to several of the main-line railway stations in Paris were made and a new railway line from Toulouse to Barcelona, entering Spain through the valley of the Cerdagne, was formally opened in 1929. The line is the second to be completed of three railways across the Pyrenees provided for in a convention signed in 1904 between France and Spain. The first of these, between Pau and Saragossa, was opened in the fall of 1928. Work on the third, between Leida and Saint-Giron, was progressing slowly. The Toulouse-Barcelona line was being built five miles beyond Barcelona to the new Free Port under construction at the mouth of the Llobregat River. Here, goods may be loaded on French trains and pass through Catalonia to France without interference on the part of the Spanish Customs.

The total length of roads in 1927 was 381,820 miles, of which 24,441 miles were state highways and 7555 miles, departmental. The remainder were maintained by the communities through which they pass. The length of navigable rivers and canals in 1926 were 6585 miles, the total traffic amounting to 48,121,000 metric tons in 1928, as compared with 41,852,000 tons in 1927. Vessels entering the ports of France in 1928 totaled 28,299 of 52,302,000 registered tons and clearances totaled 25,434 vessels of 46,419,000 registered tons. Both entrances and clearances showed increases over 1927. The French merchant marine on June 30, 1928, consisted of 1682 vessels of 3,344,465 gross tons.

Some phases of civil aviation showed a decline in 1928, the number of passengers carried dropping from 21,000 in 1927 to 19,549 in 1928 and the express carried decreasing from 2,755,000 pounds to 2,545,000 pounds. The distance flown by planes increased from 3,753,000 miles in 1927 to 4,180,000 miles. The 1929 budget contained a large appropriation for the extension and improvement of aviation.

ARMY. The French Army is divided into two forces, the metropolitan, comprising the active army, reserves, and territorial army, and the colonial forces, both are under the War Ministry. The active metropolitan army in 1928 numbered 413,578, including the air-force establishment of 32,886. Enrollment for the metropolitan army is on a compulsory basis, but liberal exemptions are allowed. The term of service was reduced from one and one-half years to one year, effective in 1930. In 1928 white troops in the colonial army numbered 48,951, in the Foreign Legion, 10,000, and colored troops, 110,000, making, with the metropolitan army, a total peace force of 672,122.

NAVY. For an account of naval conditions in France, see **NAVAL PROGRESS**.

GOVERNMENT. According to the French Constitution, the President is the executive, assisted

by a cabinet responsible to the Chamber. The legislative power is vested in the Parliament, or National Assembly. The President, who holds office for seven years, is elected by an absolute majority of votes in the Senate and Chamber of Deputies, and he chooses his cabinet ordinarily from among the members of the two. The Senate is made up of 314 members not less than 40 years of age and elected by an electoral college for nine years, one-third retiring every three years, the Chamber of Deputies is made up of 612 members elected by direct popular manhood suffrage for four years. The composition of the Chamber elected Apr. 22-29, 1928, was as follows: Communists, 16, Democrats, 22, Independent Radicals, 64, Left Republican Democrats, 34, Socialists, 104, Radicals and Radical Socialists, 110, Republican Socialists and French Socialists, 46, Republicans of the Left, 94, Democratic Republican Union, 110, Conservatives, 12.

President in 1929, Gaston Doumergue, elected July 24, 1924. The Ministry appointed Nov. 11, 1928, consisted of: Prime Minister, Raymond Poincaré, Deputy Prime Minister and Minister of Justice, M. Louis Barthou, Finance, Henri Chéron, Interior, André Tardieu, War, Paul Painlevé, Marine, Georges Levesgue, Foreign Affairs, Aristide Briand, Colonies, André Maginot, Public Instruction and Fine Arts, Pierre Marraud, Public Works, Pierre Forget, Commerce, Georges Bonnet, Agriculture, Jean Hennessy, Labor, Hygiene, Assistance, and Social Provision, Louis Loucheur, Pensions, Louis Anteuil, Air, Laurent Eynac.

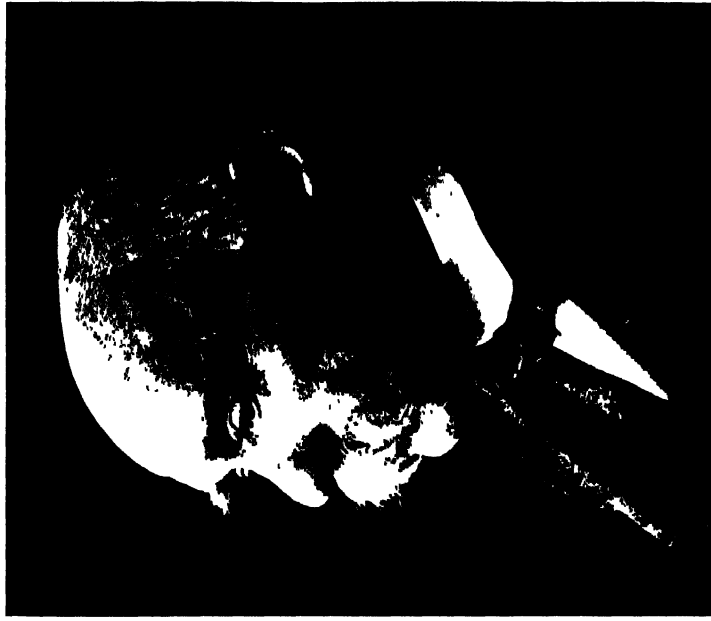
HISTORY. The governmental stability which characterized France under the firm rule of the Poincaré National Union ministry, 1926-28, gave way in 1929 to repeated cabinet crises similar to those which brought France to the verge of ruin in 1926. Three successive cabinets functioned during the year under the constant threat of defeat, with consequent unfavorable repercussions in foreign and domestic affairs. The realignment of parties which paved the way for the return of governmental instability took place with the withdrawal of the Radicals from the Poincaré ministry in November, 1928, and the consequent reconstitution of the cabinet. (see 1928 **NEW INTERNATIONAL YEAR BOOK**.) The Radicals made repeated attempts to overthrow the new Poincaré government, the first of these on January 11 in connection with articles in the budget providing for the restoration of certain rights withdrawn from missionary societies in 1901 and 1904. The Premier won a vote of confidence by a majority of 74, his support coming mainly from the Right groups. Again, on February 19, he won by the close vote of 291 to 285 on an unimportant question of judiciary reforms. With the reparations problem then under discussion in Paris by the experts, the cabinet situation was deplored as weakening France's position.

In March, the cabinet withstood repeated attacks on the question of the religious-orders bill, the treatment of French soldiers on duty along the Rhine, and other issues. A bitter debate, which apparently marked the resumption of the religious controversy over the so-called lay laws of 1901 and 1904, occurred in connection with the preliminary vote authorizing missionary societies to resume recruiting in France and to establish headquarters there in which to train their recruits. Reassembling May 23 after the Easter recess, the Opposition forced a vote of confidence



Photo Henri Manuel

ANDRÉ TARDIEU
Premier, Oct. 1, 1929



Courtesy, American Review of Reviews

GEORGES CLÉMENCEAU
Died Nov. 24, 1929

TWO FRENCH STATESMEN

on the vigorous measures taken by M Tardieu, Minister of the Interior, to prevent May Day demonstrations in Paris. The Government was again upheld by a vote of 326 to 258.

On July 21, M. Poincaré achieved the final step in his programme for the rehabilitation of French finances, when the Chamber of Deputies ratified the Mellon-Bérengeur debt agreement with the United States and the Churchill-Caillaux debt agreement with Great Britain by 300 to 292 votes. The Mellon-Bérengeur agreement was entered into on April 29, 1926, and provided for the payment of the entire debt of the French government to the United States over a period of 62 years, the average interest rate to be 2.17 per cent. This represented the cancellation of about 52 per cent of the entire amount of the French funded debt, if calculated upon the basis of $4\frac{1}{4}$ per cent as the cost of the money to the United States. The funded principal of the debt was fixed at \$4,025,000,000, of which \$1,070,000,000 consisted of cash loans contracted before the Armistice, and \$1,027,000,000 of cash loans advanced after the Armistice. Some \$407,000,000 represented the French debt incurred through the purchase of war supplies left in France by the American Expeditionary Forces, the original cost of which was about \$1,739,000,000. The remainder represented accumulated interest.

Under the agreement governing the purchase of the war supplies, the \$407,000,000 debt was due Aug. 1, 1929. The failure to ratify the Mellon-Bérengeur agreement left France faced with the alternative of being forced to pay this debt immediately or being declared in default. The question of ratification was heatedly debated as the time limit for payment of the war-stocks debt drew near. The problem was confused by the fact that the Young Plan for reparation payments was then before the various governments for ratification. The French generally hesitated to ratify the debt accords with the United States and Great Britain before the Young Plan had been accepted by the governments concerned. Premier Poincaré, former Premier Joseph Caillaux, M. Bérengeur, and other influential Frenchmen joined in the plea for immediate ratification of the debt accords, but the Chamber, on June 27, requested the Premier again to attempt to persuade the American Government to allow the postponement of the payment on the war-stocks debt beyond August 1.

The United States Government, lacking the authority to acquiesce without the consent of Congress, was compelled to refuse. On July 16, Poincaré was upheld by a vote of 304 to 239 when he opposed a motion to postpone discussion of the debt ratifications until the reparations problem had been generally settled. M. Poincaré presented the case in favor of immediate ratification in a two-day speech before the Chamber. The debates preceding the final vote showed that a considerable section of French opinion considered the debt payments contingent on the payment of German reparations, but there were no reservations attached to the resolution for ratification. On December 16, the Mellon-Bérengeur agreement was ratified by the United States Senate after a debate of only an hour and a half, by a vote of 53 to 21. The bill for ratification was signed by President Hoover December 18. The annual payments provided for under the agreement with the United States were \$30,000,000 in the first year (1935), and ranged upward to \$125,000,000

annually during the seventeenth to sixty-first years. With interest, total payments were placed at \$6,847,674,104.

His task completed and his health impaired by his labors, Poincaré resigned on July 26. Aristide Briand was called to form a new cabinet. As the Radical Socialist leaders, such as M. Herriot and M. Daladier, refused to participate, he decided on July 29 to go ahead with the old cabinet, he himself filling the posts of Prime Minister and Foreign Minister. His cabinet was not conceded a long lease of life, but he went to The Hague Reparations Conference with the backing of virtually all groups in Parliament on his foreign policy. (For developments at The Hague, see REPARATIONS.) Before the League of Nations Assembly on September 5, M. Briand made an eloquent plea for a "Federated Europe."

The Briand cabinet met sudden defeat on the opening day of Parliament (October 22), a snap vote on procedure resulting in an anti-government majority of 11. Dissatisfaction with the terms of the Young Plan, the popular belief that M. Briand at The Hague had bartered away French occupation of the Rhineland for a doubtful reparations promise on the part of Germany and before the French eastern fortifications programme had even begun, and a collapse in agricultural prices due to overproduction combined to cause his overthrow. There was also resentment at the concessions Briand had made to Britain at The Hague. President Doumergue first called Edouard Daladier, leader of the Radical Socialists, to attempt the formation of a cabinet, but he was unsuccessful, as the Socialists refused to cooperate. Senator Etienne Clémentel also failed to form a government of the Centre with Left support.

While the cabinet crisis continued, a number of important problems awaited solution. The putting into effect of The Hague agreements, including evacuation of the Rhineland, the approaching negotiations with Germany for the return of the Saar, the question of the International Bank and the five-power London naval conference in January with the allied question of Franco-Italian naval parity in the Mediterranean—all were pressing for attention. Finally, on October 1 a new ministry of the Centre and Right was formed by André Tardieu, a member of the Centre, who assumed the Premiership in addition to holding his former post as Minister of the Interior. M. Briand remained as Foreign Minister. The principal change was the appointment of André Maginot as Minister of War in place of Paul Painlevé who had been criticized for neglecting the eastern fortifications. The other members of the cabinet were: Minister of Finance, Henri Cheiron; Marine, Georges Leygues; Agriculture, Jean Hennessy; Labor, Louis Loucheur; Posts, Germain Martin; Aviation, Laurent Eynac; Public Instruction, Pierre Marraud; Colonies, François Pietri; Commerce, Pierre Flandin; Pensions, M. Gallet; Public Works, Georges Peinot; Merchant Marine, Louis Rollin; Justice, Lucien Humbert.

On November 9, the Tardieu cabinet survived two tests: votes on domestic and foreign policies by majorities of 71 and 79. M. Tardieu, in outlining his policies, gave assurance to the Right that the evacuation of the Rhineland would not be completed until the Young Plan had been ratified by Germany and pledged himself to the continuation of Briand's foreign policies. Fortifica-

tion of the eastern frontier would be pushed faster, and adequate protection of France and her communication lines with her colonies insisted upon at the London Naval Conference. With regard to internal measures, he announced that measures calculated to benefit agriculture and improve social and general economic conditions would be undertaken out of the large treasury surplus. Tax reductions totaling 1,149,000,000 francs (\$46,000,000) were voted December 26, to become effective January 1.

The unexpectedly large majorities given the Government's programme and the favorable impression made upon the Chamber by the new Premier aroused hope that his cabinet would have a longer tenure than those of his immediate predecessors. A firmer tone in France's foreign policy became immediately apparent. On December 26, the Government made public a memorandum sent to the Powers a few days previously in which the principles which would guide the French delegates at the forthcoming London Naval Conference were outlined in detail.

The memorandum stipulated that any agreements arrived at in London must be within and subservient to the framework of the League of Nations' general disarmament plans, declared that, without other provision for enforcement than the force of public opinion, the Kellogg-Briand Pact could not be regarded as a guarantee of the security of nations, and announced that French naval needs must be established upon the requirements of the "French empire" and not upon the mathematical ratios set forth by the Washington Conference. Finally, the memorandum submitted definite French proposals for a Mediterranean naval accord to include Great Britain, Italy, France, and Spain. The memorandum, which appeared to explain a general five-power reduction of armaments at the London Conference, evoked considerable criticism in the United States and Great Britain. It was indicated that, without assurances of security through an international agreement, France was not willing to reduce her naval programme, which provided for a naval tonnage of 800,000 tons by 1942, without capital ships, which the French admiralty regarded as obsolete.

On December 26, Foreign Minister Briand again overcame violent attacks from the Right upon his policy of peace. The following day, upon Premier Tardieu's refusal to withdraw his support from the policies of his Foreign Minister, the Premier received an overwhelming majority of 342 to 17 for the Government's programmes at The Hague Reparations Conference, scheduled to commence Jan. 3, 1930, and the London Naval Conference.

On December 28, however, M. Tardieu received a majority of only 45 votes on the question of the international bank plan. The Premier demanded and received full power to negotiate at The Hague a final accord governing the international bank. The Opposition charged that the Government had failed to provide sufficient national guarantees in the bank plan and that the International Bank represented an effort on the part of the United States to establish an economic hegemony over Europe. M. Tardieu, expressed surprise at this view, asserting that America's part in the international bank represented a valuable collaboration which Europeans could ill afford to lose. On the same day, the Chamber of Deputies adopted a five-year plan for the fortification of the eastern

frontier, providing for the expenditure of 3,300,000,000 francs on the fortification and aviation programmes.

French troops evacuated Coblenz and the second occupation zone of the Rhineland on November 30 in accordance with the agreement concluded at The Hague Conference. The third zone was to remain occupied until after the ratification of the Young Plan by Germany. Franco-German negotiations for the return of the Saar Basin to Germany were opened in Paris on November 21. Under the Versailles Treaty, the French were awarded "full and absolute" ownership of the Saar coal mines, until 1935, when a plebiscite was to determine whether the inhabitants wished to be annexed to France, to return to Germany, or to remain as at present under a Governing Commission appointed by the League of Nations and responsible to it.

The French made little headway in their apparent attempt to win over the people of the Saar, 90 per cent of whom were German, and abandoned hope that the plebiscite would result in annexation by France. The negotiations were inaugurated after M. Briand had agreed with the late Foreign Minister Stresemann at The Hague Conference that France would relinquish her claims to the Saar providing a satisfactory arrangement could be made for Germany's repurchase of the Saar mines, and for the continuation of the union of Saar coal with Lorraine iron.

On November 29, the government of the State of Prussia, which formerly owned the Saar mines, received unanimous parliamentary backing for its declaration that it would energetically oppose reported efforts of French and German industrialists to secure the mines jointly. The negotiations in Paris were adjourned December 20 "for the Christmas holidays," to be resumed Jan. 10, 1930. It was reported, however, that difficulties had developed over the method of payment for the mines, estimated to be worth over \$75,000,000. Germany, it was understood, demanded that she be allowed to make the payments under the Young Plan, while the French held out for a settlement independent of reparations accounts.

The Kellogg-Briand Peace Pact was ratified by the Chamber of Deputies on Mar. 1, 1929, with only the 12 Communists voting in opposition, and by the Senate on March 29, the latter vote being unanimous. The two-year controversy with the United States over the application of the American valuation system to French exports also was settled during the year. On December 13, Walter Evans Edge, the new American Ambassador to France, arrived in Paris. He was appointed to succeed the late Myron T. Herrick. Fear of the "Americanization" of France through American moving pictures led the Government to foster native films and to stipulate that American importers must purchase and show one French film for every seven brought into the country.

French relations with Great Britain appeared to have been impaired somewhat by the advent of the Labor government in Britain and by the stand of Chancellor of the Exchequer Snowden at The Hague. Relations with Italy remained none too cordial, although it was reported that negotiations had been resumed in an effort to settle all outstanding differences, particularly as to the status of Italians in Tunis and the delimitation of the frontier between Tunis and Tripoli. Fight-

ing broke out in Morocco again during the summer, and on June 9 a French detachment was overwhelmed and a post besieged in the central region of the Great Atlas Mountains. The Riff tribesmen, however, remained quiet.

A decree granting amnesty to Léon Daudet, Royalist editor who sought asylum in Belgium following his escape from the Santé Prison in 1927, and to Camille Renault and 11 other Communists jailed for political propaganda was signed by President Doumergue on December 30. Of especial interest to historians was the action of the French government in commencing the publication during the year of the official French documents on the origin of the World War, covering the period from 1871 to 1914. For developments in the Alsatian autonomist movement, see **ALSACE LORRAINE**, see also **REPARATIONS**.

FRANKENFIELD, HARRY CRAWFORD American meteorologist and official of the U. S. Weather Bureau, died July 29, 1929, in Washington, D. C. He was born in Easton, Pa., Nov. 24, 1862, was graduated in 1881 from Lafayette College, and received the doctor of medicine degree from Howard University in 1886. He was in charge of the U. S. Weather Bureau in Chicago (1887-94), transferred to St. Louis (1894), and subsequently to the bureau at Washington, where he was forecaster and professor of meteorology (1898-1920). He was chief of the river and flood service, 1898-1912, and again from 1920 until his death. To this work, his outstanding contribution was the development of numerical computations by means of which flood stages at various places could be closely foretold, days to weeks in advance, from the existing conditions upstream. His articles appeared in the *Monthly Weather Review*, and he was also the author of "Kite Observations of 1898," *Weather Bureau Bulletin F*, "Floods of the Spring of 1903," *Weather Bureau Bulletin M*, "The Ohio and Mississippi Floods of 1912," *Weather Bureau Bulletin Y*, "Floods of 1922," and "Floods of 1927." *Monthly Weather Review Supplements 22 and 29*.

FREE BAPTISTS. See **BAPTISTS, FREE**.

FREMANTLE, ADMIRAL HON. SIR EDWARD ROBERT An English naval officer, died in London, Feb. 10, 1929. Born at London, June 15, 1836, he attended Cheam School, Surrey. Entering the navy in 1849, he served in the Burmese War, 1852, and becoming lieutenant in 1857, and commander in 1861, he was in the New Zealand War, 1864-66. Appointed captain in 1867, he served through the Ashanti War of 1873-74, and being commissioned rear admiral in 1885, he was in the blockade on the east coast of Africa, 1888-89, and commanded the Witvonters expedition in 1890. He was commissioned vice admiral in 1890, and after commanding in China, 1892-95, he was made admiral in 1896, commanding at Plymouth until 1899. He was rear admiral of the United Kingdom from 1901 to 1927. Admiral Fremantle received numerous awards, including the first-class Order of the Crown of Prussia, and the first-class Brilliant Star of Zanzibar. Besides being a Companion of St. Michael and St. George, and a Companion of the Bath, he was created a Knight Commander of the Bath, 1889, a Knight of the Grand Cross of the Bath, 1899, and a Knight of the Grand Cross of the Royal Victorian Order, 1926. Admiral Fremantle wrote articles on naval subjects for various magazines, and his essay on naval tactics received the gold medal of the Royal United States Service Institution in 1880; he also

wrote the lives of Hawke and Boscawen in *From Howard to Nelson*, and *The Navy as I Have Known It* (1905).

FRENCH CONGO. See **FRENCH EQUATORIAL AFRICA**.

FRENCH EQUATORIAL AFRICA. A French possession in Africa on the Atlantic coast between the territories of the Belgian Congo and British Kamerun. Comprising the region formerly known as the French Congo, it stretches northward to the Bahr-el-Ghazel and Lake Chad, and is bounded by the Congo and Ubangi rivers in the interior. Area, 912,049 square miles, population, according to the census of 1926, 3,127,707, of whom 2502 were Europeans. The possession comprises the four colonies of Gabon, Middle Congo, Lower Congo, and Chad. The boundary between French Equatorial Africa and the Anglo-Egyptian Sudan was fixed by an agreement signed Feb. 28, 1924. In December, 1929, it was announced that the annual population deficit registered in the vital statistics of the colony had been eliminated. The decline was largely due to sleeping sickness, spread by the tsetse fly. In the four years from 1924 to 1928, French doctors and nurses in the colony examined 2,403,000 natives and treated 98,000 for the disease. In the same period, the medical budget increased from 2,500,000 francs to 10,750,000 francs annually.

Equatorial Africa is very rich in natural resources, for the most part undeveloped. There are about 30,000 square miles of tropical forests extending to the Gabon coast. The principal valuable timber is palm oil and rubber. The principal commercial products are coffee, cacao, and cotton are raised to some extent. Livestock includes cattle, sheep, camels, horses, asses, and ostriches. Copper, zinc, and lead are to be found. Considerable quantities of ivory are exported. The total imports in 1927 were valued at 172,319,683 francs and the total exports at 136,747,844 francs (94,249,135 francs in 1926). In 1929 the general budget for the four colonies balanced at 54,500,000 francs. The revenues are made up of import, export, and excise duties, navigation fees, and certain semi-direct taxes. A governor-general whose headquarters are at Brazzaville has general supervision, but each colony is locally governed by a lieutenant-governor, aided by an administrative council. Governor-General in 1929, Rafael Antonetti, appointed in July, 1924.

FRENCH GUIANA, GUAYANA. A French colony and penal settlement on the northeast coast of South America. Area, about 34,740 square miles, population at the census of 1926, 47,341. Cayenne, a seaport town, is the capital with a population in 1926 of 13,936. The population figures do not include the number in the penal settlement of Maroni, in which there were 6000 prisoners on Jan. 1, 1928, the floating population of miners, French officials, or native tribes. In 1927-28 the school population, exclusive of Maroni, was 3500. The extensive forests are rich in timber of commercial importance. Only about 7900 acres are devoted to agriculture, the chief crops being rice, maize, coffee, cacao, indigo, manioc, tobacco, gutta-percha, and sugar cane. The chief occupation is placer mining for gold. Other minerals produced are silver, iron, and phosphates. The total imports in 1927 amounted to 61,641,424 francs and the total exports to 20,769,728 francs. The chief articles of export were gold,

stage is decaying, and many suggested the name of Jacques Copeau to replace the director Émile Fabre (Copeau was the well-known stage reformer of the former Colombine Theatre (see *Nouvelles littéraires*, July 6, 20, etc.).

Geneva and the League of Nations were much discussed by men of letters. Robert de Traz in *L'Esprit de Genève* tries to show that Geneva was fatally destined to become the home of the League of Nations, Calvin having opposed the individual conscience to the hierarchy of force, in this, he was working along the same lines as the reformers in the British Isles: "what we call the Anglo-Saxon ideals; there was the part in modern thought also played by Rousseau, the author of the *Social Contract*. The satirical note, however, is not lacking, and many were looking forward to a play by the very witty Robert de Fleis and Francis de Croisset (the first having died, only one act was produced), not only was the League itself hit, but especially the numerous ladies that swarmed about the place, "having renounced men to dedicate themselves to mankind", the *Préveuses de Genève* was to be the title. Much more sarcastic was the attack by the venomous René Benjamin in *Les Augures de Genève*. The same author had an unpleasant affair brought upon him by his public remarks about a powerful member of the literary guild, in *Sous l'œil en fleur de Madame de Noailles*.

POETRY Among a number of publications in 1929 were the *Œuvres complètes*, by Baudelaire, the beautiful *Testament d'un Latin*, by Pierre de Nolhac, of the French Academy, for years conservateur du Musée Versailles, Francis Jammes's charming poems in prose, *Les nuits qui chantent* (compare his *Pensées des jardins*). Friends collected the works of Léon Deubel, who had committed suicide some years previous leaving some stirring poems (*Eurres*, Meireux). André Rivotte, one of the most classical of present-day French poets, had *Le Désir et l'amour*. Jean de la Ville Mionnet's *L'horizon chimérique* reminds one of Baudelaire, while Chérelong's *Orient*, recalls Iliard, and Véra's *Barre*, Gautier's impeccable lines. Louis Chadourne sings in *Les accords* and Pierre-Jean Jouve (author of the mystic *Paulina*) in *Le Paradis perdu*, which takes up the theme of Vigny's *Eloa* and Lamartine's *Chute d'un ange*.

Lucie Delarue-Madrus was represented by *Poèmes minous pour les enfants*. Léon Paul Fargue's renown has grown with his collections of verses—*Épaves*, *Espaces*, *Sous la Lampe*—a very skillful word wizard to express our complex modern minds. Somewhat as a surprise came a volume of verses from the pen of Francis Carco—*La Bohème et mon cœur*—the man who had shown interest so far only in the study of the repulsive inhabitants of the slums of Paris. Roger Allard collected and published, as *Poésies légères*, 1911–1927, his alert light poems that had come out in various periodicals. A friend and disciple of Apollinaire, Louis de Gonzague Erick, offered his amusing but not always so easily understood, *Poésie*, he is what is called a *poète macaronique* using for grotesque effects bits of Latin and Greek in his French lines. In fine classical lines, Henri Chabrol expresses very pagan ideas and discards Christian ideals, he calls it *Lyrique du corps*. Two volumes by former Dadaists are Tristan Tzara's *De nos oiseaux* and Paul Eluard's *L'amour et la Poésie*. The latest petite revue of the younger generation is *Orbes* (Kra) with

Jacques-Henry Lévêque and Olivier de Carné as directors, and with such men as Tzara and Blaise Cendrars as contributors.

PRIZES FOR POETRY Numerous prizes were awarded in poetry, among them the Prix Jean Moreas, to Phileas Lebesgue, for his work in general, the Prix des Vignes de France, to André Mary for his *Poèmes*, 1903–1928, and the Prix des Vikings, proposed by the Scandinavians of Paris to counteract the effect of Maurice Bédél's widely read Goncourt novel, *Jérôme, 60 degrés de latitude nord*, which was thought to poke fun at Scandinavia. The laureate was Théophile Fétet, for *La Normandie traitée*. A commemorative sign was placed on June 21 on the house where the famous American symbolist poet, Stuart Merrill, died.

The year 1929 brought forth an anthology, *Les poètes du 19^e siècle*, by A. M. Gorsez, also a fine panorama of present-day French verse classified according to provinces, which was published by Ch. Dornier, in *Revue de l'Enseignement français hors de France*, August and September. An echo of the quarrel on *La poésie pure* was found in René Vitor's *Essai sur les conditions de la poésie pure*.

THEATRE Much activity was manifested in the domain of the theatre, but no really great play was produced. Two new theatres were founded which inspired much comment. The theatre Saint-Georges, early in the year, with André de Lorde (the author of the clever *Au téléphone*) and which proposes to give short and stirring plays (it is a little like the Grand Guignol). The first play was on Poe, as a representative of the æsthetic element of terror in literature, probably the best play on that stage was *La Fugue*, by H. Duvernois, which did not quite answer the general programme, it is not "terrible" a much beloved husband, in order to spare much sorrow to his wife as he is condemned to die by the doctors, tells her that he does not love her any more, he recovers, however, to find that he has killed her love for him. The other new playhouse is the Théâtre Pigalle, splendidly equipped in every way by the Baron Henri de Rothchild and inaugurated in the late spring with a succession of tableaux of some great episodes in the history of France. Sacha Guitry arranged this show of splendor which had a long run.

Very unusual was the welcome extended to foreign playwrights on the French stage in 1929, so much so that in November an impresario could think of no better advertisement for a new and excellent musical play, *Boulevard et ses filles*, by Verneuil, than to announce that the four contributors "all are French." Not only classics, such as Shakespeare, were given, but moderns such as the Italian, Antonelli, the Czech, Molnar, the German, Leonard Franck (an anti-war play, *Karl and Anna*), Englishmen, such as Sherif (*Journey's End*), and the Americans, Bayard Willer (*Trial of Mary Dugan*) and Rice (*Street Scene*). Among the "reprises" were two Rostand Plays (*Princesse Lointaine* and *L'Aiglon*—a big success for Mme Simone), Berque's *Les Corbeaux*, Lavedan's *Chienne du 101* (Mme Du Barry), and the post-war plays *Une Bourgeoise*, by V. Francen, Ravnal's *Tombeau sous l'Aix de Triomphe*, and Boudet's *La Prisonnière*.

Among the new plays of 1929 was the dramatization of J. Bédier's famous *Tristan et Isolt*, in collaboration with Louis Artus, strikingly staged. By the same Artus was *Un homme né d'hier*, giving

the psychology of an old "beau", also there were Marcel Achard's *La belle Marnière* and Jean de la Lune, and Gerald de Spitzer's *L'homme de joie*—all are very clever but without particularly new ideas. In that line of plays—of very delicate psychology—the success of the year was undoubtedly Giraudou's *Amphitryon* 38 (which means that it is about the thirty-eighth play on that mythological but human story of the love of Jupiter for Alcmena, the wife of his host, Amphitryon). Another success was Lenormand's *Une vie secrète* (not written in 1929, however), of course, the author continues his Freudian style; the hero is insane and writes wonderful things, but he is conscious himself that "c'est parceque je m'ignore que j'écris des chefs-d'œuvre." Alfred Savoir's *Lui* was written in the same vein: a man who actually believes that he is God on earth, with burlesque and dramatic results, cannot be said to be presented in a very convincing manner. J. J. Bernard's *Le feu reprend mal* is a post-war play about a married couple estranged by the years of separation. Bernard Zimmer's popularity grew constantly after his great success in adapting Aristophanes's *Birds* (1927), he had several plays in 1929, among them *Pauvre Napoléon* (the warrior who becomes sentimental at St. Helena) and *Le Veau gras*, a very clever and amusing modern version of the story of the Prodigal Son. Jacques Sindral (also known as "Fabre-Luce" as a political writer) has tried his hand in two plays which both were only half successes, but stirred discussion. *Double* presents a girl who hesitates between two men of entirely different natures, *Transfuges* gives a comedy of the usual political game—convictions change with new personal interests.

Ed Schneider's drama, *L'écaltation* (see NEW INTERNATIONAL YEAR BOOK for 1928), was represented in Paris in 1929; in it are opposed a mother who wants to live the life of a modern flapper and a daughter who is repulsed by that very thing and looks for an old-time life of devotion to higher things. A woman, Marguerite Duterme, in *Les égariés*, tried to give a counterpart to the much discussed *Captive*, by Bourdet. Stève Pasteur took up the problem of the soul of a business man (a revival of the famous Mirabeau's *Les affaires sont les affaires*), while Edmond Flég, in *Le marchand de Paris*, gave the very kind-hearted rich man—and the interesting thing about the performance was that the veteran actor Le Bargy who had had in Mirabeau's Isidore Lechat one of his most famous parts, tried to surpass himself in playing this part of the anti-Lechat.

H. Kistemaekers had a not very convincing melodrama in *L'Instinct*, H. Jeanson wrote a family play of keen psychological analysis, *Amis comme avant*, Crommelynck (the author of the curious *Le cocu magnifique* of some years past) offered in 1929 a play, *Carine, ou la jeune fille folle*, with a very unpleasant theme. Carine is genuine, innocent, good to the core, but when she discovers gradually all sorts of rascality going on in the world around her, she lets herself be carried away by the general indifference to moral standards. The year ended with a play by one of the authors whose products are most eagerly awaited, M. Bourdet. After his great success with the very gay satire on the literary prizes, *Vient de Paraître*, he returns to a thoroughly repulsive subject, but which *per se* this time does not lend itself to the highly dramatic treatment of

The Captive, in *Le sexe Facile*—ironical title—we are introduced to the so-called ultra-modern women, that is to say, women making love boldly to men, instead of the old way of men making love to women.

Some of the best comedies of 1929 bordered on the farce, for which the French are inimitable. Jacques Natanson in *Je t'attendais*, showed a young man married to a middle-aged wife and a middle-aged man married to a young mate, but at the end of the play the matches are rearranged according to the wishes of nature. Marcel Pagnol seems to be on the way to take the place of the late Courteline, Pagnol's recent *Marius* is a capital comedy which takes place in Marseilles, where Marius, the bar waiter, and Fanny, the oyster girl, make love, but finally the appeal of the sea is too much for Marius, who yields to destiny and forsakes Fanny. Much that is favorable has been said of Albert and Germaine Acremant's *Ces dames aux chapeaux verts*, a very proper play in a province town, where a young city girl appears and shocks the village people. Félix Gandéra scored a success in *Il manquait un homme*, as did Yves Mirande in *L'attaché* (Palais Royal farce). Mirabeau's *Déjeuner amoureux* is very witty, and so, of course, is the *Jules, Julien, et Julien* of the veteran humorist, Tr. Bernard. Sacha Guitry presented another of his biographical sketches by rapid tableaux in *L'abbé*, and Émile Mire published, *La Comédie Française pendant la guerre* (Figuères).

THE NOVEL Production in the field of the novel was very large, due partly to the fact that the fashion—which, however, seemed on the wane—was to make them very short. First, came novels which fall within that category without any further qualification, and which are important because of their excellence or on account of the man who signed them. Such are H. Bordeaux's *Valombres*, treating in a very dramatic manner an episode which has stirred public opinion: a good deal a school-teacher is accused of killing her illegitimate child and is willing to assume the blame before the court in order to spare the really guilty father. Bazin's 1929 novel—about a family of weavers in Roubaix—*Ros des archers*, is in his usual vein. Jacques Char doune (the author of *Épithalame*, which made such a sensation some years ago) offered, *Les Varas*, a similar story of conjugal misunderstanding.

A Gide, in *L'École des femmes*, developed the psychological case of a woman who has been blinded by love, and then opens her eyes to the shallow being whom she has married and hates him in proportion to her former devotion. Edmond Jaloux, in *Létiat*, shows that he has not yet outgrown his gloomy view of life. Jean Gaudement and Camille Cé, in *Plus vas que la vie*, analyze the state of mind of a weakling who can only dream his life with a woman he would love, while Julian Green, who had proved so pessimistically disposed in former novels, is more so than ever in his *Léviathan*, which, however, was not less praised than his former stories (it was awarded, in the English translation, *Dark Journey*, the Harper Prize), his other book, *Les voyageurs sur terre* is a bold attempt at explaining the psychology of the religious soul.

Another gloomy novel—about the class of humble clerks—is André Thérive's *La Chambre ardente*. Valéry Larbaud places the scene of his last novel, *Allen*, in the Bourbonnais. The old

master, Marcel Prévost returns to the domain that had made him so famous, the psychology of love, in *L'Homme vierge*. The same story is told from three different angles in the form of letters by an old beau who had adopted an orphan girl in his house and then seduced her, as a diary, by the son of that man who is utterly shocked, having a "protestant" mind, and as a confession of the girl to the young man, whom she blames because, by his indifference to love, he had thrown her into the arms of the old man, it all ends with an automobile accident probably intended.

Roger Martin-du-Gaid continues his remarkable sexual story, *Les Thibault*, in vol. vi, entitled "La mort du père," but in a gruesome manner, reminiscent of the worst Zola days. A novel greeted on all sides as being above the average of the 1929 output was Marcel Airland's *L'Ordre* (3 vols.) the hero, Gilbert Villard, is a fomenter of disorder by his eccentric manners, his absurd and fanciful likes and dislikes—in short, he is possessed by that restless spirit which has been so often pointed out in post-war youth and which Airland himself had called a modern "mal du siècle." Montherlant showed his versatility in giving his first real love novel, *La petite infante de Castille*. In his detached way, he portrays his fancy for a silly but charming little Spanish girl (*de cette stupidité sans prétention qui est un charme chez le sexe lequel n'est insupportable qu lorsqu'il se croit quel-que-chose*), but he lets her go because he will enjoy more the pleasure of scoffing the opportunity, which he afterward regrets.

Aug. Bailly received the Prix Lasserre for his novel, *Now*, which takes up the subject so well treated in Maupassant's *Fort comme la mort* and Bourget's *Pantôme*, of the man who falls in love with the daughter of his former love, but the girl remains indifferent. Louis Ed. Le Ratz, in *L'Ange, la bête et l'homme* has an "education sentimentale" in the manner of Flaubert—he does not insist on "la bête." Jean Cassou's *La clef des songes* considers life as a dream, while Léon Bopp, in *Le crime d'Alexis Lenoir*, takes up under present conditions the theme of Bourget's *Disciple*, a young man has killed and makes his confession pretty much in the same way as Gresslou, but the theory that led him to kill light heartedly is what he calls "hazardisme" i.e., a sort of Bergsonism in which man creates almost any moral truth he chooses, there being no outside truth.

Em. Robin won the Prix du Premier Roman with a similar book, *Accusé, tâte-toi!* Henri de Zwiggler, in *La légende*, depicts a sort of village Carmen in the Savoyan Alps, and her victim is a writer who had gone to the place for some work. For readers who prefer a lighter type of book, there is Pierre de Régner's *Colombine ou la grande semaine*, witty, about life in society.

Alberte Cahuet gave us in 1929 one of his clever supposedly historical novels, *La Robe de Porphyre*, in which he claims that possibly the remains of Napoleon are not under the famous cupola in Paris, but in Westminster Abbey.

The peasant novel, so popular for years, was a little less so, but 1929 brought out Maurice Genevoix's *Cyrille*, very realistic. C. F. Ramuz, the Swiss author, in his preface to his new edition of *Salutation pay saune* rebukes those who reproach him for using the language of the mountaineers "Je suis vaudois, j'écris vaudois."

Among the newcomers in the field, but who have been decidedly successful, are Jean Giono, who saw his 1928 novel *La Colline* awarded the Brenano Prize in 1929, when translated under the title, *Hill of Destiny*, and who came very close to receiving the Prix Goncourt for his new peasant-like novel, *Un de Baumugnes*, both are dramas among peoples of unsophisticated minds, dramas which are often more powerful for that very reason, the story of *Maia Chapdelaine* has been mentioned by more than one critic in connection with this young man, also Marcel Aymé, who won great favor with his *La Table aux herbes*, he is an equally keen observer and writes in a more humorous vein.

There were two important 1929 novels dealing with religion. Georges Bernanos's (author of *Sous le soleil de Satan*) *La joie*, showing a young girl, Chantal de Clergerie, who by the purity of her faith conquers all the hypocritical lies of the so-called religious people around her. Some see, in the Abbé Brenmont the original of, the Abbé Cénabre of the novel, and Henri Ghéon's, *Les jeux de l'enfer et du ciel*, 3 vols., which depicts the pilgrimage of a motley crowd to the famous Ars, in the Pyrenees, and which is represented as taking place in the days of the Abbé Vianey, it is an almost complete counterpart of Zola's *Lourdes*, in Zola's book, the believers are few but sincere, while in Ghéon's, the unbelievers are few but sincere, there are some very clever and interesting pictures of varied types of pilgrims.

In France, as elsewhere, war books were popular again in 1929 after so many years of indifference. Probably the most remarkable was Lucien Descaves's *L'Hyondelle sous le toit*, the story of a small town during the years 1914 to 1919. René Jouglet, in *L'Etranger*, took up the subject of international marriages. Jean Variot, in *Résurrection du feu*, depicts a supposed good-for-nothing in Alsace who is spurred to fine action by the war fire, while H. Frémont, in *Après le feu* (preface by Raymond Poincaré), gives a picture of an energetic woman starting life anew in Lorraine, having lost husband and son in the cataclysm Channing, as are all the books of R. Escholer, is *Mahmoudou Fofana*, the war experiences of a Senegalese soldier. There are two volumes of stories, one by Henri Beberly (former winner of the Prix Goncourt), *Tombes sans lauriers*, the other by Galière Boissier, *Louis de la Riflette*, with *La fleur au fusil*, the first giving the title to the book.

A critical study of the French war books, appeared under the title, *Témoins* (Paris), by Prof. Jean Norton Cru, of Williams College, a severe indictment of both those who admire the heroism of the War and of those who err in the other direction, such as Barbusse and Remarque. Episodes of the war in the Far East are told in Malraux's *Royaume Façerie* and in Grandjean's *L'Épopée jaune*—the first indulging in the horrible, the second showing the heroism of missionaries and marines in Japan, a real Book of Martyrs.

Among exotic novels, Pierre Benoit is represented by one of his well-known *romans d'aventures* in *Erromango*, which relates how an agriculturist leaves for an island in the Pacific Ocean to raise cattle, the effect of the climate is to render him insane and amorous hallucinations finish him. More striking even is George Groslier's *Le retour à l'argyle* (Prix de Littérature

Coloniale), the story of a French couple leaving for colonization in Cambodia, the woman cannot adapt herself to the new conditions, the man succeeds, and yields to the influences of climate and surroundings, this process of adaptation being interestingly described Jules Supervielle, in *Le Survivant*, acquaints us with various South American customs, and Lucie Delarue Maudru Amanti takes us into ever-mysterious and fascinating Egypt.

There is a group of 1929 novels whose authors seem to have forgotten that there is a limit to outspokenness. M. Martin's example (at the end of 1928), *Amour Terre inconnue*, was followed by J. Kessel in his *Belle du jour*, but the question is whether this is not pathology instead of literature. Another much-discussed novel, published under the pretense of progressive art, was Marcel Berger's *L'Amour sans amour*, the staging of the *Decameron*. Pierre Zenda treats modern love in *Charleston*. As to Colette's style, it was long ago taken for granted, her recent novel is *La seconde*.

There are some novels which may claim originality. Duhamel, in the *Club des Lyonnais*, continues the study of his Salavin—that innocent fool who is trying to find an aim to his life—and after having decided to be a saint in the preceding volume, now tries his hand at being a Communist, perhaps, also, J. de Lacretelle's *Amour nuptial*, in which a novel writer marries a wife so good, so wise, that she gives him no inspiration for his books—which puzzles him. Originality in the

is ascribed to his heroine. . . . Mme Louise Pailleton's story of the woman called *Ratoune* (curious is the attempt of the Brothers Tharaud to revive the atmosphere of the Geneva of Calvin, and their fairly successful way of showing that the adoption of the reform was due in great part to all sorts of insignificant causes having little to do with religion, the novel is called *La chronique des frères ennemis*. Maurice Bedel's idea in *Fascisme*, *An II* is well expressed in the subtitle, *La mensculute cordiale*. André Breton, in his *Nadja*, gives a very typical novel of the dadaistic type, illustration of his manifesto of surrealism which he gave out some years ago and which is now issued in a second edition.

Jean Cocteau, considered as eccentric as the surrealists, but who refused to join them, gave this year a striking story called *Les enfants terribles*—depicting the almost insane dispositions of the post-war youths who, having spent themselves, fail to attain any moral balance and commit suicide. Maurice Magre, in *Lucifer*, reminds us of Huysmans, who 20 years ago showed so much interest in the satanic cults in remote corners of Paris. As a curiosity, 1929 brought out *Roman d'un crime*, a story written by three well-known novelists. André Salmon, who wrote of the crime itself, Geo London, who recounted the courtroom proceedings, and Fernand Rivoire, who described the execution of the sentence of death.

SHORT STORIES. Some of the best volumes of short stories include André Savignon (author of the *Filles de la pluvie*, crowned by the Goncourt) *Tous les trous*, André Maurois, *Le monde imaginaire*, however, embraces only the stories already published under the title *Merpe*, J. Kessel *La coupe fêlée*, J. L. Vandoyeur, *Nuits à l'hôtel Reaux-Monts*, Fr. Mauriac *Troux révisés* ("Coups de couteau," "Un homme de lettres," "Le démon

de la connaissance"); E. Pérochon, *Le crime étrange de Iase Balzan* (the psychoanalytical manner applied to a girl, three stories in all); Jacques de Lacretelle, *Histoire de Paola Ferraro*, title of the first story, and two Bourget products. *Au service de l'ordre* and *On ne voit pas les cœurs* (four proverbs).

MISCELLANEOUS. Although awarded the Grand Prix du Roman by the French Academy in June, *Le Livre des Bêtes qu'on appelle sauvages*, by André Demaison, is really no novel at all, but extremely picturesque narratives of experiences of the author, a colonist in Africa, with wild animals of the region, the name of Kipling has been repeatedly mentioned in connection with that original book. H. de Montherlant has another volume discussing sports, *Farnus*, 3^{me} *Olympiade*. Farnus is the name of a young slave mentioned in Seneca's *Letter to Lucilius*, and, among other things, the author claims that the theory is unfounded which considers sport rivalry as a means to replace national chauvinism by so-called sport-spirit. Henri Pourrat offered one of his too rare books to speak feelingly of his native province, *Cœur d'Auvergne*. It is quite in keeping with the age of disrespect to treat with little reverence the heroes or events of history. The following books have restated problems in a new way. Il Béraud, *Le 14 Juillet*, O. Aubry, *Napoléon III*, and Delteil, *Il était une fois Napoléon*. A new example of child psychology was given in Tr. Derème, *Patachon, petit garçon*.

There were numerous books on travel of varied interest which appeared in 1929. Paul Claudel, in *L'oiseau noir dans le soleil levant*, treats various topics of Japanese life and thought. Il Béraud in *Ce que j'ai vu à Rome* is not favorable to Fascism, F. Carco wrote *Printemps d'Espagne*, G. de La Rochefoucauld gave us a charming book in *Constantinople avec Loti*, Jean-Richard Bloch continued relating his travel experiences in *Bananas et Cacaouilles* (Senegal and Canary Islands), and Blaise Cendrars added to his collection another volume about his tramping around the globe, *Plan de l'aiguille*. Much in vogue have been the volumes of a series just started and called *Les grandes légendes*, which include Funck-Brentano's *Île de la Tortue*, and Aug. Bailly's *Le radeau de la Méduse*.

Another popular genre is that of memoirs in all forms. Much interest was shown in the *Voir intérieures de Barris* (2 vols.), by Duhamel, and which give notes that the great writer had prepared for "Mémoires" of his own hand. Under the title, *Mes Modèles*, the famous old painter, Blanche—who also writes admirably—tells of the famous personages he has known, such as Barrès, Gide, Proust, George Moore, Henry James, Thomas Hardy, etc.

The son of the late Pierre Loti, M. Vian, published 2 vols. of *Journal intime* of his father. Francis Jammes, in *La divine douleur*, tells of his past life. While the Duchesse de Grammont writes very entertainingly of *Au temps des Equipages* (Second Empire), (typ has alert souvenirs of *Du temps des chevaux et des chevaux, souvenirs du Second Empire*. The Comtesse de Noailles—who is far from the age of Gyp—nevertheless writes *Mémoires* already. Then we have Léon Daudet's amusing *Paru vécu*, Fr. Mauriac's *Mes plus anciens souvenirs*, and many others. One of these books is posthumous, René Schwob's *Moi, jadis* (telling of his conversion).

André Maurois's *Aspects of Biography* (six lectures delivered at the University of Cambridge), was published first in English.

The *vies romancées*—as the more or less fanciful biographies written after the model set by Maurois are now called—still were tremendously popular in 1929. Among the various kinds of lives (*grandes existences, vies illustres, vies aventureuses, vies amoureuses*, etc.) are those by Henriot, Brethoren, G. Lecomte, Baron de Suffren (born 1729), A. Billy, *Sophie Arnould* (the actress), J. M. Carié, *Louis Stevenson*, L. Bertrand and Cassou, *Philippe II*, Rouff, *Chateaubriand*, Boulenger, *Saint-Louis*, Moma et Louvet, Vatel, G. Tine, *Mme de Maintenon*, Hallays, Regnaud, Funck-Brentano, *Mvabeau*, R. Fernandez, *Molière*. *** Th. Renardos, P. Rival, *Reine Margot*, M. Jacot, *Hélène de Troie*, J. Germain, *Geneviève de Brabant*, etc., etc. New collections were formed, such as *Histoires de France*, with contributors of the rank of Funck-Brentano, L. Pailleron, A. Billy (e.g., *La du triumphe du Prince imperial*, by Biaviel), the series *Des Histoires Extraordinaires* (e.g., Morat and Livet, *Mystère du chevalier d'Eon*—was the "chevalier" a man or a woman?), the series *Les Grandes Légendes* and *Les sept Péchés Capitulans*, etc.

HISTORY OF FRENCH LITERATURE. A formidable array of books in this category greeted us in 1929, including the following: Ch. Langlois, vol. iv (final) of *La vie en France au Moyen-âge* (11^e spirituelle), Pierre Champion, 3-vol ed. of *Les Cent nouvelles Nouvelles* Sixteenth century, Plattard, *Vie de Rabelais* Seventeenth century, M. Leroy, *Descartes, le philosophe au masque*, Emile Magne, *L'œuvre et l'Hôtel de Rambouillet* (Prix Marquette-Gonin), C. Clerc, *Vie tragique de G. de Scudéry*, Lachèvre, *Scarron et sa gazette burlesque*, G. Mongrédien, *Athalie*, de Racine Eighteenth century, F. Roches, ed., *Lettres Persanes*, Lacoste, *Bayle novelliste et critique littéraire*, *Œuvres de Voltaire* (Cité des Lettres, 3 vols.), Treich, *L'esprit de Baumechamps*, Diderot, *Lettres à Nophré Voland*, 2 vols., A. Schinz, *La pensée de Rousseau, essai d'interprétation nouvelle*, M. Coudy, Diderot, Romantic period, L. Pailleron, *Aubeiges romantiques*, P. Souday, *Les romantiques à l'Académie Française*, Maurius et de la Taille, *Un débat sur le romantisme*, G. Bauer, *Metamorphoses du Romantisme*, Rouff, *Vie de Chateaubriand*, Em. Beau de Lomenie, *Carrière politique de Chateaubriand*, two books on Mme de Staël, by Jean de la Pange and by Hellen, Bellessort, *Essai sur l'œuvre de Hugo*, Guillet, *Hugo spirituel*, R. de Traz, Baldeus-peigne, *Le de Vigny*, Em. Henriot, A. de Musset, H. d'Ambras, *Dumas et les Trois Mousquetaires*, R. Jasinski, *Annales romantiques de Gautier*, *L'Espana de Gautier*.

In addition to the *Œuvres* of P. Trahard, *Miréc de 1834-53*, *Œuvres de Miréc*, P. Floettes, *Leconte de Lisle*, Thibaudet, *Amal ou la part du réel*, L. Deffoux, *Le Naturalisme*, P. Apesteguy, *Vie profonde de Rostand*, Dr. M. de Lérimier, *Promenades avec Huysmans*, Fâtève, *Le hainien* (posthumous), Roland et Renéville, *Rimbaud le voyant*, M. Coulon, *Vie et œuvre de Rimbaud*, Bolléy, *Léon Blois*, a new periodical, *Chronique Barrérenne*, N. Séguin, *Anat France anecdotique*, B. Crémieux, *Du côté de chez Marcel Proust*, J. Jacob, M. Proust, J. Larnac, *Collette*, *Vie et œuvres*, Lasserre, *G. Sorel*, R. Lalou, *A. Gide*, P. Humbourg, *G. Duhamel*. Books of 1929 that cover different men and

women are L. Daudet's *Flambeau* (Montaigne, Rabelais, V. Hugo, Baudelaire), Rachilde's *Portraits d'hommes* (Barrès, Gourmont, Samain, Moréas, Blois, etc.); J. Larnac's *Hist de la litt féminine en France*.

LITERARY EVENTS. An endless list of Prix littéraires, the details of which may be followed in *Nouvelles Littéraires* (e.g., for the summer list of the French Academy Prizes, issue of July 13, 1929). The Grand Prix de Littérature went to Henri Massis (now Rédacteur of the *Revue universelle*); the Grand Prix du Roman, to André Demaison (see above), the Prix Broquette-Gonin, to Em. Magne (see above), the Grand Prix de la Société des Gens de lettres, was won by Albert Erlande, the Prix des Vignes de France, by André Mary (see above), the Prix Virenone (de littérature spiritualiste) was awarded to Lya Beigel. Just announced at the close of 1929, the Prix Goncourt went to Marcel Arland, for his *L'Ordre* (with Henri Ghéon as close rival, see above), the Prix Femina was won by Georges Bernanos, with *L'œuvre* (see above), and the Prix Renaudot, by Marcel Aymé, with *La table aux Crevés* (see above).

Marshal Foch and Clémenceau of the French Academy died during 1929 and Marshal Petain was called to replace Foch. The seat of Courteline at the Académie Goncourt was filled by Dorgèles (author of *Les Crou de Bois*), after strong support for Dulamel and Mme Colette. The centenary of Cheibuliez was commemorated Victor Margueritte (author of *La Garçonne*) was recalled to the presidency of the Société des Gens de Lettres, and pressure brought to have him reinstated in the Legion of Honor. The works of Théophile Gautier became general property. La Devinière, most probably the birth place of Rabelais, was pronounced public domain, and Les Délices, one of the residences of Voltaire in Geneva, was bought by the city of Geneva to prevent destruction.

NECROLOGY. Deaths of the year included, C. V. Langlois, Léon Balaguet, Paul Souday, Maurice Boucher, and Jean Paichari.

See also PHILLOGY, MODERN.

FRENCH SOMALI (SO-Ma'lé) COAST, or FRENCH SOMALI AND A French colony in Africa on the Gulf of Aden between Italian Eritrea and British Somaliland. Estimated area, 5790 square miles, estimated population in 1928, 85,788, including about 550 Europeans. The port of Jibuti is the seat of government. Its population in 1928 was estimated at 9111, of whom 540 were European (317 French). After 1922 the Government introduced a public elementary school system at the capital, supplanting the mission school which had been in operation for 20 years. The budget for 1928 balanced at 13,002,000 francs.

French Somali Coast has practically no industries and very little agriculture. The main sources of wealth are commerce, inland trade with Ethiopia, and coast fisheries. The imports in 1927 amounted to 480,642,000 francs and the exports to 513,383,000 francs of which 350,226,000 francs represented re-exports. The chief exports are ivory, coffee, hides, and skins. The chief imports are cotton goods, butter, coal, and sugar. A large share of the exports of Abyssinia pass through the port of Jibuti, which is connected by a railway 485 miles long with Addis Ababa. In 1927, 556 vessels of 2,452,164 tons entered and cleared the port of Jibuti. The colony is under

a governor assisted by an administrative council Governor in 1929, M. Chapon-Baissac (appointed in 1924)

FRENCH SUDAN. A French colony encompassing the valley of the Upper Senegal, some two-thirds of the course of the River Niger, and a large part of the Sahara Desert within the sphere of Algeria Bounded on the east by the Territory of the Niger, on the west by Mauritania, the Falemé River, and French Guinea, on the south by the Upper Volta and the Ivory Coast, and on the north by the territory of Algeria Area, estimated at 360,331 square miles, population, estimated at 2,632,618 in 1927 The capital is Bamako, with 24,041 inhabitants Other important towns and their populations are Kayes, 9873, Timbuktu, 5485, and Sikasso, 9197 All the chief towns have regional or urban schools The active crops include groundnuts, millet, corn, cotton, rice, sesame, rubber, and kaoli, also many cattle are raised Native industries are of some importance, including the making of pottery, jewelry, and leather, and weaving The total imports in 1928 amounted to 113,085,000 francs and the total exports to 5,217,000 francs Much of the foreign trade of the French Sudan is carried on through the ports of Senegal, so that the above figures therefore do not accurately reflect the trade importance of the colony The chief imports were cottons, foodstuffs, and metal work, and the chief exports, groundnuts, cattle, rubber, gum, kapok, skins, and wool The budget for 1928 balanced at 54,134,005 francs There is a railway connection with the coast over a line 760 miles in length The government is under the Governor-General of French West Africa (see FRENCH WEST AFRICA) Lieutenant-Governor in 1929, Terrasson de Fougères

FRENCH WEST AFRICA An African colonial possession of France, comprising the Atlantic coast colonies of Mauritania, Senegal, French Guinea, and the Ivory Coast, the colony of Dahomey on the Gulf of Guinea, and the interior colonies of French Sudan, Upper Volta, the Territory of the Niger, and Dakar and Dependencies It includes the river basin of the Senegal, nearly all the upper and middle Niger Basin, the basin of a large number of rivers emptying into the Gulf of Guinea, and the southern part of the Sahara region Area, 1,247,191 square miles, population in 1926, 13,541,611, as compared with a total area of all the French protectorates and mandated territories of 10,255,610 square kilometers and a total population of 55,631,184 Official French reports classify the diverse native inhabitants under more than 50 groups Some very extensive areas of this region are practically deserted, while others have a population as high as 60 persons to the square kilometer

The colonies in 1926 had the following populations Senegal, 1,318,287; Guinea, 2,095,988, Ivory Coast, 1,724,545, Dahomey, 979,609, French Sudan, 2,634,982, Upper Volta, 3,240,147, Mauritania, 289,184, Niger, 1,218,717, Dakar and Dependencies, 40,152 The total European population was 15,399, of whom 11,099 were French The natives in general live by farming and stock raising Up to 1928, few useful minerals had been discovered and the output was comparatively small in value In 1927-28 there were 281 preparatory schools, with 16,087 pupils, 147 elementary schools, with 13,704 pupils, 88 urban schools, with 5918 pupils, and eight higher

primary and 12 technical schools. In addition, there were 146 evening schools for adults with 5888 pupils The expenditure on education was 21,226,115 francs

In 1928 the total imports of Senegal, French Guinea, Ivory Coast, Dahomey, and the French Sudan were valued at 1,485,376,000 francs (\$58,227,000), representing an increase over the previous year, and exports were almost stable at 1,184,645,000 francs (\$46,438,000) The individual totals for imports and exports, respectively, for the five colonies were Senegal, 895,536,000 and 760,428,000 francs, Ivory Coast, 235,689,000 and 253,052,000 francs; Dahomey, 134,349,000 and 97,773,000 francs, French Guinea, 106,115,000 and 72,174,000 francs, French Sudan, 113,685,000 and 5,217,000 francs As a large part of the foreign trade of the French Sudan is carried on through ports of Senegal, the above figures do not give a true perspective of the trade importance of the French Sudan Peanuts constituted about 50 per cent of the combined exports of Senegal, Ivory Coast, Dahomey, French Guinea, and French Sudan in 1928 Cocoa beans were the chief item of export from the Ivory Coast Other exports were hardwoods, palm kernels, palm oil, gum, hides, cotton lint, and crude rubber (from French Guinea) The imports included cotton piece goods, foodstuffs, automobiles, machinery, petroleum products, and some tobacco France supplied about 75 per cent of the total imports in 1927 and took about 50 per cent of the exports The budget for 1929 provided for revenues of 801,197,500 and expenditures of 771,879,000 francs

In 1927 there were 1950 miles of railway with 345 additional miles under construction and 14,386 miles of telegraph line Vessels entering and clearing the ports of French West Africa the same year numbered 20,229 of 16,466,259 tons

A governor-general, assisted by a council, is at the head of the administration of all French West Africa The seat of government is at Dakar Each colony is under a lieutenant-governor subordinate to the governor-general Governor-General in 1929, J. Carde, appointed Feb 20, 1923

FRIENDLY ISLANDS. See TONGA

FRIENDS, RELIGIOUS SOCIETY OF A mystical religious sect which originated in England in the middle of the seventeenth century The founder of the society was George Fox (1624-91) who visited America in 1672 The first Yearly Meeting in the United States was held in Newport, R I, in 1661 and has been continued under the name of New England Yearly Meeting Others established within the next 40 years were the Baltimore, Philadelphia, New York, and North Carolina Yearly Meetings, they are composed of quarterly and monthly meetings having one or more congregations. In the nineteenth century, other meetings were formed as migration moved westward

FIVE YEARS' MEETING In 1902 the largest body of the Religious Society of Friends, known as the Orthodox Group, organized the Five Years' Meeting This society meets as a delegate body every five years and in 1929 consisted of 12 yearly meetings, with a membership of approximately 81,000 Its headquarters are in Richmond, Ind The work of the various departments, such as missions, peace, prohibition and public morals, religious education, is under the direction of executive committees and secretaries of boards

The Five Years' Meeting also maintains seven colleges for higher education: Earlham in Richmond, Ind.; Penn in Oskaloosa, Iowa; Guilford in Guilford, N. C.; Wilmington in Wilmington, Ohio; Whittier in Whittier, Calif.; Nebraska Central in Central City, Nebr.; and Friends University in Wichita, Kans. Haverford College in Haverford, Pa., is maintained by the Philadelphia Yearly Meeting and Pacific College in Newberg, Oreg., by the Oregon Yearly Meeting. The latter society, however, and the Ohio Yearly Meeting are not a part of the Five Years' Meeting. In 1929 the membership of the Oregon Yearly Meeting was 3208 and of the Ohio Yearly Meeting, 5157. *The American Friend*, a weekly religious journal, is published at headquarters, as is also literature for the Bible schools of the Five Years' Meeting.

LIBERAL BRANCH. This branch was formed in 1827 when more than half of the Friends in the Middle States followed Elias Hicks. The separation centred around the doctrinal issues of the day. The Liberal Branch includes seven Yearly Meetings federated in the Friends' General Conference, which meets in even numbered years and conducts work in religious education, social service, and advancement of Friends' principles. The society emphasizes the freedom of the individual to follow the voice of God in his own soul rather than any individual or church authority. The membership in 1929 was 16,573, and there were 111 publications include the weekly

Intelligencer, and a monthly magazine for children, *Scattered Seeds*. The society conducts several secondary schools, and Swarthmore College in Swarthmore, Pa., was founded by it.

An important agency representing all groups in the United States is the American Friends Service Committee, with headquarters at 20 South Twelfth Street, Philadelphia. It was formed in 1917 for war-relief work, and under its auspices approximately 1000 members carried on relief and reconstruction work in various countries of Europe. In Germany alone, it administered food relief to the extent of approximately \$30,000,000 in money and in kind. In 1929 it acted in a similar capacity in administering relief in cooperation with the Federal Government, the Churches of Christ in America, relief to needy textile workers in the strike area of North Carolina. The committee also united with English Friends in conducting several good-will centres in European countries for the purpose of extending international understanding. The first conference of all Friends in America was held in Oskaloosa, Iowa, in September, 1929. It was called for the purpose of considering the common task confronting American Friends and for the furtherance of good-fellowship.

FRUIT. See **HORTICULTURE**.

FRUIT CROPS. See **HORTICULTURE**.

FRUIT INSECTS. See **ENTOMOLOGY, ECONOMIC**.

FUCHS, EMIL. An Austro-American painter and sculptor, died suddenly in New York, Jan. 13, 1929. Born in Vienna, Aug. 9, 1866, he studied under Viktor Tilgner, and at the Royal academies in Vienna, and in Berlin. Winning a scholarship in 1890, he lived for five years at Rome. On his return to Germany, he won a gold medal at Munich in 1896 with the group "Mother Love." He then went to London, where, through his sculptures, portraits, and medals for the Royal family,

he became very popular. His work received honorable mention in a Paris competition in 1907. Having first visited the United States in 1905, he received many commissions in that country, painting the portraits of prominent persons, and designing the medals for the Hudson-Fulton Celebration, for the Hispanic and the Numismatic societies, and the J. Pierpont Morgan Memorial Medal. Mr. Fuchs became a naturalized American citizen in 1924. He received the \$1000 prize for the best head of a girl in the Brown and Bigelow Competition, New York, the following year. He is represented in various permanent collections in the United States, such as of the Metropolitan, the Cleveland, and the Brooklyn museums, the New York Public Library, and the Congressional Library, Washington, D. C. Mr. Fuchs wrote, *With Pencil, Brush and Chisel, The Life of an Artist* (1925).

FUEL. Estimates of the U. S. Bureau of Mines place the total 1929 production of bituminous coal in the United States at 525,358,000 tons, an increase of 4.9 per cent over the 1928 production. The latest available government statistics indicated the following uses of the bituminous coal mined: railroads, 27.7 per cent, coke ovens, 16 per cent, electric utilities, 7.7 per cent, steel works, 5.4 per cent, general manufacturing plants, 19.5 per cent, gas plants, 1 per cent, coal-mine fuel, 1.1 per cent, other mines and quarries, 0.8 per cent, export, 0.9 per cent, domestic and miscellaneous uses, 19.9 per cent.

Consumption of coal by the railroads in the United States had declined from 173 pounds per 1000 gross ton-miles in 1920 to 125 pounds in 1929. Similarly, due to greater economies in power generation, the consumption by electric utilities decreased from an average of 3.02 pounds per kilowatt-hour in 1920 to 1.69 pounds in 1929. Some of the larger and more efficient plants were regularly turning out a kilowatt-hour on one pound of coal. Thus the continued increase in electrical output of about 10 per cent per year had been accompanied by only a slight increase in the fuel consumed.

The bulk of anthracite was consumed in domestic use, although power plants and industries consumed a considerable tonnage of the smaller sizes and some was used by railroads. Intensive development of the small stoker for heating boilers is diverting more and more of the small-sized anthracite to domestic use. See **COAL**.

Oil production in the United States last year passed all previous records and exceeded a billion barrels, an increase of nearly 12 per cent over 1928. The greatest increases were in California, Texas, and Oklahoma. The production of gasoline through refining and cracking amounted to over half this quantity. That part of the residue that was used as fuel was distributed among stationary power plants, marine boilers, industrial and domestic heating. The number of oil burners installed for domestic heating in 1925 was estimated to be 25 per cent greater than in 1928. See **PETROLEUM**.

Considerable activity centred in the natural-gas fields where long pipe lines of large capacity are under construction, or have recently been completed, to convey the gas from the Texas and Oklahoma fields to Chicago, Denver, and intermediate cities. Other lines extend from Louisiana to St. Louis, Birmingham, and Atlanta, from Southern California to San Francisco, and over certain sections of Wyoming, Montana, and Mis-

mississippi. One of these pipe lines will be nearly 900 miles long and several range from 200 to 500 miles. This was in addition to existing lines in West Virginia, Ohio, and Pennsylvania, some of which showed a greatly curtailed supply. On the other hand, the Texas, Oklahoma, Louisiana, and California fields promise an abundant supply for years to come. It is probable that this gas will find wide application in industrial plants through the Middle West and will thus prove a strong competitor of coal. It may also stage a revival of the gas engine for certain classes of service. The consumption of natural gas in 1929 increased 21 per cent over that of 1928. See GAS, NATURAL.

Distillation of coal is accomplished by two general methods, namely, high-temperature carbonization and low-temperature carbonization. The former, in which practically all the volatile is distilled off, yields a long line of by-products and has become firmly established on a commercial basis. In the latter, upon which is based a number of individual processes, only a portion of the volatile is distilled off and the residual coke has a higher heat value and is more easily ignited. In Europe a large number of low-temperature carbonization plants had been built, mostly on a small scale, with varying degrees of success, depending upon local conditions. In the United States, a considerable number of such plants had been built during the last few years, with one exception, on a small scale. Processing difficulties had been responsible for the shutting down of several. The few that had been technically successful had not yet attained commercial success, due largely to the current price for tar and lack of a consumer market for the coke produced.

The mechanical stoker and pulverized coal still continued as strong competitors in stationary power plants. Neither dominated the field, and there were conditions for which each was best fitted, although pulverized coal was gaining steadily among the larger plants.

As for the marine field, during the year a second Shipping Board vessel, the *West Alsek*, was equipped with individual pulverizing mills for each furnace and had made several successful transatlantic trips. The first large vessel to be equipped for burning pulverized coal was the *Mercury*, which had been operating under these conditions for nearly two years. With 1929 fuel-oil prices, pulverized coal offered little inducement for American ships. However, its practicability had been demonstrated and it would serve as a potential weapon against increased oil prices.

In October a four-day National Fuels Conference was held at Philadelphia, under the auspices of the Fuels Division of the American Society of Mechanical Engineers. Simultaneous sessions covered fuels for power generation, for industrial furnaces, and for domestic use. The attendance was over one thousand.

During 1929 the various companies reporting to the American Gas Association recorded gas utility sales of over 446 billion cubic feet, an increase of nearly 10 per cent. Revenues from gas sales for the year aggregated \$418,831,103 representing a gain of 4.1 per cent. On December 31, the customers of these companies totaled 9,738,670, or approximately 2 per cent more than on the same date of the year previous. During the year most sections of the country continued to report satisfactory progress in gas sales accord-

ing to the American Gas Association. In New England, the year closed with a gain of nearly 6 per cent in gas sales, as compared with an increase of only 1.4 per cent in customers during the same time. A factor contributing materially to this expansion was an increase of 5.8 per cent in gas sales for household purposes. The growing importance of this new use for the gas industry's product is evident from the data relating to New England, indicating that while house-heating customers were only half of 1 per cent of the total customers, gas used for house-heating purposes represented nearly 7 per cent of the total gas sales for the year in this region.

In the Middle Atlantic States, total sales for the year increased 2.5 per cent, in the East North Central States, 1.1 per cent. In Illinois, Indiana, Michigan, Ohio, and Wisconsin, the increase was 9.1 per cent. In 1929 there was continuation of these trends in production which have characterized the industry at large to an increasing extent during the past few years. The volume of water gas produced by these companies during 1929 was about 8 per cent less than the year previous, while the production of retort coal gas dropped nearly 15 per cent. Marked increases, however, were registered in the quantity of coke-oven gas produced and purchased. The volume of this type of gas produced by the utilities themselves rose some 27 per cent during the year, while coke-oven gas purchased from sources outside the industry, such as iron and steel plants, as well as merchant by-product coke-oven plants producing gas primarily for city distribution, increased some 29 per cent.

FUEL INDUSTRY. See ALASKA, CANADA.

FURNACES. See BOILERS.

GABUN. See FRENCH EQUATORIAL AFRICA.

GALLSTONE DISEASE. This important subject of gall-bladder dyspepsia is discussed by Dr. G. A. Dowling of Seattle in the *Journal of the American Medical Association* for January 5. In over 1000 cases of patients with gall-bladder disease, nearly two-thirds complained of dyspepsia, while only about one-third complained of pain. The number of dyspeptic symptoms was very large, and there was little or nothing to distinguish this from other types of indigestion. It is only when pain also is present that we may suspect the disease in question. The actual cause of the dyspepsia is probably spasm of the pylorus or reverse peristalsis. In cases unaccompanied by the more or less characteristic pain, it is necessary to make some further tests, one of which concerns the acidity of the stomach secretions. In the gall-bladder patient, there is usually diminished acidity, that fact is paradoxically opposed by another, that sodium bicarbonate often relieves the dyspeptic sensations. In about two-thirds of all patients, the stomach acid was diminished or altogether absent. The dyspepsia from this cause can be treated directly and improved even in the presence of the disease by special diet, which comprises small meals; little roughage, elimination of fats, alcohol, and condiments, laxatives, with pepper, charcoal, and bromides as drug remedies. It is unwise to add acids to the diet.

EVALUATION OF CHOLECYSTOGRAPHY. Dr. J. T. Case, well-known radiologist of Battle Creek, stated that many medical men were still out of touch with this new and efficient diagnostic resource. They regard it in the light of a functional efficiency test. If the gall bladder is visible,

it must be healthy and vice versa, but Grahani's test is much more than a test of functional efficiency of the gall bladder, for it should give an adequate idea of anatomical changes in the latter. A comparison may be made between this test and the barium meal in radiography of the stomach which is much more than a test of functional efficiency of the stomach, since it reveals many pathological alterations. Cholecystography therefore is of value both in functional and structural regard, and especially when the intravenous injection is practiced is it of value from the functional angle. This method of making the test is also the most trustworthy for the recognition of gallstone bladders. If the gall bladder is normal to the test, it is *prima facie* evidence that the knife is not needed. The greatest liability to error is in the case where there is only slight pathological alteration in the gall bladder, and here an operation may be shown to have been unnecessary, but the chance of this error is small.

GAMBIA. A British protectorate and colony in West Africa at the mouth of the Gambia River. Area of Gambia proper, four square miles, population about 10,000. Area of protectorate, 4130 square miles, population in 1921, about 200,000. The capital is Bathurst, on the Island of St. Mary (population, 9227 in 1921). In 1926 there were seven elementary government-aided schools with 1867 pupils enrolled. In 1927 the imports totaled £956,741 and the exports, £999,887. The chief imports were wearing apparel and foodstuffs and the chief exports, groundnuts, hides, and palm kernels. The public revenue in 1927 was £252,419 and the public expenditure, £277,625, including £50,000 for the establishment of a reserve fund. The public debt amounted to £84,171 on Jan. 1, 1928. The tonnage of vessels entered and cleared in the foreign trade in 1927 was 1,284,664 tons, of which 821,614 were British. There are no local railways. The colony is administered by a governor, an executive council, and a nominated legislative council containing an unofficial element. Governor in 1929, Sir Edward B. Denham (appointed August, 1928).

GANDHI, MAHATMA See INDIA, under *History*.

GARBAGE AND REFUSE DISPOSAL. Motor vehicles for collection and incineration for disposal of garbage and refuse continue to gain in use in most of the progressive countries of the world. In Great Britain and continental Europe, garbage, ashes, paper, rags, bottles, metals, and various other classes of wastes are mixed at the house, collected and disposed of jointly, except that, in some cities of Italy, garbage is handled separately, as noted further on. In the United States, the three-separation plan (garbage, ashes, miscellaneous refuse) is common but not everywhere used. Much garbage is collected by itself and either fed to hogs or treated by the reduction process for the recovery of grease and fertilizing material. The reduction process is generally confined to the larger cities and hog feeding, to the smaller ones. Los Angeles is the only large city that sends its garbage to a hog farm (see 1928 NEW INTERNATIONAL YEAR BOOK, also preceding editions).

There have been no recent accessions to the list of reduction plants. In those American cities which practice incineration, garbage alone or garbage mixed with other refuse may be burned. Ashes also may be put through the furnaces, but

that practice is becoming less usual. When an American city has no incinerator, its garbage may be fed to hogs, reduced, dumped with ashes and refuse, merely to get rid of it or else to fill low land. In a few cases, as at Scarsdale, N. Y., of late, and in some small places in Florida, beginning in 1928, garbage only is subjected to fermentation in tanks, with the aim of reducing it to humus for use as a fertilizer, by the Becarrí process, which originated in Italy. Dumps or fills receiving all wastes, including garbage, may be kept in a sanitary condition, provided clean ashes or dirt are used for covering the wastes.

New York City (which resorted to dumping its garbage and refuse at sea some years ago after many years' trial treating the bulk of its garbage alone by the reduction process in a privately-owned plant) is continuing its comprehensive incinerator-building programme. At the close of 1929, the head of New York's new sanitation commission (see SEWERAGE) recommended that the construction of incinerators be accelerated by an appropriation of many additional millions of dollars. San Francisco voters, late in 1929, indorsed the principle of incineration but negatived plans tentatively proposed to provide the necessary furnaces. A threatened court injunction against operating the present old and inadequate incinerator was hanging over the city as a result of a lawsuit brought by near-by property owners on the ground that the old incinerator was a nuisance. The situation at San Francisco was complicated by the fact that the garbage is collected by many licensed scavengers, at the expense of individual householders, the fees also covering disposal. The latter is effected by the scavengers collectively, who use the old municipally-owned incinerator for the purpose. At Minneapolis, two proposals to buy the garbage of the city for feeding to hogs were rejected by the authorities because it was held that the price was too low to warrant a change from incineration in a plant built quite recently. Manchester, England, as a part of a five-year programme, put in use in July, 1929, a new refuse disposal plant of 135-short-ton capacity in eight hours, which separates the refuse into dust,inders of heat value, salable products, and combustible and noncombustible tailings. Paper, rags, rope, and other materials are picked out for sale. It was planned to mix the dust with offal and refuse from an adjacent slaughter house and sell the mixture as "town manure." Combustible material which is not salable goes to an incinerator, heat from which is presumably utilized.

BIBLIOGRAPHY. For description of the Manchester plant, consult *Municipal Engineering* (London), Aug. 8, 1929, also, in abstract, *Engineering News-Record* (New York), Dec. 26, 1929. For British refuse and street-cleaning statistics, see annual reports of the Ministry of Health. Of two new British books on garbage and refuse collection and disposal and on street cleaning services (generally combined in England), *Public Cleansing* is a joint production of the James Jackson Study Circle of the Birmingham Corporation Salvage Department, composed of present or former staff heads working under Mr. Jackson, general manager, the other work of importance is *Modern Public Cleansing Practices*, by A. L. Thomson, Cleansing Superintendent of the Motherwell & Winshaw Burgh Council, Scotland.

GARDENS. See HORTICULTURE.

GARMENT TRADES. See **STRIKES AND LOCKOUTS**

GAS, ILLUMINATING AND FUEL During the year 1929 there was a remarkable advance in all divisions of the American gas industry. Not only was there expansion into new fields of usefulness but an extensive development of existing markets. Sales of gas for domestic purposes other than house heating showed a normal increase of somewhat more than 4 per cent, while the use of gas for household heating purposes registered an increase of over 50 per cent, with central house heating and refrigeration showing notable development. The consumption of gas for industrial commercial purposes, such as factories, hotels, restaurants, etc was nearly 12 per cent above 1928 figures. Preliminary estimates of sales by 12 companies in 1929, compiled by the department of the American Gas Association, indicated an 8 per cent increase over 1928, putting sales at a record high figure of 535,000,000 cubic feet. Classified sales of manufactured gas for the year were as follows: 340,000,000 cubic feet for domestic purposes, 27,000,000,000 for house heating, 165,000,000,000 for industrial-commercial purposes, and 3,000,000,000 for miscellaneous uses, a total of 535,000,000,000 cubic feet, as against a total of 494,000,000,000 cubic feet in 1928, an overall increase of 8.1 per cent. During 1929 gas service in the manufactured-gas branch of the industry was extended to 360,000 new customers, bringing the total number of customers to 12,200,000 at the close of the year.

During 1929 there was a pronounced increase in the quantities of coke-oven gas produced by the utilities themselves, the output rising from 39,000,000,000 cubic feet in 1928 to 50,000,000,000 cubic feet in 1929, a gain of 28 per cent. Furthermore, there was an increase of 30 per cent in the quantity of coke-oven gas purchased from coke and steel companies for distribution by the utilities, amounting to 126,000,000,000 cubic feet during 1929.

In the natural-gas industry, according to preliminary estimates of the American Gas Association, there was a production of 1,890,000,000,000 cubic feet in 1929, as against 1,568,000,000,000 cubic feet in 1928, an increase of 20.5 per cent. This branch of the industry increased its gross operating revenues in 1929 to \$450,000,000, an increase of 23.6 per cent over 1928, which showed gross operating revenues of \$364,000,000. Such activity was largely in the South and West, for it was hardly possible to substitute natural gas for manufactured gas in the East because of the large supply which would be required for such a move and because it would necessitate scrapping efficient by-products gas plants. Natural gas was particularly available for large industrial consumers with a particular need for the high heat content of this type of gas, and it also could be purchased by manufactured-gas utilities to enrich their own manufactured product. Where natural and manufactured gas were available, it was generally considered most economical to distribute both products mixed, as it reduced the expense of manufacturing gas and provided for a financial return on the sale of the natural gas more in line with its high heat content than when this gas was distributed in an unmixed form. In this field, there had occurred the extension of hundreds of miles of great pipe-line systems, so as to bring natural gas from the enor-

mously productive areas of the Southwest and West to hundreds of communities that never had heretofore enjoyed the convenience of this fuel.

During the year, there continued to be marked progress in the adaptation of gas to many new industrial, commercial, and domestic uses, in addition to the revolutionizing of the ceramic industry, brass smelting, baking, refrigeration, central heating, and hotel cooking, which had been under way for several years. Research was being prosecuted in many fields, and the testing of upward of 15,000 appliances was in progress in the laboratory of the American Gas Association in Cleveland, in the interest of the protection of the public and the industry against faulty and inefficient gas-burning appliances. The modernization of scores of manufactured-gas plants had become quite general, and while there recently had been marked progress in refrigerating and heating, there also were important opportunities in other fields. Changes of an engineering character scheduled to come included the use of gas, steam, and electrical production in single plants, where coal would be completely processed, while the development of a gas-fired turbine for the generation of electricity might make possible the locating of future combination utility plants at the coal or mine mouth and thereby eliminate heavy investment.

According to B. J. Mullaney, president of the American Gas Association, the combined revenues of the manufactured- and natural-gas industries in 1929 amounted to about \$950,000,000, as against \$875,000,000 in 1928. This was a gain of nearly 9 per cent over the previous year which, in turn, showed an increase of nearly 8 per cent over 1927. At the end of the year 1929, the gas industry had a total of over 17,000,000 customers or a gain of almost 1,000,000 customers over 1928. The investment involved in the service of these customers was approximately \$4,750,000,000, and the representatives of the gas industry stated at the business conference called by President Hoover in 1929 that they expected to spend in the neighborhood of \$425,000,000 in the construction of additional facilities for enlarged service and another \$50,000,000 for the maintenance of existing service facilities. It was stated late in 1929 in a survey of the financial status of the industry, made by a leading investment banking house, that in 1930 the production of gas, both manufactured and natural, would exceed 2,000,000,000,000 cubic feet and that the total investment in the industry would cross the \$5,000,000,000 mark with revenues approaching a total of \$1,000,000,000.

On the technical side, recent years have shown vast developments in the gas industry, especially in the efficiency and economy of transporting gas. To withstand higher pressures, the tensile strength of the pipe has been increased and the life of the pipe lines materially extended through methods of preventing rust and deterioration. Efficiencies and economies have been introduced into every department of production, transportation, and distribution, so that in 1929 the American industry was on a better basis than ever previously. Particularly in connection with natural gas, long trunk lines for transmission had been built, mostly in the Southwest and West, and great producing areas with vast reserves had been developed. Accordingly, natural gas was being transmitted to greater distances than had ever been considered economically prac-

ticable, and during the year much main-trunk-line building was well under way. This was to be followed by expansion of facilities and the extension of small lines from the main trunk lines to the larger communities and later to the smaller centres. During the year, the consolidation of separate lines was well under way, and it was believed that there would follow gradual consolidations, accompanied by physical connections and tie-ins such as had taken place in the electrical and power industry.

Notable among the larger fields in which developments were taking place and from which natural gas was being transmitted to centres hundreds of miles distant were the great Monroe and Richland Parish gas fields in Louisiana, the "Panhandle" and other producing areas in Texas, and the Kettleman Hills in California. See GAS, NATURAL.

GAS, NATURAL. In 1928, 1,568,139,000,000 cubic feet was produced and delivered to consumers in the United States according to the U. S. Bureau of Mines. This represented an increase over 1927 of 8 per cent, which compares with an increase in petroleum production during the same period of 04 per cent, with an increase in carbon-black manufacture of 25 per cent, and of natural gas-oil of 11 per cent. Deliveries of natural gas to Canada and Mexico declined from 184,000,000 to 160,000,000 cubic feet, which, when deducted from the production, gave 1,567,979,000,000 cubic feet as the total consumption for the year. During 1928 production in Oklahoma fell off, but the State continued to hold first place as a producer ahead of Texas, where a material increase was recorded. Production in Louisiana increased 22 per cent in 1928, which placed that State within striking distance of California in third place. The total number of domestic consumers increased from 3,984,000 in 1927 to 4,366,000 in 1928, an increase of 10 per cent. The most important increases occurred in Colorado, following the completion of the Panhandle-Denver line, in Louisiana, after the opening of the Monroe-New Orleans line, and in Texas, following a general expansion of distributing facilities throughout the State. Michigan made a notable gain in number of consumers, following the development of considerable production near Muskegon. Ohio continued to be the leading State from the standpoint of number of domestic consumers, followed by California and Pennsylvania. All three of these States reported an increase in the number of domestic consumers in 1928, though on a percentage basis they were greatly exceeded in this respect by less important States through which trunk lines were laid during the year.

The total consumption of natural gas by domestic consumers in 1928 amounted to 320,877,000,000 cubic feet, equivalent to 20 per cent of the total consumption. This total represents an increase over 1927 of 8 per cent. For the sixth successive year, the average consumption per domestic consumer was lower in 1928, when it amounted to 73,500 cubic feet, as compared with 74,300 cubic feet the previous year. This decline in average consumption may have been due to more efficient use, but it was probable that, had the new trunk lines been in operation the entire year, the average consumption would have increased. The average price paid for natural gas by domestic consumers continued its slow increase and amounted to 62.0 cents per thousand cubic feet in 1928. This compared with 60.8 cents

in 1927 and 58.4 cents in 1926. On the basis of the consumption and price data given above, the natural-gas bill for the average domestic consumer in 1928 was \$3.79 per month, comparing with \$3.76 per month for 1927 and \$2.82 for 1918.

The total consumption of natural gas for industrial purposes in 1928 amounted to 1,247,102,000,000 cubic feet, an increase over 1927 of 9 per cent. Of this total, 573,698,000,000 cubic feet, or 46 per cent was used for field purposes, that is, for drilling, pumping, etc.; 175,137,000,000 cubic feet, or 14 per cent, was burned for carbon black, 114,950,000,000 cubic feet, or 9 per cent, was used for fuel in the refining of petroleum, 77,326,408,000 cubic feet, or 6 per cent, was burned as fuel by electric public-utility plants, leaving 305,990,592,000 cubic feet, or 25 per cent, for "other industrial" purposes. In comparison with 1927, these figures represent increases in the amounts of natural gas used for field purposes, for carbon black, for generating electricity, and for miscellaneous purposes, but a decrease in use at refineries.

California was credited with an increase of about 28,000,000,000 cubic feet in field use of natural gas in 1928, this figure exceeding the increase for the country as a whole. The other two major oil-producing States, Texas and Oklahoma, registered but small increases in the field use of natural gas. This slight change in Texas was perhaps surprising in view of the increase in drilling activity, yet considerable of the new wells were located in west Texas, where there is little gas. Drilling activity in Oklahoma fell off, but this factor was compensated by increased use of natural gas for pumping and in the operation of plants.

The use of natural gas at refineries, which had been increasing quite rapidly, declined in 1928. The total used in that year amounted to 114,950,000,000 cubic feet, as against 123,395,000,000 cubic feet in 1927. The largest factor in this decline was the displacement of about 7,500,000,000 cubic feet in Oklahoma by slightly over 1,000,000 barrels of fuel oil. Fuel-oil prices were low in 1928 and some refiners considered it economical to use their surplus in place of gas rather than sell it on a weak market.

The U. S. Geological Survey reports the consumption of natural gas as fuel in the generation of electric power by public-utility plants in 1928 as 77,326,408,000 cubic feet, an increase over 1927 of 14,407,211,000 cubic feet, or 23 per cent. Texas was the leading State from the standpoint of quantity of natural gas used in the manufacture of electricity in 1928, with California second and Louisiana third.

The average price per 1000 cubic feet paid for natural gas for industrial purposes in 1928 was 13.2 cents, as compared with 12.0 cents the previous year and 12.8 cents in 1929. Thus the upward trend in prices in 1928 was sufficient to more than offset the decline of 1927. This increase was due entirely to the increased price of gas for field purposes, in fact, the price of gas for all other purposes except field uses declined from 16.5 cents per M in 1927 to 15.8 cents per M in 1928.

The interstate movement of natural gas increased materially in 1928, when a total of 241,386,000,000 cubic feet was transported between States, as compared with 194,401,000,000 cubic feet in 1927. The movement of natural gas from West Virginia to Ohio continued to rank first in

GAS

^a Includes value of natural gas used at refineries. ^b Included under "Other." ^c Included with Wyoming.

* Includes value of natural gas used at refineries

importance, though some more recently established interstate deliveries, for example from Louisiana to Texas and from Texas to Oklahoma, showed a larger increase in 1928.

The year 1928 was an important one from the standpoint of mergers and expansions, and probably more pipe-line work was done than in any previous year. The new trunk lines serve or were to serve territory that a few years before had been considered inaccessible. See GAS, ILLUMINATING AND FUEL.

GAS AND OIL ENGINES. See INTERNAL COMBUSTION ENGINES.

GASOLINE. See PETROLEUM.

GASOLINE TAXES. See AUTOMOBILES, under Legislation.

GASQUET, gas'ka', FRANCIS AIDAN, CARDINAL. An English Roman Catholic prelate and historian, died Apr. 5, 1929, in Rome. He was born in London, Oct. 5, 1846, and was educated at Downside College. From 1878 to 1884, he was superior of the Benedictine Monastery and the College of St. Gregory at Downside. Because of ill health, he resigned the priorship and upon the advice of Cardinal Manning, devoted himself to historical research, working for the most part in the British Museum, with visits to the libraries at the Vatican, Milan, and Monte Cassino. As President of the International Commission for the Revision of the Vulgate, to which he was appointed by Pope Pius X, he directed from Rome a group of scholars working in the great libraries of Europe. In 1914 he was created a cardinal by Pope Pius X. After 1918 he was prefect of the Vatican Archives. Cardinal Gasquet was the author of a vast number of historical books, most of them growing out of his researches. Among them are *Henry VIII and the English Monasteries* (1888-89, 2d ed., 1906), *Edward VI and the Book of Common Prayer* (1890), *The Last Abbot of Glastonbury* (1895, 2d ed., 1908), *A Sketch of Monastic Constitutional History* (1896), *The Old English Bible and Other Essays* (1897, new ed., 1908), *The Eve of the Reformation* (1900), *A Short History of the Catholic Church in England* (1903), *Vita antiquissima B. Gregorii Magni* (1903), *English Monastic Life* (1903), *Collectanea Anglo-Premontstratensis* (1904 et seq.), *Henry III and the Church* (1905), *Lord Acton and His Circle* (1906), *Parish Life in Medieval England* (1906), *The Greater Abbots of England* (1908), *The Black Death of 1348 and 1349* (2d ed., 1908), *England under the Old Religion* (1912), *Breaking with the Past* (1914), *Monastic Life in the Middle Ages* (1922), *His Holiness Pope Pius XI* (1922).

GASTONIA, N. C., LABOR DIFFICULTIES. See STRIKES AND LOCKOUTS.

GATES, FRANKRICK TAYLOR. An American administrator and philanthropist, died in Phoenix, Ariz., Feb. 6, 1929. Born in Maine, Broome County, N. Y., July 2, 1853, he was graduated from the University of Rochester in 1877, receiving the A. M. degree in 1879 (graduated also from the Rochester University in 1880, he was ordained

ministry in that year and served as pastor of the Central Church, Minneapolis, until 1888. Successful in raising a \$50,000 fund for Pillsbury College, he was made corresponding secretary of the American Baptist Educational Society, and in that capacity persuaded John D. Rockefeller to donate \$600,000 toward the establishment of the Uni-

versity of Chicago. He subsequently became Mr. Rockefeller's representative for benevolent work, giving up his position with the Baptist society in 1893 to devote himself to investigating and managing the Rockefellers' philanthropies, as well as certain business enterprises. At the time of his death, Mr. Gates was chairman of the trustees of the Rockefeller Institute for Medical Research, director of the Rockefeller Foundation, the General Educational Board, the International Health Board, and the Western Maryland Railroad.

GENERATORS. See DYNAMO ELECTRIC MACHINERY.

GENES. See ZOOLOGY.

GENETICS. See ZOOLOGY.

GEOGRAPHICAL SOCIETY, AMERICAN. The oldest geographical society in the United States, founded in 1852, "to collect and disseminate geographical information by discussion, lectures, and publications, to establish in the chief city of the United States a place where may be obtained accurate information concerning every part of the globe, and to encourage such exploring expeditions as seem likely to result in valuable discoveries in geography and related sciences." Within recent years, the society has taken an active part in the encouragement of exploration, the scientific work of Sir Hubert Wilkins in the Arctic and Antarctic and of Rear Admiral Richard E. Byrd in the Antarctic having been carried out under its auspices.

The society's periodical is the *Geographical Review*, a quarterly, in which appear original articles and notes dealing with exploration and geographical research and reviews of the more significant geographical books. The maps, books, and pamphlets issued by the society fall into six series: *Research Series*, comprising specialized monographs, *Special Publications*, having a more general appeal, *Library Series*, devoted primarily to the collections of the society, *Outing Series*, including trampers' guides entitled *The Palisades Interstate Park and New York Walk Book*, a map of Hispanic America published in conformity with the International Millionth Map of the World and accompanied by geographical monographs (this map will consist of 100 sheets, of which more than 30 have been completed), and *Oriental Explorations and Studies*, comprising six volumes on the explorations of Prof. Alois Musil in northern Arabia.

The society maintains a geographical library and sponsors six regular lectures annually by distinguished explorers or geographers. Contributions to the development of geographical science and exploration are recognized in the society's election to honorary and corresponding memberships and in the bestowal of medals. The David Livingstone Centenary Medal for scientific achievement in the field of geography of the Southern Hemisphere was awarded to Admiral Byrd on Dec. 19, 1929. The president of the society in 1929 was John H. Finley, LL.D., and the director was Isaiah Bowman, Ph.D. Headquarters are at Broadway and 150th Street, New York City.

GEOGRAPHIC SOCIETY, NATIONAL. An organization founded in Washington, D. C., in 1888 for the increase and diffusion of geographic knowledge. During 1929 it achieved the final results that had been the objective of a series of 11 expeditions in the Southwest—eight devoted to the excavation and restoration of Pueblo Bonito in the Chaco Canyon country of New

Mexico, and three to the collection of ancient timbers through whose growth rings it was hoped to fix the age of the civilization in Pueblo Bonito and to determine the dates of the principal events of that civilization. These results, were even more remarkable than had been anticipated. Not only have they enabled the society's experts to fix the major dates of Bonitian times, but they have brought nearly 40 other ruins into the purview of modern chronology. Through them it is now known that Pueblo Bonito was founded in 919, reached its heyday in 1067, and was still occupied in 1127. They also afford a striking picture of the cycle of civilization in the Southwest, showing how long a given area could support a typical community under the primitive conditions of those times.

Furthermore, through the sequence of tree rings, a calendar of events in the Southwest has been provided, turning the American calendar back to the year 700, or nearly eight centuries before Columbus discovered America. These annual rings afford a basis for the most accurate weather chart in existence, covering 1229 years of climatic fluctuations. Each ring from the most recent found in a living tree to the most ancient discovered in a prehistoric beam proclaims whether the year in which it was found was a "fat" or a "lean" year—a year of drought or a year of good rainfall. This research has resulted from two widely variant lines of investigation, that of Neil M. Judd, who was engaged in a study of the American Indian, and that of Dr. Andrew E. Douglass of Steward Observatory, University of Arizona, who was engaged in a study of the relationship between sun spots and tree-ring variations. At a conference on weather cycles Dr. Douglass related his findings, and Mr. Judd declared that they warranted the hope that it an unbroken sequence of rings could be found it would be possible to date the ruins in Pueblo Bonito. The search for ancient beams was then instituted by the three expeditions of the society, and the ring sequence built up and tied together.

While these researches were being carried on in the Southwest, the society was fostering another research in Southwest Africa. For several years the Smithsonian Institution, through Dr. Charles G. Abbot, had been carrying forward a study of solar radiation, the institution maintaining a solar observatory in Chile and another in California at which constant measurements of the sun's radiation were made. To make these results more dependable and to keep them free from atmospheric interferences, it was desirable to have a third station. This, the National Geographic Society undertook to build and maintain at Mount Birkbeek, Southwest Africa, under grants aggregating \$65,000. The variations in the amount of solar radiation were found to show a definite conformity with the variations in weather conditions, indicating that the one has a marked influence upon the other. And the work of Dr. Douglass with his tree-ring investigations, therefore, furnished the centuries-long weather records upon which the deductions of solar radiation laws might be tested. Dr. Abbot announced that these researches had gone far enough forward to warrant the statement that, with the aid of these periodicities, it seemed probable that the principal variation of the sun and the behavior of all that hung upon it could be predicted for several seasons in advance. Such a conservative statement means not only that

the world may be on the eve of an era of the successful forecasting of the years of drought and those of abundant rainfall but that long-range forecasting of month-to-month, if not even day-to-day, weather is clearly within the realm of hope.

Dr. Joseph F. Rock also continued his researches in the Chinese provinces bordering on Tibet, where he has been gathering botanical, zoological, ethnographic, and other material for the society for a number of years. On one of his expeditions he brought back to the United States a 317-volume set of Chinese classics printed from wood blocks engraved more than 5000 years ago and kept in the great Buddhist monastery in Choni. The monastery, together with its contents, including these priceless plates, was destroyed during the late invasion of Choni, with the result that the set of classics presented by Dr. Rock and the society to the Library of Congress has been transformed into one of the most important treasures of America's great national library. Dr. Rock also brought back a collection of rhododendrons from inner-Asia which were developed at the Golden Gate Park in San Francisco and which bloomed for the first time in 1929. Dr. Rock's contacts with the peoples with whom his expeditions have had to deal have built up a feeling of cordiality between them and Americans. Upon the return of the Roosevelt-Field Museum expedition into the habitat of the giant panda, Kermit Roosevelt announced that the relationship with native rulers which Dr. Rock had established had produced in them a friendly and helpful attitude toward American scientific expeditions.

The society continued the work of Ernest G. Holt in the investigation of the lives of migrant birds which winter in Venezuela and spend their summers in the United States. The territory to be covered, as well as the lines of research to be followed, were enlarged. At the invitation of the International Boundary Commission, established by Venezuela and Brazil to fix the boundary between the two countries, the society authorized Mr. Holt to attach himself to the commission for the purpose of making a study of the flora and fauna of the region through which the boundary surveys were to be made. It is a region rich in botanical and zoological material unfamiliar to science, owing to the fact that it lies between hostile Indian tribes that had seldom permitted scientists to reach it.

The Byrd expedition to the Antarctic also was sponsored by the society. In a radiogram just before beginning his flight to the South Pole, Admiral Byrd said: "At a crucial period of our preparations for this expedition the National Geographic Society came to our assistance with encouragement and a substantial grant and so helped in a big way to make our expedition possible. Now, in the midst of the more difficult operations and when there still is a financial deficit back home, the National Geographic comes again to our assistance by duplicating its original grant of \$25,000 and so encouraging greatly every man in camp." The sun compass that was Admiral Byrd's constant guide to both the North and South Poles was invented by Albert H. Bumstead, the cartographer of the National Geographic Society. See POLAR EXPLORATION.

During 1929 bulletins dealing with the geographical backgrounds of current events were furnished to more than 600 newspapers, and weekly

bulletins of timely geographical information were sent to about 35,000 school-teachers. The society also supplied material for press associations, and as part of its educational work prepared a weekly ready-to-print service for about 1200 daily and weekly newspapers. Upon request, bulletins relating to the geography of Bible lands and mission fields were sent to about 80 church and Sunday-school periodicals and used by them in schools where Americanization work was in progress. The chief activity of the society in the diffusion of geographical knowledge is carried on through its official publication, the *National Geographic Magazine*. At the end of 1929, there was a membership of 1,300,000, representing every civilized nation. Officers for the year were: President and editor, Gilbert Grosvenor, vice president and associate editor, John Oliver La Gorce, treasurer, John Joy Edson, assistant treasurer, Herbert A. Poole, secretary, O. P. Austin, associate secretary, Georg W. Hutchinson, general counsel, Edwin P. Grosvenor, chairman committee on research, Frederick V. Coville, assistant editors, William Joseph Showalter and Ralph A. Graves, chief of school service, J. R. Hildebrand. Headquarters are in Washington, D. C.

GEOGRAPHY. See EXPLORATIONS

GEOLOGY. The year 1929 was marked by an effort to correlate the data gathered by an ever-increasing number of workers along various lines. Symposia were held which served to direct research along fruitful lines, as well as to summarize the work that had already been done. The practical aspect of the science was stressed, fundamental concepts were reexamined, and research was carried on along a multitude of lines only a few of which can be mentioned here.

SOCIETIES. The Geological Society of America held its forty-first annual meeting in New York City on Dec. 26-29, 1928, and the published records became available in 1929. The feature of the meeting was the symposium on Continental Genesis which was led by Prof. Bailey Willis of Stanford University, the retiring president. His address, "The Earth's Interior and its Surface Expression," presented a picture of an earth that consists of an outer skin of many kinds of igneous rocks, such as granite and basalt, with a thick solid shell of heavier rock, mostly basalt, below, surrounding a dense inelastic core, probably composed of iron. The continents are largely made up of the light, acid rock granite and ride high upon the heavier, dark-colored basalt that underlies the ocean floors. The reason for the existence of the continent is found in the formation of great "blisters" of molten rock or astenolite thirty miles or more beneath the surface. These are formed because of eruptions from the hot core that form and rise along diagonal shearing planes or because of the local concentration of heat escaping from the interior. Once such a "blister" is formed it works its way upwards slowly dissolving rock as it goes and so changing its composition. As the "blister" begins to cool and crystallize, a process of separation into distinct portions or "magmas" of different composition takes place and the crystals formed either float or sink in the molten mass.

The different sorts of rocks erupted at the surface and the formation of continents and ocean basins are explainable in terms of these "blisters." For, when one of them grows so large that it exerts great pressure around its edges, it breaks

through and erupts rock upon the surface. The withdrawal of masses of molten rock from the blister causes a sinking and cracking of the cover over it with consequent eruptions from the central part. If acid portions of the magma erupt from either centre or margin, the material goes to make up continental masses—if basin portions rise to the surface, it will form a sub-oceanic ridge or a part of the ocean floor.

The Society of Economic Geologists held its annual meeting at the same time as the Geological Society. The retiring president, Prof. W. H. Emmons, addressed a joint meeting of the societies on the subject, "The Origin of the Sulphide Ores of the Mississippi Valley." His conception of the genesis of these ores contradicts the generally accepted theory, so his outline is given below.

"The Mississippi Valley region north of the Ouchita Mountains, Arkansas, is an area of sedimentary rocks gently folded and at most places nearly flat-lying. Igneous rocks are rare. This region contains the world's largest lead deposits, the world's largest zinc-lead fluorspar deposits, and the world's largest barite deposits."

"Because igneous rocks are rarely found within the area, nearly all who have investigated the deposits have believed that they were formed by rain water that soaked into the ground, gathered the metals from the country rocks and finally deposited them along fissures and in favorable beds."

"Recent surveys have shown that there is a more definite relation to the larger structural features than was generally supposed. All of the important deposits are in areas of extensive faulting or they lie on the strike of great fault zones that are traced for scores or hundreds of miles."

"The conclusion is inevitable that the deposits show a structural control that indicates ascending waters from deep sources. This conclusion is supported by the occurrence of many of the largest deposits in limestone below shales and of some of the largest deposits in low anticlines below shales. In most of the districts the chief deposits have formed below the first or lowest thick shale series in the region."

"Nearly all of the deposits are arranged in great systems of zones which show the normal sequence. Excluding all ores older than the Paleozoic, the Ozark system shows

- (1) A disc of specularite and pyrite ores with amethyst quartz in which copper, lead and zinc are lacking
- (2) Ores of pyrite and chalcopyrite
- (3) Ores of zinc, lead and barite
- (4) Ores of manganese and fluorspar

"In the Wisconsin district there is a central zone elongated parallel to the La Salle fault which contains copper ore with occurrences of gold and amethyst quartz and on either side of it are ores of zinc and lead without copper in workable amounts."

"In both of these zonal systems the order is the standard order for deposits that are connected genetically with igneous rocks and supports the hypothesis that the ores of the Mississippi Valley are connected with igneous rocks and that the deposits are related to an underlying batholith, evidences of which are the dikes that are found within the area."

The Paleontological Society of America held its twentieth annual meeting in New York on the same dates as the other societies. Professor A. F.

Foerste, retiring president, spoke to a meeting of the combined societies, subject, "Ordovician and Silurian of the Arctic Regions." This address formed part of a symposium on arctic and sub-arctic geology and paleontology intended to indicate what has already been done and to direct attention to problems that require solution. In particular, it pointed out that most of the data regarding the Ordovician and Silurian strata in northerly regions are very disconnected, and stratigraphic studies have been made in a few regions only. This leads to considerable difficulty in the accurate placing of certain formations. The conclusion is drawn that our paleogeographic maps will benefit greatly by a better knowledge of arctic and sub-arctic geology.

The American Association of Petroleum Geologists met at Fort Worth, Texas, on Mar 21-23, 1929. The meeting featured a symposium on the "Stratigraphy of the Permian Basin of Southwestern United States." Various papers on geophysics, aerial photography, tectonics, salt domes, clogged holes, and other subjects connected with oil geology were presented.

The American Institute of Mining and Metallurgical Engineers met in New York during February, 1929. The Mining Geology branch devoted a considerable part of its session to the discussion of geology and engineering as applied to dams and reservoirs. Most dams are intended to be permanent, since their failure at any time involves loss of life and property, but the impounding of large amounts of water changes the level of the water table, alters the underground circulation, and brings into play many hydraulic forces whose results are with difficulty predictable. The responsibility of the geologist, the various factors—geologic and engineering—the necessity of acquiring all the information possible, and the desirability of more quantitative geologic information were stressed in papers by C P Berkey, Kirk Bryan, O E Meinzer, C Terzaghi, C H Matthes, and others. (These, with discussion, are available in *Technical Publication* no 215 of the A I M M E, 1929.)

Another important contribution made at this session dealt with the results of the government potash exploration in Texas and New Mexico (G R Mansfield and W B Lang, A I M M E *Technical Publication* no 212. These tests show that the area from which good results may be expected is confined to about 40,000 square miles in Texas and New Mexico and that sufficient supplies of potash salts exist there, in the Permian beds, to free the United States from the German monopoly if and when the production problems are solved. Only polyhalite had been found in Texas up to the time of this report, but more recent reports indicate the presence of other potassium salts as well. Promising results have already been obtained from studies on the problems of the utilization of polyhalite.

At the same meetings, the Petroleum Division of the A I M M E featured a discussion of domestic and foreign petroleum production during 1928 and petroleum economics. These papers are published together with the papers on petroleum engineering and research given at Tulsa, Oklahoma, during the meetings from Oct. 18 and 19, 1928, in the *Transactions of the Petroleum Division*, A I M M E, 1929.

The fifteenth session of the International Geological Congress was held during August, 1929, in the Union of South Africa with Pretoria

as headquarters. As is usual at these gatherings, most of the time was spent on geological field excursions, so that when the ensuing publications become available, we will have much more first-hand information concerning a country rich in mineral deposits and in unrivaled examples of many geologic phenomena.

OTHER PUBLICATIONS The year witnessed many significant contributions in the field of economic geology, among which the following may be noted. *Annotated Bibliography of Economic Geology* for 1928. This is the first of a series of bibliographies to be published biennially which are of great value for reference since each title is followed by a brief abstract. *Geophysical Prospecting* (A I M M E, 1929) includes the papers and discussion presented at the New York meeting in February and the Boston meeting in August, 1928, and makes available sound information concerning the geophysical principles now in use. The electric, magnetic, gravity, and seismic methods are discussed in technical language for the specialist. Their value to the foundation engineer is emphasized, as well as their more general use in prospecting for ore and oil. "The Copper Deposits of Michigan," by B. S. Butler, W. S. Burlbank, and others (*U S Geol Survey Professional Paper*, 144, 1929). This represents a recent study of the whole of this important copper district, the first monographic report on the region since Livingston's in 1883.

Structural study together with chemical study of the wall rocks leads to the theory that solutions rising from the Duluth Gabbro, which probably underlies the region, deposited the copper. Copper sulphides would normally have been deposited, but the solutions encountered wall rocks high in ferric iron. The iron was reduced, the solutions oxidized, and native copper deposited. The sulphur compounds were changed to sulphates which were carried away. The deposits are peculiar not because they were deposited by solutions of peculiar character but because the solutions moved through wall rocks of unusual character.

"The Mother Lode System of California," by A. Knopf (*U S Geol Survey Professional Paper*, 157, 1929), presents the results of the latest and most comprehensive study of the Mother Lode region of California. The gold was deposited by cavity filling in fissures repeatedly opened by successive movements along tortuous fault zones. The quartz in the fissures was derived largely from the wall rock where the most remarkable feature is the replacement of silica by CO₂. The amount of silica in the veins is only a fraction of that liberated by the wall rock. The solutions were of mesothermal type grading occasionally into hypothermal. They probably consisted of water containing gold, silver, lead, zinc, As, Sb, and CO₂. The magma that supplied the gold is unknown.

"The Mining Districts of Nevada," by H. G. Ferguson (*Econ Geology*, 24, 1929, pp 115-148). A study of the mining districts of an artificially bounded area, a State, that shows the dependence of the character of the mineralization upon the type, age, and distribution of igneous rocks. The State is so situated that it includes the Sierra Batholith and its satellites on the west, with their characteristic preponderance of gold and silver, and the Rocky Mountain intrusives on the east with their greater accumulation of the base metals. The area associated with the

Tertiary lavas are distinct both in their mineralogy and in the accompanying alterations. This study makes it possible to indicate in a general way which of these individual deposits and types of deposits offers the greatest future chance of development of increased production.

"The Significance of Unsupported Inclusions," S. B. Talmage (*Econ. Geology*, 24, 1929, pp. 601-610). The existence of isolated (rounded or angular) fragments of country rock in a vein has given rise to much speculation and is important in connection with the mode of emplacement of the vein-forming material. One explanation that has been rather generally disregarded is that these inclusions may only appear to be unsupported but be in contact in another plane. This paper shows the results of many experiments that prove this conception to be sound. So, good evidence must be adduced to prove that inclusions are unsupported before they can be regarded as such.

CHROMITE. A number of papers have been published whose thesis is that chromite may be and often is a late magmatic or even a hydrothermal mineral. It has long been recognized that a sufficient concentration of the mineralizers will cause the magmatic sulphides to remain liquid until a period late in the crystallization of the magma. Magnetite has been more recently shown to crystallize in quantity after the rock-forming silicates. Now

garded as characteristically formed by magmatic segregation, is recognized as a late magmatic (the most important deposits) and pneumatolitic mineral as well. The papers referred to are "Is Chromite Always a Magmatic Mineral?" Sampson, "Is Chromite Always a Segregation Product?" Ross, "Discussion," by Singewald (*Economic Geology*, 1929, pp. 632-649) and "Origin of Chromite Deposits," by L. W. Fisher (*Economic Geology*, 1929, pp. 711-721).

Ore Deposits of Magmatic Origin, Their Genes and Natural Classification, by P. Niggli and R. L. Parker, a book which bridges still further the ever closing gap between the study of mineral deposits and that of the igneous rocks, is a revision and enlargement of an earlier work the thesis of which is that "the problems encountered in the study of ore deposits are parts of the wider problems arising in connection with the study of igneous rocks." It shows that the general petrographic theory of magmatic provinces must take into account the provinces of ore deposition, and that these are both intimately related in time and in place to the major deformations of the globe.

PETROLOGY. The Evolution of the Igneous Rocks, by N. L. Bowen, which came out late in 1928, is an enlargement of Bowen's earlier paper, *The Later Stages in the Evolution of the Igneous Rocks* that appeared in 1915 and did so much to establish the principle of differentiation by fractional crystallization and filtration. It is an important contribution that cannot be briefly summarized.

"The Crystallization of Basalts," by C. N. Fenner (*Am. Jour. of Sci.*, 1929, pp. 225-253), is important in this connection. Fenner agrees to differentiation crystallization but thinks that other processes, notably gas transfer, must be recognized as well. The series of solid solutions that forms the feldspars is rightfully regarded as important and explains why the residual melt is richer in soda and in potash than the crystals

formed from it; but the pyroxenes also form such a series, and their crystallization results in the progressive enrichment of the liquid in iron. This does not fit in with the conception that the differentiation by crystallization alone of a basaltic or peridotitic magma leads toward a granite.

"The Temperature of Magmas," by E. S. Larsen (*Amer. Mineralogist*, 1929, pp. 81-94). Larsen reviews the evidence that has been accumulating to show that acid magmas crystallize at lower temperatures than basic ones. The same results were obtained from experiments reported on before the Geological Society of America meeting in December, 1928, by Grieg, Shepard, and Merwin. In the typical specimens used, the difference amounted to more than 200° C.

GLACIAL GEOLOGY. "The Stagnation and Disappearance of the Last Ice Sheet," by R. F. Flint (*Geographical Review*, 1929, pp. 250-289), controverts the common notion that the last glacier retreated across New England (the Connecticut region in particular) by melting along a continuous front and marshals the evidence for considering the retreat as due to stagnation or melting in place. The evidence furnished by the glacial and fluvioglacial deposits of this region which, by itself, would never lead to the older conception is the basis upon which the new theory rests.

The same conception was advanced by A. P. Brigham in "Glacial Geology and Geographic Conditions of the Lower Mohawk Valley" (*N. Y. State Mus. Bull.* No. 280, 1929) for a more restricted area. References to such stagnation can be found in the older literature but no one has extended it to so wide an area as R. F. Flint in his article in the *Geographical Review*.

BOOKS AND MAPS. *Geologie Von Peru*, G. Steinmann (Heidelberg, 1929) and others, is an important contribution, since Dr. Steinmann has been at work on the area for fifty years. *Geologie des Chucumatales in Nordperu und sieben Aufschüttelagerstätten*, R. Stappenbeck, presents the geology of the Chucumata Valley from the Pacific to the summit of the western Andes. *Textbook of Geology*, Pinxson and Schuchert, pt. 1, revised and rewritten, was edited by Longwell. The most up-to-date textbook of geology, *Geology from Original Sources*, Agar, Flint, Longwell, offers collateral reading in attractive and readable form, of importance to all with a general interest in geology. *An Introduction to Historical Geology*, by W. J. Miller, is a third revised edition of a useful text. *Petroleum and Coal*, W. T. Thom, gives the origin, world distribution, and probable future of these pre-requisites of modern civilization. *Geologic Structures*, Bailey and Robin Willis, is a new edition of a standard text with many additions both in fact and interpretation. *The Structure of Asia*, edited by J. W. Gregory, contains contributions by Prof. Franz Ed. Suess, C. P. Berkey, W. D. West of the Geological Survey of India, and D. I. Mushketov, of the Russian Geological Survey, and gives the latest data about a vast but relatively little-known area. *Geologische Karte der Erde*, Franz Beyerslag, is in four parts, two for each hemisphere with a separate legend in English, German, French, and Spanish. *Evolution and Man*, H. W. Shimer, professor palaeontology in the Massachusetts Institute of Technology.

The United States Geological Survey celebrated its fiftieth anniversary in 1929. The Forty-second Annual Meeting of the Geological Society of

America was therefore held in Washington, December 26-28. The Palaeontological Society of America held its twenty-first, and the Mineralogical Society of America its tenth, annual meeting at the same time and place. Professor Heinrich Ries of Cornell University, the retiring president of the Geological Society, addressed the meeting on the subject "Some Problems of the Nonmetallic Minerals." Professor A. L. Parsons of Toronto, retiring president of the Mineralogical Society, spoke on "Iridescent Color in Peristerite."

These and the many other papers presented before the societies, a few of whose titles are appended, were to appear in the journals of the societies and the other technical geological journals during the coming year. "Subdivision of Geologic Time," George H. Chadwick; "Geomorphology and the Question of Geologic Time," F. E. Matthes, "Scientific and Practical Value of Triangulation," William Bowie, "Thrust Faulting from the West in the Appalachians of Virginia," Wilbur A. Nelson; "Stress Conditions within the Lithosphere as Revealed by Earthquakes," William H. Hobbs, "Probable Extent of Abyssal Assimilation," F. F. Grout, "The Age of the Appalachian Peninsulars," G. H. Ashley, "Stratigraphy and Threefold Orogeny of the North American Appalachians," Charles Schuchert, "The Extinction of Pleistocene Mammals," W. B. Scott, "Symposium of Clays," by various members of the Mineralogical Society of America, "Minerals of the System Cu-Fe-S," R. H. Lombard and H. E. Merwin.

See also EXPLORATION

GEOPHYSICS. See GEOLOGY

GEORGETOWN UNIVERSITY. A Roman Catholic institution of higher education for men in Washington, D. C. founded in 1789. In the autumn of 1929, 2,567 students were enrolled, with a distribution as follows: Arts and sciences, 965; medical, 519; dental, 147; law, 478; and foreign service, 430. The faculty numbered 378. The Riggs Memorial Library contained 162,476 volumes, the Hirst Library, 9123 volumes, and the individual libraries maintained by the professional schools, many additional volumes. During 1929 a new medical-dental school building and a new dining hall were opened. President, the Rev. W. Coleman Nevils, S. J., Ph. D., D. D.

GEORGE WASHINGTON UNIVERSITY. A coeducational institution of higher learning in Washington, D. C. founded in 1821. The enrollment for the first term of the year 1929-30 was 5,006, distributed as follows: Columbian College, 2,747; graduate school of letters and sciences, 413; school of medicine, 285; law school, 724; school of engineering, 425; school of pharmacy, 61; school of education, 619; school of government, 102; division of library science, 116; division of fine arts, 114. The 1929 summer session had a total enrollment of 1,490. The faculty numbered 388. The endowment fund amounted to \$1,459,152, from which the income for the year was \$63,031. The total income from all sources was \$1,067,908. The total number of volumes in the university library, including the law and medical libraries, was 85,540. President, Cloyd Heck Marvin, Ph. D., LL. D.

GEORGIA. POPULATION. According to the Fourteenth Census of the United States, the population of the State on Jan. 1, 1920, was 2,895,832. The estimated population on July 1, 1928, was 3,203,000. The capital is Atlanta.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Cotton	1929	3,782,000	1,845,000 *	\$106,255,000
	1928	3,728,000	1,030,000 *	93,730,000
Corn	1929	3,656,000	50,455,000	44,399,000
	1928	3,620,000	38,016,000	39,910,000
Tobacco	1929	110,000	89,870,000 *	16,806,000
	1928	122,800	84,387,000 *	11,139,000
Hay	1929	710,000	437,000 *	7,078,000
	1928	811,000	505,000 *	7,827,000
Peanuts	1929	640,000	394,550,000 *	13,415,000
	1928	607,000	340,200,000 *	14,969,000
Sweet potatoes	1929	124,000	11,780,000	9,424,000
	1928	119,000	10,234,000	8,699,000
Peaches	1929	.	2,880,000	3,312,000
	1928	.	10,000,000	8,100,000
Oats	1929	424,000	9,540,000	7,632,000
	1928	265,000	5,300,000	4,505,000
Potatoes	1929	20,000	1,672,000	2,201,000
	1928	22,000	1,682,000	1,934,000
Wheat	1929	85,000	850,000	1,318,000
	1928	94,000	1,034,000	1,727,000

* Bales * Pounds * Tons

MINERAL PRODUCTION. Clay products and stone furnished more than two-thirds of the value of minerals produced in the State in 1927. The total value of clay products of that year was \$4,879,736, the total for 1926 was \$5,957,486. Stone produced attained the value of \$6,146,613 and the quantity of 849,290 short tons for 1927, for 1926, of \$5,470,561, or 820,570 tons. Coal, coke, and iron production remained secondary. The most important separately reported product after clay and its products and stone, as reported for 1927, was barite, of which the quantity produced was 94,039 short tons and the value \$580,300, for 1926 production was 77,654 tons, or \$532,706. A rather long list of minor products such as asbestos, bauxite, fuller's earth, manganese ore and talc helped raise the total value of mineral production in 1927 to \$16,758,390, as compared with a total value of \$17,479,967 in 1926.

FINANCE. State expenditures in the year ended Oct. 31, 1928, as reported by the U. S. Department of Commerce, were for maintenance and operation of governmental departments, \$16,375,866 (of which \$4,897,318 was for local education), for conducting public-service enterprises, \$6005, for interest on debt, \$329,021, for permanent improvements, \$11,545,213, total, \$28,256,705 (of which \$12,979,819 was for highways, \$2,263,631 being for maintenance and \$10,716,188 for construction). Revenues were \$27,998,293. Of these, property and special taxes formed 27.3 per cent, departmental earnings and remuneration for officers' services, 3.8, license sales, 45.6 (including gasoline taxation of \$6,156,169). State debt outstanding totaled \$8,694,007. On a property valuation of \$1,293,332,397 were levied State taxes of \$6,466,662.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 6799.93. There was built, in 1929, no additional mileage.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to operations of 1927, there were in the State, in 1927, 3175 manufacturing establishments. These employed 154,168 wage earners, whose wages for the year totaled \$108,118,193. Materials and supplies used in production cost

\$360,261,684 Manufactured products attained the combined value of \$609,917,660

EDUCATION The funds available for State aid to the public-school system were increased by an estimated \$1,250,000, an increase about equal to the entire previous yearly State aid, through the enactment of an increase of the gasoline tax, devoted to the purpose. In addition to this, taxes on sales and on incomes were enacted to yield further revenue for the promotion of the State's policy of improvement in education. The population of school age was stated, for 1920, at 867,995. There were enrolled in the public schools 714,394 pupils. Of these, 623,508 were in elementary and 90,886 in day and evening high-school grades. The total expenditure for public-school education was \$21,194,169. The yearly salaries of teachers averaged, for men, \$848.32, for women, \$595.41. They were somewhat over twice as high for white as for colored teachers in each group.

CHARITIES AND CORRECTIONS A Department of Public Welfare, established in 1919, inspected institutions of child care, jails, and county activities for dealing with delinquents and dependents. It promoted the organization of juvenile courts throughout the State. The chief of the State's charitable and correctional institutions operating in 1920 were the State Training School for Boys, Confederate Soldiers' Home, State Sanatorium (mental), Training School for Mental Defectives, Academy for the Blind, and School for the Deaf.

LEGISLATION The State Legislature convened in regular biennial session at its beginning of July, 1920. Governor Hardman in his message recommended revision of the State's financial system rendered imperative by the accumulation of a deficit of \$3,777,444 from the operations of the State government in 1927 and 1928. The session was devoted largely to furnishing the State with greater revenues. The Boykin statutory income-tax law was enacted, placing on all individuals, firms, and corporations in the State an income tax of one-third that paid the United States Government. The law went into effect on October 1, its expected proceeds were from \$6,000,000 to \$8,000,000 a year. Insurance companies were exempted from payment, on the ground that they met their share through the payment of other specific taxes. Income receipts from the State of Georgia, even though exempt from Federal taxation, were rendered subject to the State tax. Provision was made for an increase of the gasoline tax to 6 cents, with a view to furnishing the money for a common-school equalization fund. The enactment of the Bird-Redwine Law regulated trading in future deliveries of cotton and other commodities, rendering it a felony to operate an establishment for trading in which future deliveries were not contemplated. It was the apparent intent of this legislation that a delivery point for cotton should be established within the State. By statute, the use of steel traps for taking game was prohibited except in the salt marshes of the coast.

POLITICAL AND OTHER EVENTS The overcrowding of the Federal prison at Atlanta led to the conclusion of an arrangement between the Federal Superintendent of Prisons and the Georgia Prison Commission whereby about 100 Negro Federal prisoners were transferred in October from Federal to State custody, to do road work in Chatham County. The arrangement was at-

tacked in the United States Senate and on December 16 that body passed a resolution requiring information on the facts. The State authorities acted against betting on dog races in Georgia by bringing suit against greyhound racers at Dixie Lakes, and the system of indirect betting known as profit sharing was declared contrary to the State law.

At Atlanta the Ku Klux Klan erected two new buildings, one a factory for the production of regalia and the other an administrative office building to which the national headquarters of the society were transferred from Washington, according to report, in July. The State Board of Forestry published in May a report in which it proposed as desirable the purchase of the Okefenokee Swamp, a great wooded marsh tract on the southern border of Georgia, by the Federal Government. The trustees of Georgia University moved to replace part-time with whole-time teachers in the University's law school, and a law school building was projected. The Good-year Tire and Rubber Company made preparations to open a 50,000-spindle textile mill at Rockmart. The city council of Atlanta passed, in spite of Mayor Ragdale's veto, a measure to segregate whites and Negroes as to residence.

The city of Atlanta was enlarged by the annexation of the municipalities of East Point, Decatur, Hapeville, and College Park, and certain unincorporated territory, under the terms of a legislative act confirmed by a referendum vote. About 30 square miles of territory were taken in and the population was increased by some 75,000 to an estimated 350,000. It was provided that the annexed municipalities should retain their existing powers, approximately, under a borough system. The mayor of the city proper was also to bear the title of Mayor of Greater Atlanta, and the mayors of all the included communities were to act as a general council in common affairs.

OFFICERS Governor, L. G. Hardman, Secretary of State, George H. Carlswell, Attorney-General, George M. Napier, Treasurer, W. J. Speer, Auditor, S. J. State, Comptroller-General, W. B. Harrison, Superintendent of Education, M. L. Duggan, Commissioner of Agriculture, Eugene Talmage, Commissioner of Commerce and Labor, H. M. Stanley.

JUDICIARY Supreme Court Chief Justice, Richard B. Russell, Associate Justices, Marcus W. Beck, Samuel C. Atkinson, H. Warner Hill, S. Price Gilbert, James K. Hines.

GEORGIA, UNIVERSITY OF A State institution of higher education for men and women in Athens, Ga., chartered in 1785 and opened in 1801. The enrollment in the 1929 summer session was 2308 and for the autumn term, 1812. The faculty numbered 116 members. The productive funds of the university amounted to \$425,000, and the income for the year from the State and other sources was \$400,000. The library contained 64,000 volumes. President, Charles M. Snelling, Sc.D.

GEORGIA (GEORGIAN SOCIALIST SOVIET REPUBLIC) One of the three Transcaucasian republics established after the Russian Revolution of 1917. After 1918 it was an independent republic, since 1921 it has been known as the Georgian Socialist Soviet Republic. In 1922 it united with Armenia and Azerbaijan to form the Transcaucasian Socialist Federated Soviet Republic, which is affiliated with the

Union of Soviet Socialist Republics (see Russia) Georgia is situated in Transcaucasia between the Black and Caspian seas and is bounded on the north by the Caucasus, on the east by the Republic of Azerbaijan, and on the south and southwest by Armenia and Turkish territory. Georgia embraces the Abkhazian Socialist Soviet Republic, the Ajaristan Autonomous Soviet Republic, and the Autonomous Region of Southern Ossetia. Capital, Tiflis Area, 26,381 square miles, population, according to the census of 1926, 2,600,963. The chief cities with their populations are Tiflis, 294,000, Kutais, 48,196, Sukhum, 61,974, Poti, 13,137, and Samtredi, 13,682. At the end of 1925, there were 211,210 pupils attending the public schools, including 1000 students in the higher educational institutions.

Agriculture engages about 90 per cent of the people. The large estates have been divided among the peasants, the minimum allowance for any one family being about 17 acres. Corn, vine growing, and the raising of fruits are the principal agricultural pursuits. Silk production and beekeeping are long-established activities. The chief mineral production is that of manganese around Telavuti, where the greatest quantity of this mineral in the world are found. The industry was virtually ruined during the World War, but is gradually resuming its pre-war production. Other mineral deposits are coal, naphtha, copper ore, lead, and iron ore. The territory contains valuable forests. All the basic industries were nationalized by the Soviet Government. The railways, which are all state owned, total 570 miles. Another line from Akhal-Senaki through Sukhum to Tuapse is under construction.

GEORGIA SCHOOL OF TECHNOLOGY.

An institution for the scientific and technical education of men in Atlanta, Ga., founded in 1888. The enrollment for the autumn of 1929 was 2383, while that in the summer session was 550. The faculty numbered 160. The endowment amounted to \$200,000, and the income from appropriations and fees, to \$700,000. There were 23,000 volumes in the library. President, Marion Luther Brittain, LL.D.

GÉRARDY, JEAN. A famous Belgian 'cellist, died in Spa, July 4, 1929. He was born in the same city, Dec. 6, 1878. At the age of 5, he began to study the 'cello with R. Bellman and during 1885-89 he studied under Massau at the Liège Conservatory, being graduated as winner of the gold medal. While still a student, he appeared in 1888 at Anstrudel in a trio with Ysaÿe and Paderewski, but his official début as soloist took place, with sensational success, in London, in December, 1890. The following year, he won triumphs in Vienna. In 1904 he interrupted his concert tours for a short time for further study under Grützacher in Dresden. From 1893 until his death, excepting the period of the War, he was constantly touring the civilized world. Between 1899 and 1924, he made several triumphal tours of the United States, arousing special interest in 1913-14, when, besides appearing as soloist, he was heard also in the principal cities in a trio with Ysaÿe and Godowsky. Among contemporary 'cellists, he had no superior.

GERMAN COLONIES. During the World War, all the overseas possessions of Germany in Africa, the Pacific Ocean, and the Far East were captured by the Allies. In Africa, they included German East Africa, German Southwest Africa, Kamerun, and Togo. All of these were divided

between Great Britain and France, Southwest Africa being annexed to the Union of South Africa. In the Pacific were New Guinea, including Kaiser-Wilhelmsland, Bismarck Archipelago, German Solomon Islands, Nauru, Caroline Islands, Marshall Islands, Mariana or Ladrone Islands (with the exception of Guam), and German Samoa. In the Far East, there was only the German possession of Kiaochow. The total area of the German colonies was estimated at 1,140,117 square miles and the total population was estimated at 13,258,000. See principal titles mentioned above, also TANGANYIKA TERRITORY and KENYA COLONY.

GERMAN EVANGELICAL SYNOD OF NORTH AMERICA. See EVANGELICAL SYNOD OF NORTH AMERICA.

GERMANIC LANGUAGE AND LITERATURE. See PHILOLOGY, MODERN.

GERMAN LITERATURE. If quantity is any indication of a country's literary activity, Germany by 1929 had fully reached the average output of pre-war years. The only startling new feature was the enormous preponderance of fiction over any other literary expression. It is in fiction, too, that the only great success of the year was achieved. It was feared that the reception accorded to Remarque's *Nachts Neuen in Westen* all over the world, would unleash a flood of war novels. But Ludwig Renn's *Krieg* and the anonymous *Schlump* seem to be its only direct successors. However, the War still served as a more or less depressing background, but it was post-war conditions that are pictured or alluded to.

Fiction. It is appropriate to begin the year's review with Stefan Zweig's *Kleine Chronik*, a slim volume of four short stories, for its exquisite character studies. Jacob Wassermann is becoming alarmingly prolific, his short novel, *Golown*, and the three short stories entitled *Adam Urban* were being followed by the semi-biographical *Christoph Columbus*. This type of fiction is represented by Rudolf Hans Bartsch's *Der grosse alte Kaiser*, which deals with Schopenhauer, Eduard Stucken's *Im Schatten Shakspers*, Meta Schneider-Weckeling's *Cornelia Goethe*, Hermann Richter's *Von ewiger Liebe*, a Brahms-Schumann story, Kasimir Edschmid's *Lord Byron*, Josef Ponten's *Seine Hochzeitsreise*, dealing with the tragedy of the artist Rethel, Klaus Mann's *Alexander*, Wilhelm von Scholz's *Der Weg nach Ilok*, a story about the Franciscan opponent of the Hussites, Capistrano, Juliane Kravath's *Die Dräute*, a tribute to Germany's greatest woman poet, Klahund's posthumous *Borgia und Prota*, Albrecht Schaeffer's *Kaiser Konstantin*, Richard Friedenthal's *Der Eroberer*, a Cortez story, and Wilhelm Matthiesens *Der grosse Gorres*, a book of historical and literary value.

Alexander von Gleichen-Russwurm, historian of society and its conventions, published a book of charming love stories, *Im grünen Salon*. Novels, diverse in subject and style, came from Georg Hermann, *Traume der Ellen Stern*, Max Dreyer, *König Kaudelcs*, Max Brod, *Zauberreich der Liebe* and *Die Frau nach der man sich sehnt*, Hermann Stehr, *Helene Entlinger* and Nathaniel Maechler, Ernst Lissauer, *Die dritte Tafel*, Wilhelm von Scholz, *Das unterbrochene Tagebuch*, Felix Salten, *Simson, das Schicksal eines Erzählten*, Schalom Asch, *Die Mutter*; Ernst Zahn, *Gewalt über ihnen*, Heinrich Lohsenfeld, *Die*

Geisterstadt, Artur Holitscher, *Es geschah in Moskau*, Max Halbe, *Die Auferstehungsnacht des Dr. Adalbert*, with the dual-souled hero, half Faustus, half Mephisto, Artur Bransewetter, *Der Tanz um das Gewissen*, Kurt Münzer, *Jude ans Kreuz*, Schalom Asch, *Chaim Lederers Ruokkehr*, Alfred Doehlin, *Alexanderplatz*, a story of Berlin's slums, Rudolf Herzog, *Wilde Jugend*, Franz Karl Ginke, *Der Wandervogel*, a mild satire, Richard Skowionnek, *Der Bauer ohne Gott*, and Otto Flake, *Es ist Zeit*, a novel on erotic problems.

Gustav Frenssen broke his long silence with *Der Dummhans*. Gerhart Hauptmann appeared at the year's end with a two-volume *Roman der Leidenschaft*. Franz Werfel's *Barbara oder die Frömmigkeit* deals with the problems before and after the War. Leonhard Frank, the author of the novel and the play, *Karl und Anna*, treats in *Bruder und Schwester*, a tabooed relation with unusual delicacy. The problems of modern youth are the topic of Arnold Lütke's *Aufbruch der Kinder* and Werner Schindler's *Die junge Saat*. It was a relief to meet books like Paul Fechter's *Die Rückkehr zur Natur*, Felix Salten's *Fünfzehn Hasen*, the story of a rabbit family, and Valdemar Bonseles's new tales of animals and flowers, *Marso im Schloss und Himmelsvolk*. A first book of rare promise was Otto Wirz's *Die geduckte Kraft*.

The women writers who contributed to the year's fiction are the veteran Austrian Oskar Schubin, pseudonym Lola Kirschner, *Der Rosenkavalier*, the romance of a famous singer, Ricarda Huch, *Eva Celeste*, Clara Viebig, *Die mit den tausend Kindern*, the story of a school mistress, Helene Bohlau, *Eine zärtliche Seele*, Helene Voigt-Diedrichs, *Ring um Rodrich*, the story of three women and one man, Irene Forbes-Mosse, *Kathinka Plusch*, Auguste Sapper, a Swabian novelist of great power, *Der Gaukler*, Cecile Inez Loos, a Swiss writer, author of an admirable story of motherhood, and Clara Ratzka, *Im Zeichen der Jungfrauen*.

DRAMA The year 1920 witnessed no great dramatic success on the German stage. Max Halbe made a futile attempt at regaining his place among Germany's foremost dramatists of twenty odd years previously in *Die Traumgeschichte des Adam Thor*, Ernst Lissauer's *Isidor* and Thomas Munzer effectively contrasted the leader of religious revolt with the head of the revolting peasants. Alfred Mombert's *Agla's Herabkunft*, a dramatic poem rather than poetic drama, is of rich spiritual content. Erich Mühsam's *Sacco und Vanzetti* lacked in artistic quality. Arnold Zweig's *Die Umkehr* founded upon the Jewish legend of Balaam, was weak in comparison with *Leopold Gruscha*. Georg Kaiser, credited with having founded the "expressionist" movement, also failed to impress with his *Lederkopfe*, his latest work, however, *Zwei Kravatten*, which he calls a review-play, is admirable for its unusually clever construction. Leonhard Frank was no more fortunate with *Die Ursacher*, in spite of a strong general interest. Rudolf Presber and Leo Walz's collaboration on *Marce Antonette*. Friedrich Nadler presented a new *Till Eulenspiegel*, with the subtitle *Pandemonium Germanicum quasi comedia*, Elise Jerusalem's *Die Steinigung in Sakya* and Helene Hirschmann's new *Kaspar Hauser* were the only works of women dramatists of some importance.

POETRY The lyrical spirit of Germany, which once sang so lustily in rain or sunshine, seemed to have been dampened. Of the older poets, only two published new books. Stefan George, the master of words and their music, *Das neue Reich*, and Hugo Salus, the physician-poet of Austria, who subsequently died, *Die Harfe Gottes*, a book of sensitive, spiritual quality. Hermann Hesse, the novelist, turned to verse in *Trost der Nacht*, and Oscar Loerke evoked a Hellenic mood in *Panmusik*. Paul Zech, who appeared on the literary horizon simultaneously with Franz Werfel, reflects in *Rotes Herz der Erde* his generation's absorption in social problems, while Theodor Kramer's *Die Gaunnersinke* is marked by a rugged realism. Two anthologies of labor poetry, *Das proletarische Schicksal*, compiled by Hans Mühle, and *Jüngste Arbeiterdichtung*, edited by Karl Broger, are also distinctly products of the socialist trend of thought in the German Republic, but Heinrich Spiero, true to his ideals, collected a book of ballads, *Deutsche Balladen*. Other volumes of importance were Hermann Stegemann's book of sonnets, *Von Leben zu Leben*, and Hans Benzmann's posthumous *Pantheon des Schaffenden*.

LITERATURE. ESSAYS, etc. The spirit of modern Germany may be responsible for a slight decrease in histories of literature, which formerly were an important item on the book market. Oskar Walzel's *Die deutsche Literatur von Goethes Tod bis zur Gegenwart* is a valuable work. Victor Klemperer has traced the development of modern French poetry in *Die moderne französische Lyrik seit 1870*. An interesting work recording the vagaries of censorship in the literature of the world is H. H. Houben's *Die verbotene Literatur von der klassischen Zeit bis zur Gegenwart*. Eduard Engel's *Was bleibt?* is a review of the world's literature from the viewpoint of the imperishable. An interesting period is treated by Hugo Bieber in *Der Kampf um die Tradition*, which is vol. 5 of *Epochen der Literatur* and comprises the half-century, 1830-1880. Hans Hecker's *Geschichte der deutschen Literatur in Schlesien* contains in vol. II, a history on Silesian history. Ernst Schulz's *Die Weltliteratur* is a stupendous compendium, a guide through 10,000 plays.

Essays of appreciation of contemporaries have always been numerous. Jacob Wassermann, Hermann Hesse, Thomas Mann, Knut Hamsun, Richard Dehmel and Lilienorn were thus honored. Heinrich Spiero's *Theodor Fontane*, Dr. Ella Mensch's *Er lebt noch*, dealing with Spielhagen, Kurt Steinberg's *Heinrich Heine, seine geistige Gestalt und seine Welt*, are proof that the predecessors have not been forgotten. Interesting interpretations are the essence of Erich Auerbach's *Dante als Dichter der irdischen Welt*, Hans Burgwieser's *Johann Peter Hebel als Erzähler*, Lothar Kempter's *Holderlin und die Mythologie*, Wolf Dietrich Rasch's *Die Freundschaft des Jean Paul*, Alois M. Nagler's *Hebel und die Musik*, and Gerhart Reehzel's *Grillparzer und die Slaven*.

Among the numerous essays on other subjects, the outstanding were Arthur Schnitzler's *Sprüche und Bedenken*, a book of wise reflections, Arnold Zweig's *Herkunft und Zukunft* for its timeliness, Heinrich Spiero's *Schicksal und Anteil, ein Lebensweg in deutscher Verdrüss*, Ernst Weiss's *Das Unverherbare* for its spiritual value; and the work of a newcomer, Herbert Cysarz, *Geschichte*.

wissenschaft, Kunstwissenschaft, Lebenswissenschaft, which reconciles with its cumbersome title by its wealth of stimulating reflections. Of lighter calibre are Kurt Aram's *Maße und Mystik*, and a book by the inveterate cynic, Oscar A. H. Schmitz, *Wespennester*. Herbert Eulenberg's *Glückliche Frauen* is unique in our time for its sane optimism.

Modern psychology enters into C. E. Jung's *Energetik der Seele*, founded upon Freud, but differing from him in many points, and Wilhelm Lange-Eichbaum's *Geme und Irrsinn*, with its title borrowed from Lombroso, is distinctly a psychiatric study. Modern youth's demand for inner liberation is voiced by Frank Thiess in *Erziehung zur Freiheit*. Houston Stewart Chamberlain's essays on *Natur und Leben* are considered valuable.

BIOGRAPHY, MEMOIRS, LETTERS. Indefatigable in her efforts to keep the memory of her great brother alive, Elisabeth Foster Nietzsche has collaborated with his French admirer, Henri Lichtenberger in *Nietzsche und sein Werk*. Willibald Köhler has written a life of the Silesian mystic *Angelus Silesius*. Walter Kuchler wrote of *Moltke*, and Dr. Ernst Elster paid tribute to the poet's centenary in *G. E. Lessing*. The memory of a great German actor of the nineteenth century was honored by Julius Bab in his *Albert Bassermann*. Of timely international interest is Rheinbaben's life of *Stiesemann, der Mensch und Staatsmann*. Otto Flake's *Ulrich von Hutten* presents that fifteenth-century champion of freedom whose ideals were thoroughly modern.

Stefan Zweig wrote a most interesting life of *Joseph Fouché* with the sub-title, "Portrait of a politician." Richard Count du Moulin-Eckart was the author of the first authentic biography of that remarkable woman *Cosima Wagner, ein Lebens und Charakterbild*. Dagobert von Mikusch wrote a life of *Gass Mustafa Kemal*. Hermann Stegemann's *Erinnerungen aus meinem Leben und aus meiner Zeit* were of literary and historical interest. Hugo von Hofmannsthal's *Buch der Freunde*, containing new notes from a diary, is full of impressions and reminiscences of his contemporaries. Friedrich Wolters's *Stefan George und die Blätter für die Kunst* is of documentary importance for the student of modern German literature. Interesting volumes of letters are those of *Theodor Fontane* and *Paul Heyse*. *Hans Thoma* and *Henry Thode*, and *Friedrich Hebbel* and *Caroline Flachsland*. Unique in spirit and form are the letters of Malwida von Meysenbug and the artist Ludwig Ruhl, published under the title, *Marchenfrau und Malerdichter*. Of the greatest historical interest is Friedrich Kirchner's *Napoleon* and his *Fürstenbriefe an Napoleon*, a volume of letters from European sovereigns to Napoleon, these are authoritative works of importance.

HISTORY. Students of French history and the French Revolution welcomed Friedrich Kirchner's *Die französische Revolution*. Friedrich von Oppeln-Bronikowski presented a picture of papal life in the Cinquecento in *Schlüssel und Schwert*. Levin Schücking's *Die Familie im Puritanismus* traces the relations between social life and literature in England from the sixteenth to the eighteenth century. Alexander von Gleichen-Russwurm's *Weltgeschichte in Sprüchen und Querschnitten* is a unique book of historical commentary. Herbert Eulenberg wrote the history of the last Bavarian dynasty, *Die letzten Wittels-*

bacher. Ricarda Huch's *Der grosse Krieg* is a history of the Thirty Years' War. Heinrich Mann wrote an epilogue to the Great War of our time in *Steben Jahre 1921-28*.

ART, MUSIC, ETC. A monumental work among art publications is *Die Kunst Japans*, comprising a history of Japanese painting, sculpture, architecture, the industrial arts, poetry, drama, dance, and music by Tsuneyoshi Tszudumi, a Japanese writing in German. A sumptuous souvenir of the China Exhibition in Berlin, 1920, is the volume *Chinesische Kunst*, a collection of phototypes with an introduction by Dr. Otto Kuemmel. Karl Scheffler's *Die Europäische Kunst im 19. Jahrhundert* is a two-volume work with more than 400 illustrations. Interesting to admirers of his work is *Hans Thoma's aus achtzig Lebensjahren 1839-1920*. Among books on music, Dr. Karl Storck's *Das Opernbuch* does for German music students what H. Krehbiel's work on the same subject did for the American. Hans Wichmann's book on *Grétry* and music on the French stage deserves mention. Travel books are always numerous on the German book market. Among the outstanding new publications of this kind were Wilhelm Dibelius's *England*, Josef Ponten's *Europäische Reisebilder*, Ricarda Huch's *Neue Städtebilder im alten Reich*, and of general interest E. G. Kolbenheyer's book on *Kaislsbad, Kampfender Quell*. Erwin Rieger's *Evangel Oesterreich* and Alfred Kerr's *All-gier trieb nach Algei* strike individual notes.

TRANSLATIONS. The Germans have always been eager to present to their readers foreign authors, though their choice, especially of American books, was not representative of the highest standards. Among American authors recently thus favored are Dos Passos, Theodore Dreiser (from *Nixes Carrie to Dreiser Looks at Russia*), Isadora Duncan, Zane Grey (eight works), Hemingway, Fannie Hurst, Sinclair Lewis, Will, Judge Landsey, Anita Loos, Saunders, etc.

NECROLOGY. A large number of writers of the older generation died during the year 1929 and are discussed either under their own names or in the NECROLOGY. Among them were Mathilde von Eschstruth, who under the pseudonym Eschen, wrote popular fiction mostly of religious character, died February 1, Hugo Salus, a most sympathetic figure among the Austrian poets about the turn of the century, who died February 4, Hans Ludwig Rosegger, second son of Peter Rosegger, the popular Austrian novelist, who continued his father's tradition, who died February 17, Artur Schurig, a literary critic, writer on literature and music, died February 17, Helene Stockl, popular writer of juveniles, who died February 16, Carl Muthesius, an authority on Goethe, died February 22, Eugen Wolff, author of books on Luther, Kleist, and other topics, died February 25, Wilhelm von Bode, Germany's greatest authority on art, holder of many prominent positions and recipient of great honors, died March 1, Eduard Schure, a distinguished writer on music and literature, died April 12, Friedrich Laenhard, popular novelist and poet, for some years in charge of the Goethe Archiv in Weimar, died April 30, Hugo von Hofmannsthal, poet and dramatist, an exceptional individuality among Germany's writers, and best known as the librettist of many operas by Richard Strauss, died July 15, Josef Petzold, professor of philosophy at the Technical High School in Berlin, author of an Introduction to

Empiric Philosophy and founder of the society for empiric philosophy, died August 4, Theodor von Wundt, noted Alpinist and writer on Alpinism, died August 17; John Brinkmann, by profession a teacher, but well known as a reader of Low German poetry and translator of plays for the Low German stage, died September 3, Wilhelm von Wymetal, a distinguished dramatic critic, died September 6, Paul Rosenhayn, popular author of detective stories, died September 12; Ewald Sylvester, a pseudonym for Karl Heide, Swiss author of the lyric volume, *Das flammende Kreuz*, the novel, *Nora Gyllensee*, and the plays *Flucht* and *Ballplatz*, died September 12.

GERMAN NEW GUINEA. This name was applied to all the German territories in the western Pacific (see GERMAN COLONIES). They were distributed by the Treaty of Versailles as follows: Those north of the Equator, viz., the Caroline, Marshall, Pelew, and Ladrone islands, to Japan, under mandate, those south of the Equator, viz., the Bismarck Archipelago, the German Solomon Islands, and former German possessions on the Island of New Guinea, to Australia, under mandate of the League of Nations. All German possessions grouped under the name of German New Guinea were formerly administered from Rabaul, the capital, in the north-eastern part of New Guinea.

GERMANTOWN, BATTLE OF, ANNIVERSARY SEE CELEBRATIONS

GERMANY. A federal republic of central Europe, constituted after the abdication of Emperor William II on Nov. 9, 1918, and organized under the constitution of July 31, 1919, by the National Assembly at Weimar, elected in January of that year, formerly the German Empire. It is bounded on the north by the Baltic Sea, Denmark, and the North Sea, on the west by the North Sea, the Netherlands, Belgium, Luxembourg, and France, on the east by Lithuania, Czechoslovakia, and Poland, and on the south by Switzerland, Austria, and Czechoslovakia. The German Empire consisted of 25 Federal States and the Imperial Reichsland, the Federal Republic consists of 18 republics. Capital, Berlin.

AREA AND POPULATION. At the census of Oct.

States of the Empire	Area English sq miles	Population June 16, 1925	Pop per sq mile 1925
Prussia *	112,628	38,120,173	338
Bavaria *	29,344	7,179,594	251
Württemberg	7,532	2,580,215	342
Baden	5,819	2,112,462	367
Saxony	5,789	4,992,120	863
Mecklenburg-Schwerin	5,068	674,045	133
Thuringia	4,527	1,609,100	355
Hesse	2,970	1,147,279	454
Oldenburg	2,480	545,172	220
Brunswick	1,418	501,875	354
Mecklenburg-Strelitz	1,111	110,269	98
Anhalt	888	751,045	396
Lippe	469	161,648	149
Waldeck	408	75,816	117
Schaumburg-Lippe	151	48,046	767
Hamburg	100	1,152,523	7,203
Lubeck	115	127,971	1,113
Bremen	99	338,846	3,423
German Republic *	180,980	62,410,619	345
Prussian Saar District *	574	671,748	1,170
Saar-Pfalz *	164	98,252	599
Saar District (altogether)	738	770,000	1,043
German Republic (with Saar District) *	181,714	63,180,619	347

* Excluding the Saar.

* The figures for the population of the Saar District, in which the census of 1925 could not be taken, are estimates.

8, 1919, the area of the Republic, including the Saar Valley, was 182,213 square miles and the population, 59,852,682, of whom 28,496,419 were males and 31,356,263 females. The accompanying table from the *Statesman's Year Book* for 1929 gives area and population according to the census of June 16, 1925.

The estimated population in 1928 was 63,751,000, excluding the Saar Basin. From 1923 to 1927, the average number of births per year was 1,249,774 and of deaths, 770,656, leaving an annual excess of 479,119 births. The surplus of births dropped from 547,808 in 1925 to 402,949 in 1927. Dr. Heiman Schumacher of the University of Berlin said in 1929 that Germany had experienced a greater decline in the birth rate since the World War than any other nation and was faced with the probability that the excess of births would soon disappear. Emigration in 1927 totaled 61,379, of whom 47,151 went to the United States. Cities having more than 500,000 inhabitants at the census of 1925 were: Berlin (3,703,193), Hamburg, 1,079,000, Leipzig, 700,222, Munich, 680,704, Breslau, 619,157, and Danzig, 557,139.

EDUCATION. Primary instruction is compulsory throughout Germany between the ages of 6 and 14. In 1926-27 there were 52,320 public elementary schools, with 180,273 teachers (137,124 men and 43,149 women), and 6,620,779 pupils (3,340,804 boys and 3,288,975 girls). Private elementary schools in 1922 numbered 675, with 35,584 pupils (14,986 boys and 20,598 girls). Secondary schools in 1922 included, for boys, 515 Gymnasias, with 10,051 teachers and 152,367 pupils. Real Gymnasias 322, with 6678 teachers and 115,615 pupils. Oberrealschulen and Realschulen, 506, with 9404 teachers and 184,175 pupils, for girls, high schools, 824, with 14,852 teachers and 299,285 pupils. There are 10 fully equipped technical schools, with the power of granting degrees. These had a teaching staff of 1293 and a student body of 20,927 in 1927.

In 1927 there were 23 universities with a total of 5175 professors and 72,139 students. The student enrollment was as follows: Berlin, 9173, Bonn, 4305, Breslau, 3034, Cologne, 5122, Frankfurt, 1416, Frankfurt, 3211, Freiburg, 1187, Göttingen, 3022, Greifswald, 1235, Halle, 1816, Hamburg, 2228, Heidelberg, 2860, Jena, 2270, Kiel, 2081, Königsberg, 1913, Leipzig, 4710, Marburg, 2767, Munich, 7384, Münster, 2899, Rostock, 1109, Tübingen, 2890, Würzburg, 2247. The students were divided among the various faculties as follows: Theology, 4307, jurisprudence, 27,675, medicine and dentistry, 11,855, philosophy, 14,000, mathematics, natural sciences, etc., 12,857, auxiliary sciences, 785. In addition, there are a number of veterinary, mining, agricultural, afforestation, art, and music academies.

AGRICULTURE. There were in Germany in 1928, according to official estimates, 51,556,972 acres of arable land, 20,165,876 acres of grass, meadows, and pasture, and 204,575 acres of vineyards. The harvest in 1928 was the most plentiful since 1914, but agriculture remained relatively depressed due to lower prices received for the crop and to a national farm indebtedness estimated at 11,400,000,000 marks (\$2,715,000,000). The area and production of the chief crops in 1928 are shown in the accompanying table. About 61 per cent of the cultivated area produces grain and legumes, while 21 per cent produces potatoes,

sugar beets, and cattle turnips. The average size of individual farms in Germany (leaving out of consideration the very smallest) is 28.65 acres, as compared with 144.8 acres in the United States. The small farms predominate in the west and south German states, while large estates prevail in the northeast. Livestock on Dec 1, 1928, totaled 3,710,500 horses, 18,386,200 cattle, 3,625,600 sheep, 20,072,300 swine, and 2,885,100 goats.

AREA AND PRODUCTION OF GERMAN CROPS, 1928

Crop	Area ^a	Production ^b
Wheat	4,269	141,608
Rye	11,452	335,498
Barley	3,753	153,730
Oats	8,896	481,984
Spelt	312	6,173
Lupinus	116	53 ^c
Potatoes	7,039	1,516,351
Sugar beets	1,123	11,011 ^c
Beet sugar		1,850 ^c
Fodder beets	203	22,644
Hay, alfalfa, and clover	18,791	29,185 ^c
Hops	38	18,466 ^d
Grapes/vines	202	54,229 ^d

^a Thousands of acres

^b Thousands of units—bushels except as indicated

^c Metric tons

^d Gallons of wine

FOREST AND FOREST PRODUCTS The forested area of Germany occupies about 31,587,209 acres, of which 9,465,708 are under foliage trees, such as oak, birch, ash, etc., and 22,120,446 acres are devoted to such as the pine, larch, and fir. The forests are exploited under the supervision of the state in accordance with the most scientific methods, the industry being one of great importance. In 1928 the production of paper and paper products in Germany broke all records, the output consisting of 2,302,207 short tons of paper, 479,477 tons of board, 1,266,195 tons of chemical pulp, and 914,844 tons of mechanical pulp. The leading paper-producing country in Europe, Germany in 1928 exported products of this nature valued at \$103,689,000, as compared with exports of \$94,614,000 in 1927.

MINING Prussia supplies the great bulk of the minerals raised in Germany, the chief mining areas being in the districts of Westphalia, Rhineland, and Silesia (coal and iron), Central Germany (brown coal), the Harz (iron and copper ore), and the Westerwald (iron ore). In 1925 there were 2042 mines in Germany, employing 808,593 persons. The number of blast furnaces in 1927 was 191. Lignite production exceeded that of black coal for the first time in 1928 and coke production reached a record figure despite a lock-out in the iron and steel industry toward the end of the year. The output of the principal minerals in metric tons in 1927 and 1928 is shown in the

MINERAL PRODUCTION OF GERMANY, 1913, 1927, 1928

		1913 ^a	1927	1928
Coal	1000 metric tons	140,753	153,589	150,876
Lignite	do	87,228	150,504	166,260
Coke ^b	do	31,667	32,242	33,863
Briquets, coal	do	6,490	5,555	4,906
Briquets, lignite	do	21,977	36,490	40,169
Iron ore	do	7,309	6,626	
Lead ^c	metric tons	51,197	47,604	
Copper ^c	do	26,825	27,719	
Zinc ^c	do	88,102	111,442	
Potash (K ₂ O)	1000 metric tons	1,189	1,268	1,421

^a Present boundaries

^b From black coal

^c Metal content of ore

accompanying table. In 1929 it was estimated that in the Ruhr district alone coal reserves within 1000 meters of the surface totaled 28,500,000,000 tons, those within a 1500-meter depth, 75,000,000,000 tons, and those within the limit of coal occurrence, about 250,000,000,000 tons. With an annual output of 100,000,000 tons, the 1000-meter reserves would last about 280 years.

In 1929 the coal output increased 8 per cent to 163,400,000 tons, the coke output 13.9 per cent to 38,500,000 tons, and the lignite output 5.4 per cent to 175,000,000 tons, the highest figure since the World War. Coal exports in 1929 totaled 26,796,000 tons, or 11 per cent more than in 1928.

Domestic consumption of coal in 1928 was the largest ever recorded, amounting to 157,400,000 metric tons of coal and lignite, or 2.4 per cent more than in 1927. The increased domestic consumption, however, was accompanied by lower exports and by increased imports of British coal. Slackening in production toward the end of 1928 and the modernization of mining methods led to a decline in the number of workmen employed in the Ruhr coal mines from 398,000 in January to 365,000 in December, 1928. The number of persons employed exclusively in mining in 1925 was 629,492, as compared with 495,279 within the present boundaries of Germany in 1907, the primary horse power directly applied in mining operations was 1,416,750 in 1925 and 1,104,673 in 1907, the horse power of electric motors was 1,072,915 in 1925 and 214,003 in 1907.

FISHERIES The North Sea fisheries yielded 214,086,508 kilos of fish in 1927.

INDUSTRY A noticeable decline from the high level of industrial activity in 1927 commenced toward the latter part of 1928, the slump being particularly apparent in industries producing for home consumption. The first serious labor difficulties since 1924 resulted in strikes or lockouts in shipbuilding, iron and steel, and other industries in 1928 and a general increase in the wage level. The unemployed increased from 647,000 on July 31, 1928, to 1,830,000 at the end of the year and the number of short time workers more than doubled. The unemployed in October, 1929, numbered 949,000 or 266,300 more than in October, 1928.

Production figures of some of the leading industries in 1927 and 1928 with comparative figures for 1913 are given in the accompanying table.

INDUSTRIAL PRODUCTION OF GERMANY

		1913	1927	1928
Pig iron	1000 metric tons	10,916	13,089	11,804
Crude steel	do	11,768	16,168	14,517
Rolling mill products	do	9,520	11,945	11,564
Rayon	metric tons	1,500	16,000	24,000 ^b
Cotton consumption ^a	million lb	1,071	985	710
Vessels launched	gross tons	465,226	289,622	376,416

^a Includes liners ^b Estimate

An increased foreign demand for iron and steel products during 1928 ameliorated somewhat the effect upon the industry of a sharp decline in domestic orders due to generally unsatisfactory economic conditions. Railway orders, building activity, and the buying power of the farmers were considerably curtailed. The lockout in the Ruhr from November 1 to early in December was a leading factor in the decreased production. The output of pig iron and crude steel was 11 per cent lower than in 1927 and all groups except crucible and electro-steel castings showed losses.

The report of the United Steel Works, commonly known as the German Steel Trust, for the business year ending Sept 30, 1929, showed total sales of 1,431,700,000 reichsmarks, or practically the same as in the previous year. Domestic sales, however, fell from 953,500,000 reichsmarks in 1927-28 to 903,300,000 reichsmarks, while export sales rose from 478,200,000 reichsmarks in 1927-28 to 528,300,000 reichsmarks. The report covered the third year of operation of the Steel Trust, which comprised six of Germany's foremost coal and metallurgical concerns, produced one-sixth of the national output of coal, and employed about 180,000 workers. It was by far the country's largest producer of pig iron, raw steel, rolling-mill products, and coke. The trust's coal production in 1928-29 rose to a new peak of 27,241,000 metric tons (26,453,000 tons in 1927-28), and coke production to 9,604,000 tons (9,518,000 tons in 1927-28). The output of pig iron, however, dropped from 6,518,000 tons in 1927-28 to 6,007,000 tons, and of raw steel, from 6,934,000 tons in 1927-28 to 6,420,000 tons. The production and sales of the Steel Trust are considered a reliable index of the German iron and steel industry as a whole. In 1929 Germany's total steel output was 16,245,921 tons, as against 14,517,013 tons in 1928 and 13,232,647 tons (deducting the Alsace-Lorraine output) in 1913.

The machinery industry, which increased its foreign sales by 22 per cent and domestic sales by 16 per cent in 1928, was depressed in 1929 and was operating at 68 per cent of capacity in November of that year. Automobile production doubled between 1926 and 1928 and in the latter year exports of cars increased by two-thirds over 1927. Cars on German roads increased by 29 per cent in 1928, but even then Germany had only one automobile to every 134 people of her population, as compared to one car for every 38 people in Great Britain and one for every five people in the United States. The chemical industry remained prosperous in 1928 and 1929, potash production in 1928 reaching the record level of 1,421,000 metric tons. The value of textile production dropped about 9 per cent in 1928. Moderate improvement in the industry was reported in November, 1929, although 111 per cent of textile trade-union members were unemployed and 26.3 per cent on short time in September. Cotton spindles in 1928 totaled 11,153,000, as compared with 10,800,000 in 1927 and 11,186,000 in 1913.

The total number of workers employed exclusively in manufacturing in 1925 was 10,091,132, as compared with 7,794,545 within the present boundaries of Germany in 1907. During 1928 the average weekly wages for skilled workers advanced from 49.82 marks (\$11.87) to 52.34 marks, while those of unskilled workers rose from 37.43 marks to 40.50 marks. About 941,400,000 marks (\$224,000,000) were spent on unemployment relief. Strikes and lockouts resulted in the loss of 10,450,000 work days. In the majority of cases, the Government settled the disputes by more or less compulsory arbitration in which the workers generally secured their demands. Unemployment increased in 1929, the number out of work on December 30 totaling about 2,000,000.

Germany ranked second to the United States in the production of electrical power in 1928, producing an estimated total of 27,870,000,000 kilowatt-hours, or 111 per cent of the world production, according to statistics of the Central Association of the German Electrotechnical In-

dustry. Total production for 1927 was 25,135,000,000 kilowatt-hours, for 1926, 21,218,000,000, and for 1914, about 7,000,000,000. In 1928, 14,146,000,000 kilowatt-hours represented the output of public plants and 13,725,000,000, the output of private plants. Of the total, 76.4 per cent was generated by solid fuel, 12.8 per cent by water power, and 9.2 per cent, by oil and wind power.

COMMERCE. The value of German domestic exports increased by 14 per cent to \$2,930,000,000 in 1928, continuing the expansion which has been continuous since 1923, while imports for consumption, which increased by nearly \$1,000,000,000 in 1927, fell in 1928 to \$3,334,000,000, as compared with \$3,381,000,000 in the previous year. The unfavorable balance of trade was \$404,000,000 in 1928 and \$815,000,000 in 1927. The heavy gain in exports was attributed not so much to increased productivity of German industry as to increased attention to export sales to offset the depression in the domestic market.

The cotton- and wool-textile and leather industries in particular were obliged to seek markets abroad for products normally consumed at home, also, generally improved conditions in other European countries stimulated sales abroad. German exports, on an average, increased by 1,000,000,000 marks a year between 1925 and 1928. Taking into account the change in the value of money, however, exports in 1928 were only 80 per cent of those in 1913, while Germany's share in international trade fell from 13.8 per cent in 1913 to 9.6 per cent in 1927. Over 78 per cent of the total gain in exports in 1928 was attributed to greater sales of finished goods, the largest individual gain being in iron and steel products. Textiles, leather and leather goods, furs and fur goods, paper and paper goods, chemicals, ceramics and glass, copper articles, machinery electrical products, automobiles, motor cycles and bicycles, and toys followed in the order named. The large domestic crops were reflected in shipments of wheat and rye over three times as large as in 1927.

While imports of raw materials were substantially larger than in 1927, with the exception of raw cotton, iron ore, and rubber, these gains were more than offset by radical reductions in the imports of corn, rye, wheat, barley, and oats. Depressed economic conditions contributed substantially to the import decrease. In 1929 the rectification of the unfavorable import balance continued, with exports increasing and imports declining during the first nine months of the year. Of the total value of imports for consumption in 1928, 28.9 per cent represented foodstuffs, beverages, and live animals, 48.3 per cent, raw materials and semi-manufactures, 16.4 per cent, manufactured goods, and 6.4 per cent, bullion and specie. Of the domestic exports, foodstuffs, beverages, and live animals constituted 5.4 per cent, raw materials and semi-manufactures, 22.4 per cent, manufactured goods, 7.2 per cent, and specie and bullion, 0.3 per cent.

Much of the raw-material imports came from the United States, which continued to rank first as a source of German imports, furnishing 14.5 per cent of the total, and from Argentina, which was in second place. Great Britain ranked third as a supplier of imports and first as a purchaser of German exports. The Netherlands and the United States, in the order named, followed Great Britain as Germany's leading customers.

Gains were registered in shipments to all continents except Australia. Germany imported goods from the United States to the value of \$483,554,000 in 1928 (\$492,645,000 in 1927) and exported goods to that country valued at \$189,908,000 (\$184,425,000 in 1927).

Of Germany's visible trade deficit of 1,700,000,000 marks, 1,200,000,000 marks was accounted for by trade with the United States. The tendency toward the establishment of branch factories in Germany by American manufacturers and of similar branches in the United States by German firms continued in 1928 and 1929. Because of their lack of capital, however, the operations of German concerns in the United States were carried on usually in cooperation with American manufacturers or financial groups. Expenditures in Germany by foreign tourists, the largest number of whom are Americans, and the earnings of the merchant marine are two of the most important sources of "invisible" revenue which helped to offset partially the visible trade deficit in 1928. In 1929 exports totaled 13,482,000,000 marks, including 799,000,000 of deliveries in kind, and imports 13,435,000,000 marks. The total trade was the highest since 1924. Imports from the United States declined sharply to \$410,258,652, while exports to that country increased to \$254,673,542.

FINANCE The closed accounts for the Government's financial operations for the fiscal year ending Mar. 31, 1928, as given by the Agent General for Reparation Payments, showed receipts of 9,020,000,000 reichsmarks (\$2,148,564,000) and expenditures of 9,316,000,000 reichsmarks (\$2,219,071,000), leaving a deficit of 296,000,000 reichsmarks instead of a surplus of 162,000,000 reichsmarks, as estimated in the budget. Ordinary revenue for the year was about 40,000,000 marks under estimates and receipts from loans under the extraordinary budget were much less than expected. Expenditures also were below estimates, the chief reductions occurring in the debt service, general financial administration, internal war charges, and nonrecurrent expenditure.

The figures of the Agent General for Reparations, however, varied from those presented by Chancellor Hermann Muller on Dec. 12, 1929, in revealing to the Reichstag that the Reich faced a deficit of 1,700,000,000 marks (about \$404,600,000) at the end of 1929. The deficit, he said, represented the accumulated budgetary shortages of several years, including 150,000,000 marks for 1927-28, and about 300,000,000 marks for 1928-29. The 1929-30 extraordinary budget contributed an additional 800,000,000-mark shortage and 450,000,000 marks were required to meet pay rolls and other expenses during December.

The budget for 1928-29 provided for ordinary receipts of 9,528,571,000, and extraordinary receipts of 146,295,000, reichsmarks, for ordinary expenditures of 9,528,571,000, and for extraordinary expenditures of 142,595,000 reichsmarks. Chief items of ordinary receipts in reichsmarks were income tax, 2,900,000,000, business turnover tax, 1,050,000, property, corporation income, transport, and other recurrent taxes, 2,085,000,000, customs, 1,200,000,000, consumption taxes, 1,602,000,000; all other, 691,571,000. In the list of ordinary expenditures, the chief items were debt service, 484,936,000, national defense, 700,633,000, pensions, 1,780,397,000; labor department, 706,844,000, allotments to states and local governments, 3,217,817,000, pay-

ments under the London Agreement, 1,227,500,000, all other, 1,410,444,000.

Features of the Reich's budget are the relatively small costs of general administration, most of which falls to the state and municipal governments, the small cost of national defense, enforced by the restrictions of the Versailles Treaty, the smallness of normal current outlays for debt service, due to the greatly reduced revaluation of the debts incurred previous to and during the World War which were virtually wiped out by inflation, the large expenditures for social welfare, chiefly due to subsidies for social insurance and relief for the unemployed, and the relatively enormous war burden, including pensions, reparation payments, etc. In addition to payments under the London Agreement, reparation payments by the railway administration and industries amounted to 960,000,000 reichsmarks in the 1928-29 budget, 880,000,000 in 1927-28, and 750,675,000 in 1926-27.

The programme of financial reform presented by Chancellor Muller and adopted by the Reichstag Dec. 14, 1929, included an increase of one-half of 1 per cent in the premium charges for unemployment insurance, expected to yield 140,000,000 marks annually, and added imposts on tobacco products, expected to produce 220,000,000 marks. Other reform measures were to be introduced early in 1930, including a tax on beer. Funds to meet the cash deficit at the end of 1929 were advanced by the Reichsbank, after Dr. Hjalmar Schacht, president of that institution, had refused his sanction to a \$100,000,000 American loan. His demand for the establishment of a 450,000,000-mark sinking fund to be applied on the floating debt and the postponement of proposed tax reductions was accepted by the Government.

The public debt on Mar. 31, 1928, totaled 7,890,569,000 reichsmarks (\$1,879,534,000), of which 5,747,834,000 represented internal government bonds, 20,589,000, internal Treasury notes and bonds, 981,940,000, internal bank loans, 901,718,000, foreign loans, and 238,488,000 marks, miscellaneous loans. On the same date in 1927, the public debt amounted to 8,072,881,000 reichsmarks (\$1,922,900,000). It was estimated that during the first four years of the Dawes Plan (from 1925 to 1928, inclusive), the German federal, state, and municipal governments and private concerns borrowed more than 6,000,000,000 gold marks abroad on long-term loans. Inasmuch as imports had greatly exceeded exports, this enormous borrowing was necessary to enable Germany to meet her cash reparation payments. The Federal debt at the end of 1929 totaled 7,994,000,000 marks, as against 7,771,000,000 marks at the end of 1928.

The discount rate of the Reichsbank remained unchanged at 7 per cent during 1928. Currency in circulation at the end of the year totaled 6,615,000,000 reichsmarks, or an increase of 300,000,000 marks during the year. Gold held by the Reichsbank increased from 1,865,000,000 to 2,729,000,000 marks during the year. Public and private borrowings abroad during 1928 were estimated at 1,570,000,000 marks, or approximately the same as in 1927, but actually a greater amount of long-term foreign capital was secured through considerable purchases of domestic bond issues for foreign account during the first half of the year. The United States supplied 69 per cent of the total new capital. Most of the loans

were obtained by electric power and light works, agriculture, mining concerns, and states and municipalities. The reichsmark and mark, it should be noted, have the same value. See REPARATIONS, also under *History*, below, for effects of Young Plan on German finances.

COMMUNICATIONS All of the railways of Germany except 1950 miles of privately owned line (in 1928) are owned by the State, although managed and administered by the German Railways Company. Passenger and freight traffic continued to expand in 1928, as indicated by the accompanying table. While handicapped by lack of capital,

GERMAN STATE RAILWAYS IN 1927 AND 1928

Item		1927	1928
Length of line	miles	33,272	33,347
Locomotives	number	24,495	24,542
Passenger cars	do	61,764	62,447
Freight cars	do	671,297	672,756
Freight train miles	thousands	116,101	156,585
Passengers carried	millions	1,909	2,006
Passenger miles	do	28,302	30,140
Freight	1000 metric tons	434,063	432,300
Gross receipts*	million marks	40,319	41,222
Passenger service	do	1,480	1,443
Freight service	do	1,226	1,276
Gross receipts, equivalent (\$1,000,000)	do	1,197	1,230

* Including miscellaneous receipts not shown separately.

The German railroads have made notable progress and the system is one of the finest in Europe. Loads carried by freight trains reached 2000 tons on important lines in 1928, as compared with 800 tons before the World War. Tracks, freight terminals and yards, bridges, and cars all have been improved. Combination air-and-rail service was inaugurated by the Deutsche Luft Hansa early in 1929. In 1929 passenger traffic on the German state railroads declined 0.6 per cent and the passenger receipts declined 0.8 per cent, although the train-mileage for the year was 4 per cent greater than in 1928. Gross revenues in 1929 were estimated at \$1,278,000,000, or \$50,218,000 more than in 1928, and operating expenses at \$1,061,000,000, leaving an estimated net income of \$217,000,000. From the beginning of the Dawes Plan in 1924 to Aug. 31, 1929, the total of reparation annuities levied on the German railroads amounted to \$900,830,000.

The total length of State and provincial highways in Germany in 1929 was approximately 37,260 miles, and of county roads about 74,520 miles. The number of motor vehicles in the country was 531,000 in 1928 and 152,000 in 1923. Motor cycles in 1928 numbered 465,000 and in 1924, 131,000.

On July 1, 1929, the German merchant marine totaled 4,025,000 gross tons (2080 vessels) of 3,777,251 gross tons on July 1, 1928), or about 76 per cent of the pre-war tonnage. Whereas 234 owners shared the 5,300,000 tons of pre-war shipping, the 1929 tonnage was distributed among 182 owners, evidencing the tendency toward mergers and consolidation of resources. The average dividend earned in 1928 was 7.4 per cent (7.5 per cent in 1927 and 6.2 per cent in 1926). It is of interest to note that none of the large joint-stock ship companies paid dividends out of their post-war earnings before 1926. Faced by unusually severe competition, due to the fact that the world shipping tonnage rose from 45,505,000 to 66,408,000 tons between 1913 and 1929, while the volume of sea-borne freight traffic increased only about 3 per cent, German shipping exhibited

a remarkable development as a result of the technical excellence of the new merchant fleet and increased managerial efficiency. An illustration of the strength of Germany's bid for a larger share of world traffic was the performance of the liner *Bremen* in establishing a new transatlantic record of 4 days, 17 hours, and 42 minutes, from Cherbourg to New York on her maiden voyage in July, 1929. See SHIPPING, MERCHANT.

The sea-borne traffic at the more important German ports in 1928 was 4.3 per cent greater than in 1927 and 29 per cent greater than in 1925. The total tonnage entering German ports in 1928 was 12,466,000 tons, of which 29,409,000 tons represented imports of foreign goods, and the tonnage cleared was 16,366,000, of which 13,356,000 tons went to foreign countries. The remainder represented coastwise trade. Tonnage exports comprised only 45.5 per cent of the tonnage imports. About 54 per cent of the total goods traffic passed in or out of Hamburg, with Bremen, the second port in importance, handling 10 per cent of the total. The other leading ports were Stettin, Emden, Harburg, Lubeck, and Altona.

Closely linked with the development of Germany's shipping industry was the programme of waterways development adopted by the Reichstag in 1927 and the cooperation between railways and waterways in promoting cheap transportation to the seaports. In 1929 the country had 7635 miles of waterways, including minor lakes and rivers and 1383 miles of canals. The German inland fleet totaled 25,000 vessels of 7,000,000 tons in 1929 and moved 107,600,000 tons of freight in the preceding year. Modernization of the Hohenzollern, Oder-Spree, and other canals was completed in 1929 and work was going forward on a new canal linking the Rhine to the Elbe and the Oder, a second connecting the Rhine, the Main, and the Danube, and a third canalizing the Neckar from Heidelberg to Heilbronn, a distance of 71 miles.

Airplanes of the Deutsche Luft Hansa, which does practically all of the civil aviation business in Germany, flew 6,306,906 miles in 1928 and carried 111,000 passengers, 485 tons of mail, and 1900 tons of goods. A triumph of German aviation was the completion of a round-the-world flight in 21 days by the *Graf Zeppelin* on Aug. 29, 1929. On August 4, the same airship completed a second voyage from Germany to Lakehurst, N. J. See AERONAUTICS.

The Federal government owns the telegraph and telephone systems. Gross receipts of the telegraph system, which had 561,183 miles of wire in 1926, were \$24,406,000 in 1927, receipts of the telephone system, with 10,608 miles of wire and 3,077,706 (1929) instruments, were \$158,432,000 in 1927. The Federal Post Office reported net profits of 235,800,000 marks for the fiscal year ending Mar. 31, 1929.

For ARMY AND NAVY, see under MILITARY PROGRESS AND NAVAL PROGRESS.

GOVERNMENT Under the constitution of the Republic adopted July 31, 1919, and promulgated Aug. 11, 1919, executive power is vested in the President elected by the people for seven years, and in a ministry appointed by him and responsible to the Reichstag, or Parliament. Legislative power is vested in the Reichstag, consisting of 493 members, who are elected by universal, equal, direct, secret franchise of male and female voters, on the principle of propor-

tional representation, and in a federal council, the Reichsrat, consisting of 68 members (Prussia, 27, Bavaria, 11, Saxony, 7, Wurttemberg, 4, Baden, 3, other states, 16). The consent of the Reichsrat is required to all bills before their introduction into the Reichstag, but the latter body may pass a bill over the heads of the former by a two-thirds vote. The composition of the Reichstag elected May 20, 1928, was as follows: Socialists, 153, German National People's party, 73, Centre party, 62, German People's party, 45, (German Democratic party), 25, Bavarian People's party, 16, Communists, 54, Middle Classes party, 23, minor parties, 39, total, 490.

The President in 1929 was Paul von Hindenburg, elected Apr. 26, 1925, assumed office, May 12, 1925. The cabinet appointed June 29, 1928, was composed as follows: Chancellor, Hermann Muller (Socialist), Minister of Justice, Erich Koch-Weser (German Democratic party), Foreign Affairs, Dr. Gustav Stresemann (German People's party), Home Affairs and Minister for the Occupied Provinces, Karl Severing (Socialist), Finance, Dr. Rudolf Hilferding (Socialist), Defense, Lieutenant-General Wilhelm Groener, Labor, Rudolf Wissel (Socialist), Food and Agriculture, Hermann Robert Dietrich (German Democratic party), Posts and Transport, Dr. Schaezel (Bavarian People's party), Economic Affairs, Dr. Julius Curtius (German People's party).

HISTORY

The question of financial reform came to the fore as the dominant domestic political issue in 1929 and threatened to involve a drastic reorganization of the German political system. Because of it, Chancellor Hermann Muller's Coalition cabinet was repeatedly on the verge of collapse during the year and, on December 21, Dr. Rudolf Hilferding, the Socialist Minister of Finance, was forced to resign.

The industrial, business, and Middle Class parties were aligned against the Social Democrats and other parties of the Left in the parliamentary clashes over the question. These two elements had long been at odds on fundamental questions of taxation, government ownership and operation, the size of appropriations for social insurance, and other welfare measures. In 1929, however, the increasing difficulties of the country's financial situation and the prospect that about 700,000,000 reichsmarks would be saved annually by the reduction of the Dawes Plan annuities proposed in the Young Plan precipitated a struggle for the control of the anticipated surplus. The industrialists and other conservatives demanded that the surplus be used to remedy Germany's crying need for additional capital, while the Social Democrats and their radical allies wished to distribute it among the working classes through the extension of existing forms of social insurance.

Some basis for an understanding of the politico-economic events revolving around this issue during the year has been given under *Industry, Commerce, and Finance*. These figures indicated a slackening of Germany's remarkable industrial and commercial development and the increasing difficulties of the financial problem. The realities of the situation seem somewhat obscure. The annual report issued January 1 by S. Parker Gilbert, Agent General for Reparations Pay-

ments, announced that Germany was then on a stable financial basis and well able to meet payments under the Dawes Plan. Other foreign observers expressed alarm at Germany's growing strength in world trade, but a more pessimistic picture was drawn by German economists and publicists later in the year. It was difficult to determine how much, if any, of this gloom was injected in the hope of securing a lighter reparations burden, or of obtaining concessions to industry on the part of the Government.

Dr. Gustav Stolper, editor-in-chief of the Berlin financial weekly, *Der Deutsche Volkswirt*, voiced the opinion that Germany was in a more difficult position on the eve of the signing of the Young Plan than at any time since 1918. Writing in a special German Industrial Review section of the New York *Journal of Commerce* issued December 17, he pointed out that the Reich budget again had a deficit of several hundred million reichsmarks, that the cities were burdened with a floating debt of several billions, whose funding at that time was impossible, that agriculture was unable to place the smallest mortgage upon the most valuable properties, that current credits were obtainable only at 14 or 15 per cent, and that industry was being pressed by the banks to repay loans, while the banks themselves were carrying a short-term foreign indebtedness higher than ever before.

In another analysis of Germany's economic condition, Dr. Herman Schumacher, professor of political economy at the University of Berlin, advanced the opinion that the period of industrial and economic recovery was approaching its end with Germany in a far from healthy condition. The decline of economic elasticity, unrest among the laboring classes, insecurity of marketing conditions, the serious lack of capital, and the compulsion to national and often wasteful export, by the uncertainty of the domestic market, were some of the factors which, he said, obstructed the nation's further recovery. In support of his pessimistic view of the situation Dr. Schumacher pointed out that in 1927 only 368,796 persons in Germany had incomes exceeding 8000 marks, or \$2000, and that, since the end of 1927, the list of bankrupts had more and more tended to include reputable firms with long and honorable histories. Before the War, creditors received an average of two-thirds of their claims upon bankrupts, in 1928, 10.8 per cent of non-privileged claims were satisfied. Germany's problems, he said, were not those of a marvelous development, as in the United States, but problems of an economic contraction never before experienced.

While the Socialists sought further means of raising money by direct taxation and foreign borrowing to meet the growing problem of unemployment relief, the Conservatives demanded that taxes be reduced, foreign borrowing dispensed with as much as possible, and expenditures for social insurance and other Social Democratic schemes curtailed to allow the country to accumulate the necessary capital for the maintenance of industrial stability. As the problem of excessive expenditures was laid principally at the doors of the municipalities and the 17 German states—each with its independent institutions, ministry, parliament, courts, and universities—drastic constitutional reforms were proposed to eliminate waste due to the duplica-

tion of governmental machinery. Most of the states are noncontiguous parcels of land accumulated by the various German dynasties through the centuries without regard to economic boundaries or the modern status of the Reich.

A preliminary step in this direction was taken November 19, when a subcommittee of the Conference of Federated States recommended that Prussia be amalgamated with the Reich as the first move toward a "unitarian state." It was believed that if the subcommittee's recommendation was accepted, the other states would follow Prussia's lead. Only in Bavaria did pronounced opposition to the plan appear. The struggle over financial reform commenced with the reassembling of the Reichstag on January 24 for the purpose of debating the new budget bill. The Finance Minister, being both a Social Democrat and a member of a Coalition cabinet including Conservative parties, was obliged to take a middle course. He proposed to raise only part of the 600,000,000-mark deficit by direct taxation. His budget provided for increases in beer, spirits, property, and inheritance taxes, the reduction of subventions out of the Federal tax yield to the states and municipalities, and additional contributions from the posts and telegraphs.

Chancellor Müller experienced difficulty in forming a Coalition ministry of the Socialists, Democrats, Centrists, and People's parties with sufficient strength to insure passage of the budget bill. The Centrists held out for three seats in the cabinet, while the People's party wavered between support and opposition to the cabinet because the budget made no provision for tax reduction. The resulting parliamentary crisis continued throughout the month of February and fear of the establishment of a dictatorship was openly expressed by former Chancellor Wirth, Chancellor Müller, and other leading figures. Dr. Gustav Stresemann, the Foreign Minister, deplored the resultant loss of moral support to the German representatives then negotiating for the revision of the Dawes Plan in Paris, but his party rejected his plea for immediate adherence to the Coalition. The cabinet crisis subsided during March, but (on April 9) the Socialists refused to vote the government a second installment on Germany's new 9000-ton cruiser and the crash of the government again appeared imminent with the reparations negotiations still under way. The debate on the cruiser budget was delayed until June, and (on April 13) the ministry was strengthened by the official appointment of three Centrist ministers.

In the meantime, the Government continued to negotiate loans from banks and other sources to meet its operating expenses. An effort to raise an internal loan of 300,000,000 marks met with only partial success, about 177,000,000 marks being underwritten. The agreement upon the revised Young Plan at The Hague Conference, through which Germany secured considerable financial advantages, lent further much-needed strength to the cabinet (see REPARATIONS). The Young Plan also provided for the final liberation of the Rhineland from allied military occupation by June 30, 1930, and for the termination of foreign supervision of Germany's railways, banks, and taxation system. With these accomplishments to its credit, the cabinet survived a heated debate over a draft unemployment-insurance law, which was attacked by the Socialist and Left parties as not going far enough

and by the Middle Classes and Right parties as unduly increasing the already heavy burden of taxation.

The death of Dr. Stresemann on October 3, following distinguished service in numerous cabinets as Foreign Minister of the Reich, caused another shift in the cabinet. Dr. Julius Curtius, Minister of Economic Affairs, was appointed to fill Dr. Stresemann's post and Prof. Paul Moldenhauer became Minister of Economics. On October 21, the Government granted the Swedish Match Company and the International Match Corporation a 50-year monopoly of the German match business in return for a 50-year 6 per cent loan of 500,000,000 marks. This and similar measures did not still the widespread criticism of Dr. Hilferding's financial policies.

On November 18, the Cologne Chamber of Commerce and Industry, predicting the end of Germany's ability to continue the practice of borrowing and consuming the nation's own reserves, demanded administrative reforms and sweeping retrenchment in all branches of government service. On December 2, the powerful Association of German Industrialists issued a memorandum calling for similar reforms to avert financial chaos. Another memorandum, which further injured the prestige of the cabinet, was made public a few days later, by Dr. Hjalmar Schacht, president of the Reichsbank, in which he criticized changes made in the Young Plan at The Hague Reparations Conference and attacked the cabinet for agreeing to them.

Chancellor Müller, in presenting the Government's proposals for meeting the situation to the Reichstag on December 12, admitted that the exchequer would show deficit of 1,700,000 marks by the end of the year. Startled by the Chancellor's gloomy picture of the Government's financial condition, the Coalition parties composed their differences for the time being and the Reichstag approved the cabinet's programme of financial reform (on December 14) by a vote of 222 to 156. The vote was 80 less than the Coalition's normal strength, however, and gave further proof of the ministry's weakness.

Dr. Hilferding had planned to raise a \$100,000,000 loan in the United States to meet payroll and other expenses due at the end of the year, but Dr. Schacht refused to give his sanction to a foreign loan unless the Government amended its programme of reforms to include the creation of a sinking fund. The Reichstag was forced to capitulate and Dr. Schacht then organized a group of Berlin and Prussian provincial banks which advanced the Government a credit of 350,000,000 marks (\$84,000,000) to run until October, 1930, at 7½ per cent. The collapse of Dr. Hilferding's financial proposals through the intervention of the president of the Reichsbank, left the former with no alternative than to resign, which he did on December 21. On the same day, the Reichstag passed a bill creating the required amortization fund of 450,000,000 marks, a bill increasing the tax on tobacco, and a measure increasing the duty on feed barley from 2 to 5 marks for 1930. The Reichstag then adjourned to Jan. 21, 1930.

In line with these developments came the announcement (December 20) that the Province of Brandenburg had intervened to prevent the further collapse of the credit of Greater Berlin. The city council, which had just voted 5,750,000 marks (\$1,380,000) for Christmas bonuses

to the city's unemployed and needy, was informed that no further expenditures could be made until all short-term credits had been liquidated and a recently floated loan of 60,000,000 marks was annulled by the establishment of a monthly sinking fund of 5,000,000 marks.

YOUNG PLAN REFERENDUM The political career of Alfred Hugenberg, wealthy industrialist, newspaper publisher, moving-picture magnate, and Nationalist leader, was believed to have received its death blow on Sunday, December 22, when his largely self-sponsored referendum against the acceptance of the Young Plan proved a complete failure. About 6,000,000 votes were cast in support of his measure, whereas 21,000,000, or more than half the electorate, was required for its adoption. Hugenberg's proposal, called the "liberty law," demanded the repudiation of the Young Plan, and called upon the German Government to start negotiations for the cancellation of the "war guilt" clause of the Versailles Treaty, and to abrogate the clauses of the Versailles Treaty providing for allied military occupation of the Rhineland. A fourth paragraph provided for the summary punishment of any German government official signing agreements with any foreign power which would impose upon Germany burdens and obligations based on her acknowledgment of war guilt. The latter measure, if passed, would have made all the members of the cabinet and even President Hindenburg liable to punishment.

The measure was denounced by President Hindenburg and many leading Germans but with the aid of his newspapers, theatres, and other means of propaganda, Hugenberg secured 4,135,300 signatures to the petition for the referendum, or 8000 more than the minimum required. The Reichstag on November 30 rejected the measure by a vote of 312 to 80. Under the constitution, it was then submitted to a national referendum. When Dr. Hugenberg attempted to discipline several members of his own party for failing to support the bill in the Reichstag, six Nationalist deputies, including Count Westarp, leader of the party's Reichstag delegation withdrew from the party (December 1). The measure failed of ratification at the referendum held December 22.

OTHER EVENTS The Steel Helmet, or Nationalist militia organization, came into prominence during the parliamentary crisis of February and March. Threats made by its two leaders, Heri Seltsie and Colonel Duesterberg, against the Republic, caused President Hindenburg to mention them as to the purposes in which he had accepted an honorary membership. In October, during the Nationalist campaign against the Young Plan, the activities of the organization caused the Prussian Minister of the Interior to issue a decree dissolving its units in the Rhineland, the Ruhr, and Westphalia. Previously, the Ministers of Internal Affairs of the Federated German States had determined upon concerted action against Nationalist propaganda.

The Communists were equally active. The May Day disorders in Berlin were the bloodiest since the revolution, continuing for three days during which 20 persons were killed, nearly 100 wounded, and 117 persons arrested, of whom 45 were sentenced to short terms of imprisonment. In Prussia and Bavaria, the police then instituted measures to suppress the Communist

military organization, called the Red Front Fighters.

June 28, the tenth anniversary of the signing of the Treaty of Versailles, was observed as a "day of mourning" throughout Germany, the protests being directed mainly at that clause of the treaty which placed upon Germany the responsibility for the World War. The failure of the Reichstag on June 27 to renew the law for the defense of the Republic opened the way for the return to Germany of former Kaiser Wilhelm, should he desire it, as a private citizen. Spokesmen for Wilhelm indicated that he would return only when the German people "repented and beckoned him." The enthusiasm with which the tenth anniversary of the proclamation of the republican Constitution of Weimar was celebrated on August 11 throughout Germany indicated that there was little prospect of Wilhelm's return under the conditions imposed. To strengthen the Republic against the attacks of both Nationalists and Communists, the new defense bill adopted by the Reichstag on November 28 provided for greatly increased penalties for insults, slander, and attempts on the lives of government officials.

Other events of importance in German history during the year were the ratification of the Kellogg-Briand Peace Pact by the Reichstag on February 6, the submission by German delegates to the League of Nations in April of proposals for the abolition of airplanes and poison gases in war, the inauguration of the new Republic with France, under the terms of the Locarno Pact (see FRANCE, under *History*), and the evacuation of the second zone of Allied military occupation of the Rhineland on November 30. The withdrawal of French troops from Coblenz and of the Belgians from Aix-la-Chapelle was the signal for tumultuous celebrations of joy throughout the newly freed Rhine districts. At Coblenz, the flag of the German Republic was unfurled for the first time over the historic citadel of Ehrenbreitstein, while bonfires blazed on hilltops and for miles along the shores of the Rhine. British troops had withdrawn from the Rhine earlier in the month. Complete evacuation of the occupied area was to take place before June 30, 1930, under an agreement reached at Locarno between the late Foreign Ministers of Germany and France, and Aristide Briand. Dr. Hugenberg's effort to secure the rejection of the Young Plan, however, resulted in an announcement by Premier Tardieu before the French Chamber of Deputies that the evacuation would not be completed until after the ratification of the Young Plan by Germany.

On November 18, the Reichstag appropriated 6,000,000 marks (\$1,440,000) for the relief of Russian peasant emigrants of German origin, who were living under privation in camps near Moscow and in Germany awaiting an opportunity to settle in Canada or Brazil.

Partly due to the so-called Sklarek bribery scandal in which several Socialist members of the Berlin City Council were implicated, the Communists gained 9 additional seats at the expense of the Social Democrats in the municipal election of November 17. With the newly elected members, they occupied 56 seats in the council. The representation of Adolf Hitler's Fascist party was increased at the expense of Dr. Hugenberg's Nationalists. Similar tendencies were noted in Frankfurt-on-the-Main and other large cities, except in the industrial towns of



Wide World Photo

BRITISH TROOPS MARCHING OUT OF WIESBADEN



Wide World Photo

THE FINAL PARADE OF FRENCH TROOPS AT EHRENBREITSTEIN
ALLIED TROOPS LEAVING GERMANY

"Red" Saxony, where the Communists lost seats. See REPARATIONS, also FRANCE, under *History* For Union with Austria see AUSTRIA, under *History*

BIBLIOGRAPHY The development of Germany was shown in several notable books published during 1929 These include *The Recovery of Germany*, by James W Angell (1929), *The New German Republic*, by Elmer Luehr, New York (1929), *State and Society in Modern Germany*, by Rupert Emswiler, New Haven (1929).

GIBALTAR. A possession of Great Britain on a small peninsula, comprising the Rock of Gibraltar, on the southwest coast of Spain, commanding the entrance to the Mediterranean Sea Area, 1½ square miles, population, at the census of 1921, 20,638, of whom 2932 were military and 546, naval men The civil population on Jan. 1, 1928, was estimated at 16,120, excluding about 1213 aliens The inhabitants are chiefly descendants of Spanish and Italian settlers, and in religion are Roman Catholics Education is compulsory between the ages of 5 and 14 In 1927-28 there were 13 government-aided elementary schools with 2836 pupils There were also five secondary schools The revenue in 1927 was £160,031, and the expenditure, £180,114 There was no public debt Trade is mainly transit Vessels entered in 1927, 4429, of 6,624,204 tons, cleared, 2265, of 5,499,871 tons Cables connect with the Continent, with eastern Mediterranean ports, and with England Gibraltar is under a governor who is also commander-in-chief He is assisted by an executive council which was established in 1922 Governor in 1929, General Sir Alexander J Godley, appointed October, 1928

GIBSON, MAJ-GEN SIR JOHN MORISON Canadian official and administrator, died in Hamilton, Ontario, June 3, 1929 He was born Jan 1, 1842, in Ontario, Canada, and was graduated from the University of Toronto in 1863, afterward taking a law course On becoming actively identified with the Liberal party, he abandoned the law practice begun in 1867 He was Provincial Secretary of Ontario, 1889-96, Commissioner of Crownlands, 1896-99, Attorney General, 1899-1905, and, from 1908 to 1914, Lieutenant-Governor of Ontario Sir John Gibson was also actively interested in military training and himself rose to the rank of major-general in the Canadian Militia In business and charitable institutions, he held important offices He was knighted in 1912.

GIFFORD LECTURES See PHILOSOPHY
GIFTS AND BENEFACTIONS. See UNIVERSITIES AND COLLEGES

GIPSY-MOTH. See ENTOMOLOGY, ECONOMIC
GIRL SCOUTS. A nonsectarian organization for girls started in Savannah, Ga., in 1912, and incorporated under the laws of the District of Columbia in June, 1915 The plan for Girl Scouting is not a copy of the Boy Scout programme, although both organizations were founded by Sir Robert Baden-Powell, but it is rather a development of the Girl Guide movement, changed and adapted to meet the needs of American girls The purpose of the organization is to help girls to realize the ideals of womanhood, as a preparation for their responsibilities in the home and service to the community. It aims to give girls, through natural, wholesome pleasures, those habits of mind, and body which will make them useful, responsible women, to develop initiative, self-control, self-reliance, and service to others. When a girl

becomes a scout, she makes the following promise. "On my honor, I will try. To do my duty to God and my country, to help other people at all times; to obey the scout laws"

The unit of the organization is the troop, which is composed of one or more patrols, with six to eight girl scouts in each patrol. The activities of the troop are developed through the patrol system, under a patrol leader who is appointed from the group The girls advance by a merit system which was developed by Sir Robert Baden-Powell

The total active membership of the organization as of Oct 31, 1929, was 200,201 There are 41 summer national training schools for Girl Scout leaders and young women who are interested in training for volunteer leadership During 1928, 913 young women attended these schools There were also 38 Girl Scout leaders' training courses given by members of the national staff in 36 colleges and other institutions of higher education during 1928, with an enrollment of 1219 students These courses are a continuation of the work which was started as a five-year experiment under an appropriation from the Laura Spelman Rockefeller Memorial, the present work is made possible by a grant from the Julius Rosenwald Fund There were 529 other courses given in 1928 in which 9380 young women received training as volunteer Girl Scout leaders

The World Association for Girl Guiding and Girl Scouting included 27 countries in 1929, while Girl Guide companies or Girl Scout troops were organized in many other countries The official organ for girls is *The American Girl Magazine*, and for leaders, *The Girl Scout Leader*, each a monthly publication The budget for the year 1930 totaled \$1,292,550 The 1929 national convention was held November 5-9, in New Orleans The officers elected for 1930 were Mrs Herbert Hoover, honorary president Mrs William H Hoffman, president, Mrs Arthur O Choate, first vice president, Mrs Vance C McCormick, second vice president, Mrs Frederick Edey, third vice president, Mrs A Clifford Shinkle, fourth vice president, Mrs William Merrill Chester, fifth vice president, Mrs Owen D Young, sixth vice president, Mrs Barrett Wendell, seventh vice president, Mrs Herbert H Lehman, eighth vice president, Mrs Nicholas F Brady, chairman of the board of directors, Mrs Edgar Rickard, treasurer, Mrs Julius H Barnes, controller, Mrs Jane Deeter Rippin, secretary, Mrs Chauncey Belknap, counsel The national headquarters are at 670 Lexington Avenue, New York City

GISMUNDITE See MINERALOGY

GLACIERS See GEOLOGY

GLASS. See CHEMISTRY, INDUSTRIAL

GODDARD ROCKET See PHYSICS

GODIVA, LADY, ANNIVERSARY See CELEBRATIONS

GOITRE. Statistics collected during the World War were of value in respect to a consideration of the distribution of endemic goitre inasmuch as they dealt with 2,500,000 men of age for military service Great differences were seen in the percentages of goitre incidence varying from as low as 0.25 per cent to as high as 26.9 per cent Aside from the preceding, there have been many reports on the incidence of goitre in school children, some of them since the War Olesen published figures in *the Public Health*

Report, No 44, June 21, which, as might be expected, show a marked parallelism with those in the recruits. Without going into the geographic distribution of the disease by States, it is of interest to note that the largest group of patients comes from sparsely settled communities having more than three people to the square mile. The next largest comes from the mountainous regions. Rarest in the incidence are the agricultural and maritime sections of the country. Urban and rural regions in general were on a par with each other. These figures may show that wholesale prophylaxis is not invariably easy to carry out and must be individualized for each community. It would, for example, be difficult to apply it to the members of the group which inhabit the sparsely settled sections. In other cases, it would be possible to overdo the prophylaxis.

GOLD. The U S Bureau of the Mint, with the cooperation of the U S Bureau of Mines,

UNITED STATES GOLD PRODUCTION, 1929

States	Ounces	Value
Alaska	876,517	\$ 7,783,000
Alabama	10	200
Arizona	153,465	1,172,400
California	401,827	8,306,500
Colorado	215,612	4,457,100
Georgia	58	1,200
Idaho	19,640	406,000
Montana	54,755	1,111,900
Nevada	158,041	3,267,000
New Mexico	32,716	676,300
North Carolina	49	1,000
Oregon	17,444	360,600
Pennsylvania	726	15,000
South Dakota	308,818	6,379,700
Tennessee	745	15,400
Texas	1,316	27,200
Utah	243,316	5,029,800
Washington	3,652	75,700
Wyoming	39	800
Philippine Islands	139,470	2,883,100
Total	2,128,027	\$43,990,200

issued the accompanying table on the preliminary estimate of refinery production of gold in the United States during the calendar year 1929 based on arrivals at United States Mints and Assay Offices and at private refineries.

This preliminary estimate of \$43,990,200 in-

WORLD PRODUCTION OF GOLD, 1928

[From the report of the Director of the Mint]

Country	Calendar year 1928—subject to revision		
	Kilos, fine	Ounces, fine	Value
North America			
United States	66,710	2,144,720	\$44,335,300
Canada	58,805	1,890,592	39,082,005
Mexico	21,745	699,102	14,451,721
Total	147,260	4,734,414	97,869,026
Central America and West Indies *	1,881	60,469	1,250,000
South America			
Argentina *	30	988	20,000
Bolivia	16	506	10,460
Brazil	3,114	100,115	2,069,561
Chile	896	28,806	595,473
Colombia	1,254	40,323	833,555
Ecuador	2,319	74,572	1,541,540
Guiana—			
British	166	5,325	110,086
Dutch	171	5,498	113,654
French	1,414	45,460	939,742
Peru	2,081	66,904	1,383,028
Venezuela	1,501	48,257	997,561
Total	12,982	416,734	8,614,660

WORLD PRODUCTION OF GOLD, 1928—(Continued)

Country	Calendar year 1928—subject to revision		
	Kilos, fine	Ounces, fine	Value
Europe			
Austria	10	321	6,636
Czechoslovakia	216	6,944	143,545
France	1,400	45,010	930,439
Germany	180	5,786	119,607
Great Britain	4	129	2,667
Greece	15	482	9,964
Italy	50	1,607	33,220
Jugoslavia	440	14,146	292,424
Rumania	1,948	62,628	1,294,636
Russia	37,325	1,200,000	24,806,201
Spain	23	726	15,000
Sweden	435	14,000	289,406
Total	42,046	1,351,779	27,943,745
Asia			
British India	11,697	376,058	7,773,809
China	3,110	100,000	2,067,183
Chosen (Korea)	5,175	166,380	3,439,380
Dutch East Indies	3,429	110,242	2,278,904
Federated Malay States	582	18,693	386,419
Indo China	8	257	5,313
Japan	9,606	308,828	6,388,938
Philippine Islands	3,317	106,641	2,204,465
Sarawak	6	120	4,174
Taiwan	457	14,693	302,781
Turkey	28	900	18,905
Total	37,415	1,202,887	24,865,861
Oceania			
Australia—			
New South Wales	399	12,831	265,240
Northern Territory	3	100	2,067
Queensland	413	13,277	274,460
South Australia	17	548	11,328
Victoria	1,055	33,917	701,127
West Australia	12,237	394,405	8,182,403
Tasmania	135	4,330	89,709
Papua	1,729	55,573	1,148,895
New Zealand	3,692	118,714	2,454,036
Total	19,680	632,695	13,078,975
Africa			
Abyssinia	284	9,131	188,754
Belgian Congo	4,296	138,116	2,855,111
Bechuanaland	54	1,748	36,134
British West Africa (Gold Coast, Ashanti, Nigeria)	4,911	157,901	3,264,103
Egypt	2	64	1,323
French West Africa	213	6,848	141,561
Kenya Colony	25	814	16,827
Madagascar	195	6,269	129,592
Portuguese East Africa	132	4,239	87,628
Rhodesia—			
Northern	19	602	12,444
Southern	17,920	576,112	11,909,292
Southwest Africa	17	542	11,204
Swaziland	11	347	7,173
Sudan	181	5,835	120,620
Tanganyika	399	12,828	265,178
Transvaal, Cape Colony, and Natal	322,061	10,354,264	214,041,633
Total	350,720	11,275,660	223,088,577
Total for world	611,964	19,074,638	406,710,864

* Estimate based on United States imports of ore and bullion

† Estimate based on other years' production

‡ Amount exported.

§ 1927 figures

dictated a reduction of \$2,175,200 in the output of gold as compared with 1928. The year of largest output, 1915, produced \$101,035,700 gold. As will be seen from the table, California led in gold production with a valuation of \$8,306,500,

Alaska being a close second with \$7,783,300 South Dakota was third with \$6,379,700 and Utah fourth with \$5,029,900.

As far as statistics available at the end of 1929 indicated, the gold production of the world was practically unchanged in 1929, as compared with 1928. The failure of the gold mines to produce sufficient of the precious metal to meet the rapidly expanding monetary demands of the world had created a fairly serious situation. One suggested remedy was the restriction of the amount of gold allowed to be used in the arts, thus turning a larger percentage into government channels. The accompanying table indicates production by the several important countries in 1928 and 1929.

Country	1928	1929
United States	2,194,295	2,128,027
Transvaal	10,354,264	10,414,066
Canada	1,891,050	1,914,920
Mexico	699,102	680,000
South America	416,734	530,000
Rhodesia	576,000	560,000
Western Australia	393,000	480,000
Others	3,150,198	3,050,000
Total	19,652,711	19,674,638

Although many digres had been sung for the Witwatersrand, the great gold-producing centre of the Transvaal in South Africa, the area continued to set a new record each successive year. This process would not continue indefinitely, but with the development of three new mines in the eastern section—which should be producing in 1931—a serious decline within the next decade appeared unlikely. The United States, on the other hand, would probably lose its rank of second to Canada within three or four years. The rapid advance in the standards of living in the United States, without a corresponding increase in the return to the gold miner, was the cause of the decline. The percentage of gold produced by copper and lead mines as a by-product had been increasing, so that the United States gold-mining industry had been reduced far more than statistics would indicate. Canada has gone ahead rapidly in the last few years, too rapidly according to some. In 1929 the gold production was coming largely from two districts, Porcupine and Kirkland Lake, both in Ontario. Possibilities of expansion much beyond their present output hardly could be expected at these two camps and the hope for developing a large gold production from Canada must rest with recent discoveries in other areas. A 10 per cent increase over the present rate within the next two or three years could be safely predicted, however.

The principal chances of a large increase apparently must rest in Oceania, where a gold field of magnitude had been discovered in New Guinea and a large mine, Wiluna Gold, was being equipped for production in Western Australia. Transportation facilities were the greatest handicap to the development of the New Guinea field, which was described by Leslie Urquhart, prominent English financier and mining magnate as the most important discovery since the Witwatersrand.

For Movement of Gold, see FINANCIAL REVIEW. **GOLDBERGER**, JOSEPH, American public-health official and research worker, died in Washington, D. C., Jan. 17, 1929. He was born in Austria-Hungary, July 16, 1874, and came to New York with his parents when he was 6 years old. He was educated at the College of the City

of New York and received his medical training at the Bellevue Hospital Medical College, after which he was resident physician at Bellevue Hospital, 1895-97. Following two years of private practice in Wilkes-Barre, Pa., he was commissioned assistant surgeon in the U. S. Public Health Service, becoming surgeon in 1912. At first, he was assigned to immigrant stations, but in 1904 he was transferred to the Hygienic Laboratory in Washington, for special research work. Dr. Goldberger made important investigations in connection with the study of typhatodes, stry itch, yellow fever, dengue fever, measles, typhus fever, cholera media, diphtheria carriers, and influenza. His greatest contribution, however, and the one with which his name is internationally associated, was the discovery of the cause, cure, and prevention of pellagra. By experiments conducted in the rural districts on the South, where the diet was restricted, he learned that lack of fresh proteins caused pellagra, and that milk and fresh meat would furnish the necessary vitamin preventive and cure, which he called P-P. Continuing his researches, he discovered a cheaper source of this vitamin in fresh or dried yeast. This discovery was believed to have saved hundreds of lives during the Mississippi floods of 1927, when the Red Cross sent supplies of yeast to the people of that devastated region. Dr. Goldberger often risked his life in the course of his experiments.

GOLD COAST. A colony on the Gulf of Guinea in Africa belonging to Great Britain, bounded by the French Ivory Coast on the west, the French Sudan on the north, Togoland on the east, and extending on the south for 334 miles along the Gulf of Guinea, comprising, in addition to the colony proper, Ashanti and the Northern Territories. The area of the three divisions is estimated at 80,000 square miles, population at the census of 1921, 2,078,043, of whom 2165 were Europeans. The capital and chief town is Accra, with a population of 38,000. Other large towns are Cape Coast (15,000), Sekondi (10,000), and Keta (10,000). In 1927 there were 22 government schools and 234 assisted schools, which are under the control of various missions. The average attendance during 1927 at the primary and secondary schools was 29,640. There were also a large number of unassisted primary schools supported by the religious denominations, and University College for secondary education at Achimota.

Among the staple products, which also comprise the chief exports, are cocoa, palm oil, kola nuts, palm kernels, lumber, india rubber, manganese, gold, and diamonds. The imports in 1927-28 were valued at £13,770,542, the exports, at £14,350,355. The total value of the mineral products exported during the fiscal year ended Mar. 31, 1927, was £1,938,870—£803,369 for gold bullion, £715,382 for manganese ore, and £420,119 for diamonds. Revenue for the year ending Mar. 31, 1928, totaled £5,217,639, and expenditure, £4,714,947, both figures representing substantial increases over the figures for the previous year. The public debt on Mar. 31, 1928, was £11,791,000. In 1929 there were 394 miles of railway open to traffic and another hundred miles was under construction. Main roads extended for 1530 miles and secondary roads for 3157 miles in the Gold Coast, Ashanti, and the Northern Territories. Telegraph and telephone systems connected the principal towns. A total of 4,896-

400 tons of shipping, 2,835,491 tons of which were British, entered and cleared the ports during 1927 The Harbor of Takovadi, which was opened in March, 1928, offered the only complete shelter for ships of over 30 feet draught between Sierra Leone and Nigeria

Ashanti, annexed by Great Britain in 1901, is under the Governor of the Gold Coast, although it has its own local laws and ordinances The population at the census of 1921 was 407,000 of whom 400 were Europeans Kumasi, with 20,000 inhabitants, is the chief town In 1927 there were 1067 pupils in the government schools and 3210 in the mission schools The forests in the western part are rich in mahogany, cedar, and other valuable woods, and in trees that yield rubber, oil and gum copal, and fruits The cultivation of cacao and rubber in plantations is being extended There is considerable gold mining The local receipts in 1927-28 were £159,646, and local expenditures, including railway, posts, and telegraphs, were £377,863.

The Northern Territories, constituted a British protectorate in 1901, also are under the Governor of the Gold Coast but locally administered by a high commissioner, with his headquarters at Tamale Area, 35,000 square miles, population at the census of 1921, 527,914, of whom only 49 were Europeans Navajo is the chief town with a population of about 15,000 The chief crops are yams, millet, maize, rice, Guinea corn, and tobacco Local revenue in 1927-28, £22,286, expenditure, £111,868 Governor of the Gold Coast in 1929, Sir Alexander R Slater, (Chief Commissioner of Ashanti, John Maxwell, (Chief Commissioner of Northern Territories, Maj A H C Walker-Leigh

GOLDER, FRANK ALFRED An American historian, educator, and director of the Hoover War Library, died at Palo Alto, Calif., Jan 7, 1929 Born in Russia, Aug 11, 1877, he was brought to the United States when 3 years old After being graduated from Harvard in 1903, he studied in Paris and Berlin, and returning to Harvard, received the PhD degree in 1909 He taught history at the University of Missouri (1908-09), at Boston University (1909), the University of Chicago (1910), and at the State College of Washington (1910-14) He next did research work in the Russian archives under the auspices of the Carnegie Institution Returning to the State College of Washington in 1915, he remained with that institution until 1920, also continuing his investigations in Russia for the Carnegie Institution and the American Geographical Society in 1917 He served on Colonel House's staff of inquiry (1917-19), and did special work in Europe for the American Relief Administration (1920-23) Appointed assistant professor of history at Stanford University in 1921, he was made professor and director of the Hoover War Library in 1921, making valuable contributions to that collection until his death Dr Golder wrote extensively on relations between Russia and America including the following *Russian Expansion on the Pacific* (1914); *Guide to the Materials for American History in the Russian Archives* (1917); *Berng's Voyages* (1922); *John Paul Jones* (1927), and, with L. Hutchinson, *On the Trail of the Russian Famine* (1927)

GOLF Besides the fact that each of the major tournaments of 1929 brought to light some thrilling event, the 1929 season was remarkable for the reason that two of the biggest United

States tourneys were played on the Pacific coast The Amateur and the Professional Golfers of America tests were both contested in California The greatest happening of the golf season in all likelihood was the elimination of Robert Tyrre Jones of Atlanta in the first round of the Amateur championship at Pebble Beach, Del Monte, California, in September by Johnny Goodman, an Omaha unknown It was over the 18-hole route after Jones had flashed some unbeatable rounds in the preliminary play and had shattered the course mark on two occasions After Jones left the field, the glamour departed and the semi-finals found four elderly golfers—as the game goes—fighting for Jones's title Harrison Johnston, Milwaukee player, defeated Dr Willing of Portland, Oregon, in the final match and grasped the honors

Three months before, however, Jones was at the top of his game and defeated a fine international field of amateurs and professionals in the National Open at the Winged Foot Golf Club, Mamaroneck, N Y, in June In the early rounds, Jones looked like a certain winner, but a heavy downpour on the day before the last round worked havoc with his game and he was forced to sink a long putt on the final green to tie the professional, Abe Espinosa, for the title The play-off on the following day was the scene of one of the greatest debacles in the history of the game Jones smothered his opponent and in thirty-six holes finished with a margin of twenty three strokes

Glenna Collett, defended her women's title at Detroit by playing some remarkable golf on three occasions when she seemed destined for defeat Leo Diegel, Agua Caliente professional, was another who repeated his conquests for the second year winning both his P G A honors and his California Open laurels The British amateur, which had fallen to an American golfer only once, was won by a native, the giant Cyril Tolley, while Walter Hagen took the British open for the second consecutive year Maurice J McCarthy, Jr, Georgetown University golfer, did not defend his intercollegiate crown and this tourney, played at the same time in June as the National Open at Deal, N J, went to T Aycock of Yale Princeton University garnered team honors McCarthy was victorious in the Metropolitan Championship, while Miss Maureen Orcutt captured the women's metropolitan honors Other tournament winners were C Kauffman, Public Links Championship, Aubrey Boomer, French Open, Eddie Hield, Canadian Amateur In the Ryder Cup matches with England at Muirfield, the British downed the United States professionals, 7 to 5

GOOD, JAMES WILLIAM An American lawyer, former Congressman, and Secretary of War in President Hoover's cabinet, died in Washington, D C, Nov 18, 1929 He was born near Cedar Rapids, Iowa, on Sept. 24, 1866, and was graduated in 1892 from Coe College and in 1893 from the law department of the University of Michigan Admitted to the bar the same year, he began the practice of law in Indianapolis, Ind He returned to Cedar Rapids becoming city attorney (1906-08), and was elected in 1909 to the Sixty-first Congress as a Republican Representative from the fifth district of Iowa serving until 1921 While in Congress, he was actively identified with the budget system, as one of its principal organizers He was chairman of the appropriation com-

mittee of the House. During the War, he offered a resolution which effected the rise in a soldier's pay from \$15 to \$30 a month, but vigorously opposed the soldiers'-bonus bill after the War. He resigned from the House to resume law practice in Chicago as a member of the firm Good, Bobb & Weacott. In March, 1929, he became Secretary of War in President Hoover's cabinet. In the few months he served in that capacity, he began a study of the military organization of the United States with a view to reducing expenses.

GORDON, THE REV GEORGE ANGELO American Congregational clergyman, died Oct. 25, 1929, in Brookline, Mass. He was born in Aberdeenshire, Scotland, Jan. 2, 1853, and after a common-school education in Insh, came to the United States in 1871. He was graduated from the Bangor Theological Seminary in 1877, was ordained in the Congregational ministry in that year, and was pastor in Temple, Me., 1877-78. He then entered Harvard, where he was graduated in 1881. After serving as pastor from 1881 to 1883 in Greenwich, Conn., he accepted a call to the Old South Church of Boston, where he served with distinction until his retirement in 1927. In addition to his work as pastor, Dr. Gordon was university preacher at Harvard (1886-90 and 1906-09) and at Yale (1888-1916), Ingersoll lecturer at Harvard (1896), lecturer at Lowell Institute (1900), Lyman Beecher lecturer (1901), and Nathaniel W. Taylor lecturer at Yale (1908), and overseer at Harvard University 1897-1916 and after 1925. Among his best-known books are *The Witness to Immortality* (1893), *The Christ of Today* (1895), *Immortality and the New Theology* (1897), *The New Epoch for Faith* (1901), *Ultimate Conceptions of Faith* (1903), *Through Man to God* (1906), *Religion and Miracle* (1909, rev. ed., 1910), *Revelation and the Ideal* (1913), *Aspects of the Infinite Mystery* (1916), *Humanism in New England Theology* (1920), *My Education and Religion* (1925).

GORDON BENNETT CUP COMPETITION

This annual international competition for aerostats or freely flying balloons is described under **AERONAUTICS**.

GORITZ, OTTO A German dramatic baritone, died in Hamburg Apr. 13, 1929. He was born in Berlin, June 8, 1873. He received his entire musical education from his mother, Olga Nielitz, and made his debut as Matteo in Aubert's *Fra Diavolo* at the Hoftheater in Neu-Strelitz (Oct. 1, 1895). At the conclusion of a three-year contract there, he was two years at the Stadttheater in Breslau, and from 1900-03 he was engaged at the Stadttheater in Hamburg. During 1903-16 he was one of the principal baritones at the Metropolitan Opera House, where he made his American debut as Klingsohr in the first American production of *Parafal* (Dec. 24, 1903). During the thirteen years of his engagement he sang this rôle no less than 57 times. Scarcely less famous was his impersonation of Beckmesser in *Die Meistersinger*. His voice, of large volume and sympathetic quality, had an unusual range of two and a half octaves, while his histrionic powers were of the first order. At the American premières he created the rôles of Moriccio in d'Albert's *Tiefeland* (1908), Kezal in Smetana's *Verkaufte Braut* (1909), Spielmann in Humperdinck's *Königskinder* (1910), Lampe in Blech's *Lersiegel* (1912), and Ochs von Lerchenau in Strauss's *Der Rosenkavalier* (1913).

GOTO, COUNT SHIMPEI Japanese statesman, died Apr. 13, 1929, in Kyoto, Japan. He was born in 1856 in Iwate-Ken, Japan, and studied medicine, going to Munich for research. He was appointed chief of the Nagoya Hospital, where he remained until 1878. In the War with China (1894-95), he was Sanitary Commissioner of the forces, winning recognition because of his success in preventing the spread of disease among returned soldiers. He was appointed director of the Civil Administration Bureau in Formosa in 1898, a position which he filled so successfully as to be made a baron in recognition of his services. He was elected the first president of the South Manchurian Railway in 1906. He became Minister of Communication in 1908 and also Deputy-President of the Colonial Bureau. In 1920 he was elected Mayor of Tokyo, where he conducted a campaign against what he considered to be the evils of the city's administration. In 1922 he was created viscount and in 1926, a count. Count Goto's independence in the conduct of his affairs as statesman brought him severe criticism, as well as admiration.

GOUCHEE COLLEGE. A nonsectarian college for women in Baltimore, Md., founded in 1885. The enrollment for the first semester of the year 1929-30 was 930, distributed as follows: First-year students, 261, second-year, 240, third-year, 219, fourth-year, 206, graduate, 1. The faculty had 103 members. The endowment funds of the college amounted to \$2,390,647. The library contained 49,363 volumes. Acting President, Hans Froelicher, Ph.D., elected after the death of Dr. William W. Guth.

GOUIN, GÉORGE, SIR LOMFR Canadian lawyer and statesman, died May 28, 1929, in Grondines, Province of Quebec, where he was born of French parents on Mar. 19, 1861. He was educated at Sorel and Lewis colleges, and Laval University, and in 1884 he was admitted to the bar of Quebec. From 1897 to 1908, he was a member of the Provincial Parliament for Montreal, during which time, in 1898, he was also a member of the Public Instruction Council and, in 1900, an alderman of the City of Montreal. He was Minister of Colonization and Public Works in the Province of Quebec also in 1900. From 1905 to 1920, he was Prime Minister and Attorney-General of Quebec, and during 1921-24 he was Minister of Justice in Quebec, resigning because of ill health. In January of 1929, he was made Lieutenant-Governor of Quebec. He was made an officer of the Legion of Honor in 1907. He was knighted in 1908 during the Quebec Tercentenary Celebration, and was created Knight Commander of St. Michael and St. George in 1913.

GRÄDENER, grä'de-nér, HERMANN An Austrian composer, died in Vienna, September 17. He was born in Kiel, May 8, 1844. He received his musical education practically from his father, musical director at the University of Kiel, but also attended the Vienna Conservatory for a short time. In 1864 he joined the orchestra of the Vienna Hofoper as violinist, and for 35 years was professor of composition at the Vienna Conservatory. Among his pupils were Franz Schreker, Erich Korngold and Oscar Straus. His compositions are distinguished for solid workmanship and rare perfection of form. Besides a great deal of chamber music, he wrote a symphony in C minor, a concerto for piano, one for cello and one for violin, an important choral work with orchestra, *Der Spielmann*.

GRAFLY, CHARLES. An American sculptor, died May 5, 1929. He was born in Philadelphia Pa., Dec 3, 1862, and after studying at the Pennsylvania Academy of Fine Arts and in Paris under Chapu and Dampf, he returned to Philadelphia and established a studio. In 1892 he became an instructor in sculpture at the Pennsylvania Academy of Fine Arts, and in 1917 instructor at the School of the Boston Museum of Fine Arts. His busts, life-sized figures, and ideal figures and groups usually in bronze, are well known, particularly his "Fountain of Man" and the "Symbol of Life." Those in public collections or as memorials include "Mauvais Préage," in the Detroit Museum, "Vulture of War," and "Truth," in the St. Louis Museum; "England" and "France," on the New York Customhouse, a bust of Dædalus and a nude, "In Much Learning," Pennsylvania Academy, and the General Reynolds Smith Memorial, Philadelphia. In recognition of his work, which is characterized by restraint and sureness, he received numerous medals of award and honors from many societies.

GRAHAM LAND. See FALKLAND ISLANDS.

GRAIN See AGRICULTURE, RYE; WHEAT, ETC.

GRAIN CORPORATION, NATIONAL FARMERS' See COOPERATION.

GRAM, GREGERS WINTHER WULFBERG Norwegian jurist and statesman, died Aug 1, 1929, in Oslo. He was born in Moss, Norway, was educated at Christiania (now Oslo) and Paris, and began the practice of law. From 1876 to 1882, he was a Norwegian member of the International Tribunal in Egypt and the following year was Governor of Nordlands Amt. During 1884-89 he was justice of the Supreme Court, to which he returned in 1891. He was Minister of State at Stockholm in 1889-91 and from 1893 to 1898. In 1892-93 he was a member of the international court of arbitration which met in Paris to settle the Bering Sea controversy between Great Britain and the United States. He was appointed a member for Norway to the Court of Arbitration at The Hague in 1910, serving until 1906, and again serving from 1912 to 1918. He was referee (1903) in a case of arbitration between Germany, France, and England on one side, and Japan on the other in regard to taxes for legation houses at Tokyo, and in 1909 he was appointed to the court of arbitration between Norway and Sweden for the settlement of reindeer questions. He became a member of the Institut de Droit International in 1904. In 1915 he was again an umpire, this time in a dispute between the United States and Italy; and in 1919 he was chief arbitrator of the commission on Moroccan claims. He was a member of the organization committee of the Permanent Court of International Justice of the League of Nations.

GRAND ARMY OF THE REPUBLIC, THE. A patriotic order formed in 1866 in Decatur Ill., among a number of former soldiers who had served in the Civil War. The first post (No. 1) was organized in Springfield, Ill., receiving its charter from Dr. B. F. Stephenson who had been active in securing the formation of the organization and who became the Department Commander of the States. The purpose of the society is to "enjoy a companionship made sacred by common sufferings and sacrifices," its corner stones, "Fraternity, Charity, and Loyalty," demand the care and protection of sick and helpless comrades and their widows and orphans; the upholding of

all comrades in their worthy endeavors, and loyalty to the flag and laws of the Republic. Auxiliary orders are the Woman's Relief Corps, Ladies of the G. A. R., Sons and Daughters of Union Veterans, and their auxiliaries. In 1929 there were 24,662 active local posts with a membership of 32,592.

The sixty-third national encampment was held in Portland, Me., in September, 1929, while Cincinnati, Ohio, was chosen for the 1930 encampment. Delegates to the national encampment are chosen by the department encampments and those to the department encampments, held in June, by the posts. The officers elected for 1929-30 were Commander-in-chief, Edwin J. Foster, Worcester, Mass., senior vice commander-in-chief, Charles E. Nason, Portland, Me., junior vice commander-in-chief, James W. Shields, Boise, Idaho, surgeon-general, Edward C. Cowan, Crawfordsville, Ind., chaplain-in-chief, the Rev. J. King Gibson, Dayton, Ohio, trustee of the permanent fund, Louis F. Arensberg, East Millsboro, Pa., quartermaster-general, Cola D. R. Stowits, Buffalo, N. Y., and adjutant-general, Wilfred A. Wetherbee, Boston, Mass. National headquarters are Room 27, State House, Boston.

GRAPEFRUIT. See HORTICULTURE.

GRAPES. See HORTICULTURE.

GRAPHITE. During 1928 the natural graphite sold or used by producers in the United States amounted to 5611 short tons valued at \$297,093, being divided between amorphous graphite, 2094 tons valued at \$43,320, and crystalline graphite, 2617 tons valued at \$253,773. The States producing crystalline graphite in 1928, in the order of their importance, were Texas, Alabama, New Jersey, and Georgia, while Rhode Island, Michigan, and Nevada produced amorphous graphite. Natural graphite is used chiefly in the manufacture of foundry facings, pigments and paints, crucibles, pencils and crayons, commutator brushes, stove polish, lubricants, retorts, and batteries. The United States also has an important industry in the manufacture of artificial graphite which since 1920 has exceeded annually the output of domestic natural amorphous and crystalline graphite. In 1927, the last year for which figures were available from the Acheson Graphite Company, which manufactures the artificial material at its Niagara Falls, New York, plant, 12,257,239 pounds were produced, although in 1923 the output had amounted to 26,761,015 pounds.

In addition to the natural production and the artificial material the United States in 1928 imported 17,842 short tons valued at \$801,559. This material came largely from Madagascar, Ceylon, Italy, and Japan, although the original source of the material was difficult to ascertain on account of various transshipments. In 1928 Czechoslovakia, with 32,332 metric tons, was the world's leading producer of natural graphite, followed by Austria with 24,226 tons, Chosen (Korea) with 22,830 tons, Germany with 17,464 tons, Ceylon with 14,576 tons, and Madagascar with 13,397 tons.

In 1929 there were few developments of note in the graphite industry, although there was an increased demand for the product. American operators with a production of from 15 to 19 per cent of the domestic supply were asking for an increased tariff, while graphite consumers advocated lower duties. In 1929 Alabama was regarded as the leading graphite producing State,

while Ceylon, Madagascar, Mexico, Chosen, and Canada were again the principal producing countries. In 1929 Madagascar was believed to have shipped about 7000 tons to England, 2500 to 3000 tons to the United States, 1500 to 2000 tons to both France and Germany, and 1000 tons to Italy. In Mexico production continued normal, while in Canada the Black Donald Graphite Company, the principal producer, was idle during most of the year on account of flooded mines. Graphite was reported discovered in Namaqualand, South Africa. Imports of graphite into the United States in 1929 amounted to 23,961 tons valued at \$1,065,186.

GRAVITATION. See **PHYSICS**

GRAVITATIONAL CONSTANT. See **PHYSICS**

GREAT BRITAIN. UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND. A constitutional monarchy comprising England, Scotland, Wales, Northern Ireland, the Channel Islands, and the Isle of Man Capital, London, ruling sovereign in 1929, George V. The term Great Britain literally applies only to the island including England, Scotland, and Wales, but is often extended to include the other units of the United Kingdom. The British Empire comprises the United Kingdom, India, the dominions of Australia, Canada, Irish Free State, Newfoundland, New Zealand, and South Africa, and the various colonies, protectorates, dependencies, and other territories subject to the ultimate control of the British Parliament.

AREA AND POPULATION. The area of England, Scotland, Wales, the Isle of Man, and of the Channel Islands is 89,041 square miles, the area of Ireland, 32,586 square miles. (See **IRELAND**, **NORTHERN**, and **IRISH FREE STATE**.) The estimated population of England, Scotland, and Wales in 1928 was 44,375,000. For details of the census of 1921, see **NEW INTERNATIONAL YEAR BOOK** for 1923 and preceding years. The accompanying table from the *Statesman's Year Book* for 1929 gives a comparison of the estimated population (exclusive of army, navy, and merchant seamen abroad).

Year (30 June)	England and Wales	Scotland	Total of Great Britain
1914	46,960,684	4,747,167	41,707,851
1923	38,403,000	4,901,100	43,304,100
1924	38,716,000	4,881,617	43,627,617
1925	38,890,000	4,893,032	43,783,032
1926	39,067,000	4,897,000	43,964,000
1927	39,290,000	4,895,000	44,185,000
1928*	39,482,000	4,893,000	44,375,000

* Provisional figures

The movement of population in England and Wales in 1928 was Births, 660,207; deaths, 620,100. For Scotland, the corresponding figures were 96,815; 65,263, and 32,955. In 1928 the number of British subjects emigrating to countries outside of Europe totaled 136,831 and the number of persons of British nationality who immigrated to Great Britain from non-European countries was 59,105. British emigrants in 1928 went mainly to British North America, 54,709, Australia, 28,714, the United States, 22,235, British South Africa, 7005; India and Ceylon, 6502, New Zealand, 4975. In 1927 the total British emigration was 153,505. The net migration in 1928 was 77,727 and in 1927, 97,790.

The British birth rate in 1929 fell to its lowest level, amounting to only 16.3 per 1000 inhabit-

ants, or 0.3 less than in 1927, when the previous low record was established. In the same year, the death rate rose to 13.4 per 1000, or 1.7 per 1000 above the 1928 rate.

The population classified as urban totaled 30,035,417 in 1921, or 79.3 per cent of the total. In spite of a loss of more than 1,000,000 men in the World War and of steady emigration, the population in 1928 was 2,061,000 greater than in 1914 and 405,000 greater than in 1926. The birth rate, which was 16.7 per thousand in England and Wales in 1928, has fallen steadily since the peak of 36.3 per thousand in 1876. The birth rate for the United Kingdom in 1927 of 17.1 per thousand was lower than that of France. The population of Scotland has shown a decrease since 1926. In 1928 the natural increase in the population of England and Wales was only 5 per thousand. Sir Charles Newman, chief medical officer of the Ministry of Health, estimated that the country was within sight of a stationary population. The density of the population in England, 701 to the square mile, is the highest in Europe.

Greater London, the largest city in the world, had a population in 1921 of 7,480,201 on the 443,440 acres covered by the metropolitan and city police districts. Registration London which coincides with the administrative county and nearly coincides with the London parliamentary boroughs, had a population of 4,484,523, with an area of 74,850 acres. The estimated population of Greater London in 1928 was 7,849,000. Birmingham, the second city of England, had a population in 1921 of 919,441 (estimated, 1928, 968,600). Liverpool continued to stand third, with 802,940 in 1921 (estimated, 1928, 872,900), and Manchester, fourth with 730,307 in 1921 (estimated 1928, 755,900). Other large cities with their populations are Sheffield, 490,639 in 1921 (estimated in 1928, 515,400), Leeds, 458,232 in 1921 (estimated in 1928, 476,500), Bristol, 376,975 in 1921 (estimated in 1928, 390,400). Glasgow is the largest city in Scotland with a population of 1,034,174 in 1921 (estimated in June, 1928, 1,061,900), Edinburgh is next with 420,264 in 1921 (estimated in June, 1928, 429,000). The chief city of Wales is Cardiff, which had a population of 200,184 in 1921 and an estimated population of 226,800 in the summer of 1928. The census of 1921 did not include Ireland. For the populations of Australia, Canada, India, and other British possessions, see articles under those titles.

EDUCATION. Elementary instruction is free and compulsory between the ages of 5 and 14. In 1929 the Labor government announced its intention of increasing the compulsory age limit to 15 years. In England and Wales in 1927-28, there were 21,332 schools, including public elementary, special, and certified efficient. The number of public elementary schools on Mar. 31, 1927, was 20,084 with 5,570,206 pupils on the registers and 165,010 teachers. There were also 576 special schools for the blind and deaf and for mentally and physically defective children, as well as 59 poor-law schools, 26 nursery schools, and 272 play centres. The number of secondary schools on the grant list in 1928 was 1329, with 377,540 pupils and 20,102 full-time teachers. In Scotland, there were 2903 primary schools with an accommodation of 865,674 pupils in 1926-27, the average number on the registers was 664,958 and the average attendance, 590,-

107. There were 18,673 certificated primary school-teachers and 50 assistant teachers. In 1926-27 there were four training centres and three training colleges with 2515 students. In 1927 there were 251 secondary schools with a total accommodation of 182,082 and an average register of 151,277. The accompanying table from the *Statesman's Year Book* for 1928 gives an estimate of the number of students and members of the teaching staff in the Universities of Great Britain in 1927-28

BRITISH UNIVERSITIES

Universities	Number of professors, etc	Number of students
England		
Oxford	228 ^a	4,417 ^b
Cambridge	346	5,475 ^b
Durham (1831)	260	1,285 ^c
London (1836)	1,089 ^a	9,468 ^{c,d}
Manchester (1880)	268	2,466
Birmingham (1900)	200	1,500
Liverpool (1903)	389	2,038
Leeds (1904)	315	1,415
Sheffield (1908)	170	2,159 ^d
Bristol (1908)	187	892
Reading (1926)	138	1,561
Total for England	4,590	32,678
Scotland		
St Andrews (1411)	116	700
Glasgow (1450)	360	5,210
Aberdeen (1494)	147	1,128
Edinburgh (1582)	363	4,085
Total for Scotland	886	11,323
Wales (1907)	363	1,526
Totals of above	4,839	47,527

^a Chancellors, 227 university professors and readers, and 2,411 teachers.

^b Undergraduates

^c Internal students. In addition, there are external students, i.e., matriculated students who have not taken a degree nor been registered as internal students. The number of these is not ascertainable but is probably greater than 9000.

^d Includes evening students

^e Excluding college tutors

At most of the universities and university colleges, women students are admitted on equal terms with men. There are, however, several colleges exclusively for female students, Bedford (62 teachers, etc., 600 students), Royal Holloway (35 teachers, 200 students), and Westfield (16 teachers, etc., 147 students), in London, Newnham (11 teachers, etc., 277 students) and Girton (11 teachers, etc., 263 students), in Cambridge, Lady Wrentham Hall (8 teachers, etc., 111 students), St. Anne's (10 teachers, etc., 156 students), St. Hugh's College (9 tutors, 150 students), St. Hilda's College (11 teachers, 108 students), in Oxford. The Society of Oxford Home Students numbered 215 students in 1928. Women were first admitted to membership in Oxford University, and to take degrees, in October, 1920.

AGRICULTURE There were 14,258,000 acres of arable land, or 24 per cent of the total area of the United Kingdom, including Northern Ireland, under cultivation in 1928, in addition to 33,613,000 acres of permanent grass and pasture, and 301,000 acres of orchards, shrubs, and bushes. Crops were above the average in both yield and quality in 1928, although there was a further decrease in the acreage sown and market prices were not satisfactory. The wheat acreage in 1928 was 15 per cent less than in 1927, while the barley area showed 11 per cent increase for the year. The barley and oats crops were considerably larger than in 1927, as were the maize and potato crops. The wheat yield was smaller. The acreage and production of the principal crops in the United Kingdom, including Northern Ireland, in 1927 and 1928, are shown in the accompanying table.

UNITED KINGDOM CROP AREAS AND PRODUCTION

Crop	Area ^a		Production ^b	
	1927	1928	1927	1928
Wheat . . .	1,709	1,459	55,777	49,761
Barley . . .	1,168	1,299	44,537	52,451
Oats . . .	2,958	2,948	155,951	169,716
Potatoes . .	814	789	185,341	212,764
Turnips . .	1,135	1,141	15,376 ^c	17,421 ^c
Sugar beets ^d	232	177	1,753 ^e	1,449
Beet sugar ^d			209 ^e	216 ^e
Hops ^f	21	24	28,616 ^f	27,115 ^f
Hay	2,223	2,190	3,156 ^g	3,113 ^g

^a Thousands of acres

^b Thousands of units—bushels except as indicated

^c Unit, long ton

^d Exclusive of Northern Ireland

^e England and Wales

^f Unit, pound

LIVESTOCK IN 1927 AND 1928

	England and Wales		Scotland	
	June, 1927	June, 1928	June, 1927	June, 1928
	Number	Number	Number	Number
Horses	1,077,221	1,038,160	172,102	165,738
Cattle	6,275,240	6,026,441	1,210,450	1,214,348
Sheep	17,072,275	16,389,610	7,535,477	7,578,704
Pigs	2,691,514	2,971,033	196,613	195,504

During recent years, the Government has sought to aid agriculture to recover from its depressed condition. In 1928 Parliament passed the Agricultural Produce Grading and Marketing Act, exempted farm lands from local taxation, and adopted an agricultural-credits act through which short term credits became available to agriculture in 1928, and long term credits in January, 1929.

FISHERIES The quantity and value of the British fish catch for 1927 and 1928 are given in the accompanying table.

BRITISH FISH CATCH, 1927 AND 1928

	1927	1928 ^a
	Tons	Tons
England and Wales	654,301	672,407
Scotland	345,996	310,189
G B (excluding shellfish)	1,000,297	1,002,596
	£	£
England and Wales	12,769,516	13,219,338
Scotland	4,369,968	4,657,720
G B (excluding shellfish)	17,139,485	17,897,058
Value of shellfish	523,854	527,267

^a Provisional figures

MINING AND MANUFACTURING The coal industry plunged deeper into its long standing depression in 1928, which was the worst year on record, with the exception of 1920. The total output amounted to 237,800,000 tons, or 5 per cent less than in 1927, while exports were 50,055,000 tons, showing a decrease of 2 per cent in quantity and of 15 per cent in value, as compared with the previous year. The number of miners employed decreased by 70,000 to less than 900,000 during the year. Immediately after the World War, 1,300,000 miners, or one-fiftieth of the working population, were employed in the coal industry. Some slight improvement was recorded in 1929.

Efforts to reorganize the industry on a profitable basis and to stabilize production and shipments through restriction of the number of mines operating were reflected in numerous financial mergers in 1928. One company acquired control of between 80 and 85 per cent of the

country's anthracite output and a number of large units were established in the bituminous industry. Marketing agreements in some of the coal-producing regions involved restriction of output, price fixing, and the subsidizing of exports. The outputs of the principal mining and manufacturing industries in 1926, 1927, and 1928, are shown in the accompanying table.

BRITISH MINE AND FACTORY PRODUCTION, 1926-28

Product	1926	1927	1928
Coal 1000 long tons	126,279	251,232	237,768
Iron ore . . . do	4,096	11,212	6,610
Salt . . . do	1,722	1,983	
China clay, etc. . . do	1,058	1,124	
Oil shale . . . do	1,960	1,960	
Limestones . . . do	11,077	14,443	
Mandstones . . . do	3,124	3,288	
Slate . . . do	300	288	
Igneous stone . . . do	8,692	8,891	
Pig iron . . . do	2,458	7,293	6,611
Steel ingots and castings . . . do	3,596	9,097	8,525
Cotton deliveries to spinners * 1000 bales	3,082	3,010	2,904
Boots and shoes 1000 pairs	114,601	114,900	115,000
Spirits, alcoholic . . . do			
Beer 1000 proof gals	34,753	35,754	37,665
Shipbuilding, vessels launched	26,766	25,100	25,360
1000 gross tons	640	1,226	1,446

* Years ended July 31

The iron and steel industry was less depressed than the coal industry in 1928, but production of pig iron fell considerably below the level of the previous year. The machinery industries made noticeable progress, the electrical-apparatus industry was slightly less active than in 1927, and the automotive industries were only fairly well employed. The largest tonnage since 1921, aggregating 1,444,000 gross tons, was launched by the shipyards, but orders declined steadily toward the end of the year. Conditions in the cotton,

ing, the building trades and the railway service, in which wages were reduced, wage rates changed but slightly in 1928. The collapse of speculation in 1929, removed many of the difficulties in the way of a trade revival, money, in particular, becoming much cheaper. At the end of the year, trade and industry were nevertheless reported in a hesitant condition, with the unemployment situation still acute and with the prospect of higher taxation.

COMMERCE. While domestic exports in 1928 increased 2 per cent to £723,427,455, as compared with £709,081,263 in 1927, reexports of foreign and colonial produce declined in a similar ratio to £120,352,491 from the 1927 total of £122,952,839. Total exports were valued at £843,779,946 in 1928 and £832,034,102 in 1927, according to provisional figures. Among the domestic exports, coal, cotton goods, iron and steel, and tin showed declines but were more than offset by increases in exports of machinery, chemicals, slaps, leather, and rayon and wool textiles. There was a drop in the reexports of raw cotton and crude rubber, but there were increases in reexports of foodstuffs and manufactured goods.

Imports in 1928 were valued at £1,190,940,354, as compared with £1,218,341,150 in 1927, or a decline of 1.8 per cent. Imports of grain and flour, wood and timber, raw rubber, iron and steel, automotive vehicles, and rubber tires suffered the heaviest decreases and there was also a falling off in the demand for foreign coal, iron, and steel. The unfavorable trade balance of £353,160,408 (\$1,718,000,000) was smaller than in any year since 1924. The values of imports and exports (excluding the bullion, specie, and foreign merchandise transhipped under bond) for the years 1926, 1927, and 1928 are given in the accompanying table.

Board of Trade figures for 1929 showed an increase of £26,000,000 in total imports, an increase

UNITED KINGDOM FOREIGN TRADE VALUES

Year	Imports £	Domestic Exports £	Reexports £	Total Exports £
1926	1,241,361,377	653,046,909	125,494,968	778,541,877
1927	1,218,341,150	709,081,263	122,952,839	832,034,102
1928 *	1,196,940,354	723,427,455	120,352,491	843,779,946

* Provisional figures

woolen, and linen-textile industries were unfavorable, but rayon production was much larger than in the previous year and exports increased to a total of about \$50,000,000. The chemical industry experienced a better year. Steel production in the calendar year 1929 reached a post-war peak of 9,634,700 tons, the highest output since 1917.

In general, industrial profits in Great Britain fell off during the fiscal year 1928-29, as compared with the previous year, according to a survey made by the *Times Trade and Engineering Supplement*, London. Of 122 firms distributed among 13 main industries, those in 10 industries showed a lower ratio of profits to capital, three industries showed a higher ratio. The actual profits were generally above the low levels reached after the 1926 coal strike, dividends evidenced a downward trend. In 1929 industrial and trade conditions improved toward the end of the year. Exports were higher and the number of unemployed showed a decrease from 1,520,730 on Dec. 30, 1928, to 1,510,200 on Dec. 30, 1929 (see UNEMPLOYMENT). Outside of coal min-

ing, of £6,000,000 in exports of British goods, and a decrease of £10,500,000 in reexports. The respective figures were: Imports, £1,221,591,000; British exports, £729,555,000; reexports, £109,742,000. Exports of manufactured articles declined by £5,000,000, while exports of coal increased by £9,500,000. The Board of Trade estimated the credit balance for both visible and invisible trade in 1929 at £151,000,000, as compared with £152,000,000 in 1928, £114,000,000 in 1927, and an adverse balance of £7,000,000 in 1926. Invisible exports in 1929 were calculated at £517,000,000, as compared with £510,000,000 in 1928, and the net national shipping income at £130,000,000, income from overseas investment at £285,000,000, net government receipts from overseas at £22,000,000, and income from other sources at £65,150,000.

In 1929 the United States continued as the chief source of British imports, supplying 15.8 per cent of the total. Argentina and British India, the two sources next in importance, supplied 6.4 per cent and 5.4 per cent, respectively. Imports from the United States showed a slight falling off from

the previous year, due to smaller imports of wheat and flour and the elimination of coal imports.

The principal countries which supplied Great Britain's import requirements, with the values of the goods supplied, are given in the accompanying table.

Other countries taking substantial allotments of the United Kingdom's exports in 1928 were. New Zealand, £19,297,000, Italy, £14,354,000; Denmark, £9,763,000, Sweden, £9,715,000, Switzerland, £7,923,000; Norway, £7,938,000, Poland, £5,253,000, Japan, £14,539,000, Straits Settlement, £11,400,000; China, £16,718,000,

PRINCIPAL SOURCES OF IMPORTS INTO THE UNITED KINGDOM

Country of origin	Value	1926	Value	1927	Value	1928 *
		Per cent of total		Per cent of total		Per cent of total
United States	£228,890,791	18.4	£200,186,000	16.4	£188,660,000	15.8
Argentina	87,505,031	5.4	76,496,000	6.3	76,785,000	6.4
British India	87,688,068	4.6	85,840,000	5.4	64,491,000	5.4
Germany	72,609,965	5.9	59,916,000	4.9	63,781,000	5.3
France	59,176,536	4.8	63,486,000	5.2	60,648,000	5.1
Canada	64,048,440	5.2	55,152,000	4.5	57,110,000	4.8
Australia	61,030,461	4.9	52,740,000	4.3	54,469,000	4.5
Denmark	47,954,048	3.9	49,973,000	4.1	53,056,000	4.4
New Zealand	46,813,322	3.8	46,549,000	3.8	47,315,000	3.9
Irish Free State	40,865,657	3.3	49,247,000	3.6	45,144,000	3.7
Belgium	44,858,301	3.6	46,524,000	3.8	43,385,000	3.6
Netherlands	50,299,477	4.1	44,506,000	3.7	42,315,000	3.5
Egypt	25,100,537	2.0	23,681,000	1.9	26,279,000	2.2
South Africa	18,907,958	1.5	21,418,184	1.8	24,151,000	2.0
Sweden	21,425,722	1.7	25,259,000	2.1	22,045,000	1.8
Russia	24,130,217	1.9	21,052,000	1.7	21,548,000	1.7

* Provisional figures

Of total imports into the United Kingdom, 30.4 per cent came from other parts of the British Empire in 1928, 30.1 per cent in 1927, 30.3 per cent in 1926, and 32.5 per cent in 1925. As shown in the accompanying table, the import value of articles falling in the classifications of food and drink, raw materials, and manufactured articles, showed aggregate declines in 1928, as compared with the previous year, while imports of animals not for food and of parcel-post articles increased in value. Domestic exports of food, drink, and tobacco, manufactured articles, animals not for food, and parcel-post goods showed varying increases in value over the previous year, while the export value of raw materials declined, as shown

Hong-Kong, £5,476,000, Ceylon, £5,971,000, Brazil, £16,031,000, Chile, £5,129,000, Egypt, £11,186,000, Nigeria, £8,943,000, and the Gold Coast, £4,677,000. The exports and imports of gold were unusually heavy in 1928, the exports more than doubling from £29,060,010 in 1927 to £60,523,701 in 1928, while the imports increased from £32,404,512 in 1927 to £47,808,055 in 1928. Silver imports and exports also increased, imports totaling £10,200,223, as compared with £7,173,051 in 1927 and exports, £9,188,769, as compared with £7,145,577 in 1927. In 1929 imports from the United States totaled £847,979,856 and exports to that country amounted to £329,766,636,000.

FINANCE For the fiscal year ending Mar 31,

C. I. F. VALUE OF IMPORTS INTO THE UNITED KINGDOM BY CLASSES

Class	1926	1927	1928 *
Food, drink, and tobacco	£529,788,541	£588,527,000	£581,918,000
Raw materials and articles mainly unmanufactured	392,183,456	851,740,000	334,820,000
Articles wholly or mainly manufactured	314,682,305	322,418,000	318,016,000
Animals, not for food	2,164,784	2,653,000	3,065,000
Parcel-post (nondutiable) articles	2,552,191	3,009,000	9,127,000

* Provisional figures.

F. O. B. VALUES OF DOMESTIC EXPORTS OF UNITED KINGDOM

Class	1926	1927	1928
Food, drink, and tobacco	£ 50,457,811	£ 52,279,000	£ 54,272,000
Raw materials and articles mainly unmanufactured	47,162,351	76,352,000	70,169,000
Articles wholly or mainly manufactured	539,340,935	569,914,000	578,629,000
Animals, not for food	1,716,720	1,898,000	1,995,000
Parcel-post shipments	14,369,592	14,689,000	18,363,000

* Provisional figures.

The British Empire absorbed about 45 per cent of the exports of the United Kingdom in 1928 and the United States, about 6 per cent of the total. The exports were distributed by grand divisions as follows: Europe, 30 per cent, Asia, 23.5 per cent, North America, 14 per cent, Oceania, 12 per cent, Africa, 12 per cent, and South America, 8.5 per cent. Countries taking the bulk of the domestic exports of the United Kingdom in 1926, 1927, and 1928 are indicated in the accompanying table.

1929, total government revenues amounted to £836,435,000 (£4,070,511,000) and total expenditures to £818,041,000 (£3,980,966,000), leaving a surplus of £18,394,000, as against a surplus of £14,239,000 in the preceding year. The ordinary receipts of £758,104,000 were larger than the budget estimates, chiefly because of unexpectedly large estate duties, and larger returns from income and stamp taxes and from special receipts. The 1928-29 budget created a new fund through a customs duty of \$0.08 a gallon on

PRINCIPAL DESTINATIONS OF EXPORTS OF UNITED KINGDOM GOODS

Country of destination	1926		1927		1928*	
	Value	Per cent of total	Value	Per cent of total	Value	Per cent of total
British India	£81,755,046	12.5	£85,045,000	12.0	£88,921,000	11.6
Australia	61,831,260	9.4	61,179,000	8.6	55,699,000	7.6
United States	49,115,767	7.5	45,437,000	6.3	46,624,000	6.4
Germany	26,851,802	4.0	41,879,000	5.9	40,950,000	5.7
Irish Free State	34,767,887	5.3	36,200,000	5.1	35,126,000	5.0
Canada	26,374,171	4.0	29,250,000	4.1	34,268,000	4.7
Union of South Africa	22,163,584	4.9	30,812,000	4.3	31,471,000	4.3
Argentina	23,074,409	3.5	26,992,000	3.8	31,213,000	4.3
France	20,884,170	3.1	23,684,000	3.3	25,169,000	3.5
The Netherlands	17,933,880	2.8	21,220,000	3.0	21,801,000	3.0

* Provisional figures

gasoline for facilitating local taxation reform.

Of the total expenditures, the ordinary expenditures of £682,201,000, or £739,710,000 including the sinking fund, exceeded the budget estimates. As other costs of the national debt were greater by £7,491,000 than anticipated, only £57,500,000 was applied to the sinking fund instead of the £65,000,000 contemplated in the estimates. Thus, although total expenditures were £2,154,000 under the estimates, the apparent improvement was due to the reduction in sinking-fund payments. The items making up the total of ordinary receipts and expenditures in 1927-28, 1928-29, and 1929-30 are shown in the accompanying table.

UNITED KINGDOM ORDINARY BUDGET ESTIMATES FOR 1929-30, COMPARED WITH RETURNS FOR 1927-28 AND 1928-29

[In thousands of pounds sterling]

Item	1927-28, actual	1928-29,*	1929-30, budget estimate
RECEIPTS			
Customs	111,620	118,972	126,000
Excise	139,200	124,000	131,950
Estate duties	77,310	80,570	81,000
Income and super tax	311,183	283,770	297,500
All other taxes	54,108	36,826	38,200
Posts, telegraphs, and telephones (gross)	63,000	8,100	8,990
Interest and payments from sundry loans	23,952	28,111	30,550
Receipts from civil departments, etc	59,701	(b)	(b)
All other	2,748	57,755	39,750
Total	842,824	758,104	753,940
EXPENDITURES			
Debt service	378,816	369,000	355,000
National defense	117,440	113,470	112,610
Road fund	19,666		
Payments to local taxation accounts	15,369	14,200	15,000
Education	51,258		
Health, labor, and insurance	72,867	234,130	234,894
Other departmental services	115,435		
Posts, telegraphs, and telephones (gross)	56,800		
All other	8,934	8,910	24,460
Total	838,585	739,710	741,964

* Preliminary

(b) Not available, included under "All other"

Some changes in accounting methods will be noticed in the table. Prior to 1928-29, the financial accounts included the gross receipts and expenditures for posts, telegraphs, and telephones, as well as the revenue from motor-vehicle duties and the expenditure of that revenue on the road fund. After that year, the budget accounts showed only the net receipts for posts, telegraphs, and telephones and only the ex-

chequer share of motor-vehicle duties, the road fund having been deducted. The debt service after 1923 included contributions to the new sinking fund.

Chancellor of the Exchequer Winston Churchill's budget for 1929-30, made public in the spring of 1929, was noteworthy principally for its abolition of the duty on tea, which produced about £8,000,000 revenue annually. The tea tax had been one of the stand-bys of British taxation since the days of Queen Elizabeth. It was also announced that the Government would proceed to relieve agriculture from taxation immediately, instead of waiting for the general application of its derating plan in October. Taxes on betting were repealed, but license duties were imposed on bookmakers and on their office telephones, and a duty on totalizer bets. The railway passenger duty was withdrawn and an increase of manufacturers' duties was imposed to counterbalance the derating of breweries and tobacco factories. An extra grant of 15 per cent was provided for roads and bridges if half the workers employed on such projects came from depressed areas. There was also a reduction of the tax on heavier motor-cycles and trucks.

A surplus of £11,980,000 was estimated for 1929-30 in the Churchill budget, but new obligations incurred by the Labor government following its advent to power in June were so extensive that at the end of the third quarter of the fiscal year (Dec. 21, 1929), it was estimated there would be a deficit of about £35,000,000. On the same date, the revenues had fallen £19,942,947 below, and expenditures had increased £17,109,002 above, estimates. The financial commitments for 1929 and 1930 involved in new legislation passed under the auspices of the Labor party included Unemployment Insurance Act (1929, £3,500,000, 1930, £3,500,000), Unemployment Insurance Bill, no. 2, 1929, £3,750,000, 1930, £8,500,000; Widows', Orphans', and Old-age Contributory Pensions Bill (1929, £40,000, 1930, £5,300,000), for the development of agriculture, £1,000,000; National Capital Grant of £500,000 to the National Capital Fund (1929, £40,000, 1930, £750,000), Housing Act (1929, £13,000, 1930, £100,000), and Civil-service Bonus (1929, £800,000). The total of these commitments was placed at £8,243,000 for 1929 and £18,967,000 for 1930.

On May 31, 1928, the total debt of the British Government amounted to £7,630,973,000 (£37,136,130,000), while the unpaid loans extended by it to the Allied Powers, the dominions, colonies, and other sources totaled £2,133,600,000. The debt amounted to \$813 per capita and was three times as large as that of France,

the European country carrying the next heaviest debt. Besides unpaid loans, the Government held Suez Canal shares and other assets to the value of £132,035,000. The foreign debt consisted mainly of that to the United States, which was reduced from \$4,470,847,000 on Mar. 31, 1929, to \$4,426,000,000 on Dec. 16, 1929. On the latter date, the total of payments to the United States since the funding of the British debt amounted to \$1,124,970,000, of which \$174,000,000 was for repayment of principal. In the fiscal year 1928-29, the total debt was reduced by about £103,000,000. The floating debt, consisting of treasury bills and ways and means advances, was reduced from £1,272,000,000 on Mar. 31, 1921, to £737,345,000 on Mar. 31, 1929.

New capital raised in the United Kingdom by public issue in 1928, in the form of government issues and direct borrowing for national purposes, amounted to £362,510,000, the highest total for any year after 1920. In 1929 there was a sharp decline in new capital raised. About 60 per cent of the 1928 total was for domestic purposes, 24 per cent was for other parts of the British Empire, and 16 per cent was for foreign issues. The war-time treasury-note issue was a record in 1928 with the note issue of the Bank of England and the total note issue of the country was again centred in the bank, the fiduciary limit under normal conditions being fixed at £260,000,000.

London's position as an international financial centre was severely tried in 1929, due to the steady flow of funds to New York during the first half of the year, the temporary advances required by Germany, and withdrawal by France of a substantial part of the large balances maintained in London. The activity reached its climax in January and Europe during the year and was an appreciable element in the strain. In January, the Bank of England was forced to increase its rate from $\frac{1}{2}$ to $\frac{5}{8}$ per cent to prevent the further outflow of gold. This replenished the gold supply by nearly £14,000,000, but, by the end of May, the outflow of gold commenced again, reducing the bank's gold stock to £132,000,000 in September. On September 26, the bank rate was again raised, this time to $\frac{6}{8}$ per cent, the highest in eight years. Gold recommenced its inward flow and, on November 21, the rate was reduced to $\frac{5}{8}$ per cent. Foreign loans floated in Great Britain in 1929 totaled \$541,468,153, as compared with \$768,300,000 in 1928. The 1929 figure was only \$130,000,000 short of the total foreign loans issued in the United States.

SHIPPING. On June 30, 1928, the British merchant marine consisted of 8204 vessels of 19,875,000 gross tons, of which 19,754,000 gross tons represented vessels moved by steam or other power. The number of vessels in the foreign trade entering British ports in 1928 totaled 83,732 of 90,442,000 net registered tons, while vessels clearing numbered 84,421 of 91,297,000 net registered tons. British shipping generally followed the demand for tonnage poor in 1928, although it improved toward the end of the year. For statistics concerning the vessels launched during the year in Great Britain, see **SHIPBUILDING AND SHIPPING**.

RAILWAYS. The depression in the coal trade and in the heavy industries and in the motor competition in both passenger and freight business resulted in an unsatisfactory year for the

British railways in 1928. Railway freight tonnage and receipts were much smaller than in the previous year and the receipts from passenger traffic decreased by 2 per cent. The four privately owned systems into which the railways are divided all together failed by \$44,115,640 to earn the "standard revenues" during the year, which was the first in which the standard schedule of fares and charges determined in the Railway Act of 1921 became operative. There was a \$9,000,000 decrease in net income for the year, while gross receipts fell by \$32,000,000. Statistics of the railways for Great Britain only in 1926, 1927, and 1928 are shown in the accompanying table. The total investment in roads of the four companies at the end of 1928 amounted to \$3,801,023,458, as against \$3,787,534,391 at the close of 1927. The total investment in all railway facilities and equipment was \$4,623,507,570, as against a 1927 investment of \$4,609,478,249, and the respective figures for the total capital investment in all railway services were \$5,455,727,200 and \$4,437,603,300.

STATISTICS OF RAILWAYS (GREAT BRITAIN ONLY)

Item		1926	1927	1928
Length of line	miles	20,396	20,400	20,387
Length of track	do	52,332	52,459	52,567
Locomotives	number	24,045	24,013	23,665
Passenger cars	do	51,210	51,465	51,980
Freight cars	do	720,860	718,249	706,052
Passenger train miles	thousands	233,630	268,859	
Freight train miles	do	112,894	144,135	139,639
Passengers carried	millions	1,541	1,650	1,667
Freight carried *	1000 long tons	215,597	325,401	306,129
Ton-miles *	millions	14,042	18,447	17,713
Gross receipts *	\$1000	171,852	200,849	194,000
Passenger service	do	85,121	89,526	88,900
Freight service	do	85,044	109,571	103,700
Gross receipts, * equivalent	\$1000	834,893	976,326	944,101

* Excluding livestock

* Standard gauge only

* Including miscellaneous receipts not shown separately

The London, Midland, & Scottish Railway failed by \$4,056,622 to earn the fixed standard earning in 1928, the London & Northeastern, by £3,509,974; the Great Western, by £1,254,990, and the Southern, by £237,067. An adjustment of the tariff schedules in an attempt to produce the standard revenues for each of the four companies was undertaken by the Railway Rates Tribunal in 1929. A further decrease of about £1,750,000 in passenger-traffic revenue occurred in 1929, according to the *London Times*. The railways were carrying more passengers than ever before, but the wide extension of cheap-ticket facilities intended to arrest the loss of passengers had resulted in decreasing revenues from this source.

During 1928 there were 460 people killed and 24,324 injured in railway accidents in Great Britain. On Sept. 22, 1929, the Southern Railway, which possessed 1,100 miles of any of the electric lines, began to operate all its electric trains on the third-rail direct-current system. Railway improvements costing about £20,000,000 were projected in 1929. The underground group in London planned to extend the Piccadilly line northward from Finsbury Park to Cockfosters, and the District Railway westward from Hammersmith to Northfields. The doubling and quadrupling of tracks,

electrifications of certain sections, improvement of stations and of goods accommodation, and the conversion of old rolling stock were planned by other railways. The underground group expected to spend £13,000,000 on its extensions and improvements requiring three years for completion.

OTHER COMMUNICATIONS In 1928 the government-owned telegraph and telephone systems had 363,000 and 7,278,000 miles of wire, respectively. Gross receipts of the postal service were £42,998,000, of the telegraphs, £5,011,000, and of the telephone system, £18,875,000. In 1928 civil airplanes flew 1,011,000 miles, carrying 27,659 passengers and 771 tons of goods and mail. Regular air service from England to India was established early in 1929, and in September, 1929, a night-and-day air-taxi service was established in London, to provide immediate service to all parts of Europe.

Plans for state contributions toward extensive road-construction projects as an aid to the solution of the unemployment problem were formulated by the Labor government during 1929 and by the end of the year 30 of the county boroughs in the industrial north and others in various parts of the country had submitted five-year construction programmes, to cost about \$109,496,000. In order to obtain the state subsidy, preference in employment upon roads must be given to married men resident in the county. A number of the programmes were approved and were to be commenced at an early date.

ARMY AND NAVY The military system of the United Kingdom provides for a regular and territorial army and a reserve. Troops in the army serve both at home and abroad. Territorial troops serve only at home in peace times. The regular army in 1929-30 totaled 206,655, of whom 59,987 were in India. The strength of the territorial army on Dec. 1, 1928, was 146,266 (See **MILITARY PROGRESS**). The accompanying table from the *Statesman's Year Book* for 1929 shows the number of classes of the more important units of the British fleet, ships and vessels of the dominion.

Class	Completed by end of		
	1926	1927	1928
Battleships and battle Cruisers	22	20	20
Cruisers	49	50	50
Aircraft carriers and tenders	7	7	7
Flotilla leaders and destroyers	174	174	157
Submarines	56	56	51

GOVERNMENT George V, born June 3, 1865, was the reigning monarch during 1929. He succeeded his father, Edward VII, on May 6, 1910. The cabinet during the first part of 1929 was as follows: Prime Minister, Treasury, and Leader of the House of Commons, Stanley Baldwin; Foreign Affairs, Sir J. Austen Chamberlain; Privy Seal and Leader of the House of Lords, Marquis of Salisbury, President of the Council, Earl of Balfour, Chancellor, Lord Hailsham, Chancellor of the Exchequer, Winston S. Churchill; Home Affairs, Sir William Joynson-Hicks; Colonies and Dominions, Leopold C. M. S. Amery; War, Sir L. Worthington Evans; India, Viscount Peel; Air, Sir Samuel Hoare; Admiralty, W. C. Bridgeman, President of the Board of Trade, Sir Philip Cunliffe-Lister; Health, Arthur N. Chamberlain; Agriculture and Fisheries, Lieut.-Col. Walter E. Guinness, Secretary for

Scotland, Sir John Gilmour, Education, Lord Eustace Percy, Labor, Sir Arthur Ramsay-Steel-Maitland; Chancellor of Duchy of Lancaster, Lord Cusheundun; First Commissioner of Works, Marquis of Londonderry, Attorney-General, Sir Thomas W. H. Inskip, Pensions, George C. Tyrone; Transport, Wilfrid W. Ashley; Solicitor General, Sir Frank Boyd-Merriman; Postmaster General, Sir William Mitchell-Thomson, Lord Advocate, William Watson, Solicitor General for Scotland, A. M. MacRobert. For changes in the cabinet, see below, under *History*. The composition of Parliament following the general election of May 30, 1929, was as follows: Labor, 288, Conservatives, 200, Liberals, 59; Independents, 8.

HISTORY

The advent of the Labor government to power on June 5 following its great gains in the general election of May 30, was perhaps the outstanding even in a year which contributed an unusual number of significant developments to the chronicle of British history. The formation of the second Labor cabinet by Premier Ramsay MacDonald was followed by a drastic reorientation of foreign policy, which bore fruit in at least a temporary abandonment of Anglo-American naval rivalry, the calling of the five-power conference for the reduction of naval armaments in London for Jan. 21, 1930, the offer of virtual independence to Egypt and Iraq, the resumption of diplomatic relations with Soviet Russia, and a new and unexpectedly firm stand with regard to Great Britain's participation in the settlement of the reparations problem, and increased cooperation in the work of the League of Nations.

At home, the new government extended social welfare legislation, such as old-age and unemployment insurance, in a manner which threatened a budget deficit and an increase in taxation (see under *Finance* above), attacked the unemployment problem apparently without great success, and secured the passage of a new law intended to revive the sadly depressed coal industry. The year also was marked by the recovery of King George from his serious illness of the previous winter, by the development of a serious threat of revolution in India, the quiescence of the Prayer Book dispute which in 1928 seemed to threaten the disestablishment of the Church of England, and by further movements toward unity among the religious bodies. Industrial conditions in general showed improvement, except for several important industries. There was marked progress toward conservation of Britain's natural beauties. On the whole, the year ended with the nation in a much more optimistic frame of mind than at its opening.

DOMESTIC POLITICS The outcome of the general election of 1929 was accurately forecast by the results of more than 50 by-elections held in the interval between the Labor party's accessions to office in 1924 and 1929, through which the party more than doubled its representation in Parliament. The failure to solve the unemployment problem, the continuance of the depression in the coal and other important industries, and the growing naval rivalry with the United States all contributed to bring about the overthrow of the Conservative government, which had held an unusually long tenure of office—since November, 1924. The Conservatives

campaign on their record for social legislation, appealing to the country to repudiate the Labor party's socialistic programme. They proposed measures for the relief of industries from local taxation, for the "safeguarding" of certain important industries, and for the reform of local government.

The Labor programme, while endorsing the Liberal proposal of free trade, declared this was insufficient. It promised to solve the unemployment problem by establishing the 48-hour week throughout industry, enforcing international labor standards, raising the school-leaving age from 14 to 15 years, and the creation of a superannuation scheme for aged miners. Unemployment relief and the repeal or amendment of the Trades-disputes Act also were included in the Labor platform. Labor attacked the Conservative government in the foreign field for the rupture with Russia, the failure to evacuate the Rhineland, the breakdown of the Geneva Conference on Naval Disarmament in August, 1927, the Anglo-French Naval Agreement in July, 1928, and the increasingly difficult relations with the United States.

Labor, in an important declaration of foreign policy, announced that it stood for the complete remuneration of the right of private war and private blockade, the full acceptance of the new doctrine of the freedom of the seas under international regulation, for cooperation in the League of Nations' sanctions against a state which resorts to war in breach of its covenants, and for the development and codification of international law on the assumption that private war and private blockade are international crimes.

The voting of May 30 resulted, in round numbers, as follows: Conservatives, 8,506,000; Labor, 8,292,000; Liberals, 5,178,000; Independents, 251,000; Communists, 50,614. Labor made gains which exceeded the hopes of its most optimistic supporters, securing 288 of the 615 seats in the House of Commons, as against 260 seats by Conservatives, 59 by Liberals, and 8 by Independents. Premier Stanley Baldwin resigned on June 4 and on the following day the King called J. Ramsay MacDonald to form a new cabinet. The new ministry was announced on June 7 as follows: Prime Minister and First Lord of the Treasury, J. Ramsay MacDonald; Lord Chancellor, Lord Justice Sankey; Lord President of the Council, Lord Parmoor; Lord Privy Seal and Deputy Leader of the House of Commons, J. H. Thomas; Chancellor of the Exchequer, Philip Snowden; Secretary of State for Foreign Affairs, Arthur Henderson; Secretary of State for Home Affairs, J. R. Clynes; Secretary of State for the Colonies and Dominions, Sidney Webb (Lord Passfield); Secretary of State for War, Tom Shaw; Secretary of State for India, Captain Wedgwood Benn; Secretary of State for Air, Lord Thomson; First Lord of the Admiralty, Albert V. Alexander; President of the Board of Trade, William Graham; President of the Board of Education, Sir C. P. Trevelyan; Minister of Health, Arthur Greenwood; Minister of Agriculture and Fisheries, Noel Buxton; Minister of Labor, Miss Margaret Bonfield; First Commissioner of Works, George Lansbury; Secretary for Scotland, William Adamson; Chancellor of the Duchy of Lancaster, Sir Oswald Mosley. On August 22, the post of Minister of Transport, occupied by Herbert Morrison, was raised to cabinet rank.

As in 1924, Labor entered office without the votes required to carry through its programme unaided. Lacking 20 votes of a majority, the Labor government was forced to depend on Liberal support. Lloyd George, the Liberal leader, announced following the election that he regarded the Liberals as holding the fate of the new government in their hands. Liberal support would be forthcoming for progressive measures in foreign policy and for a resolute attack upon the unemployment problem, he said, but would be withdrawn if the Labor party attempted to put its Socialistic doctrines into practice. On November 28, the Conservative and Liberal leaders combined against the ruling party on the new dole bill and only the absence of a large number of their followers from the House of Commons prevented the defeat of the Labor government. On a number of other questions during the year, Labor maintained itself only by narrow margins.

As was generally expected, the Conservative policy of protection was discarded and a return to free trade decreed by the new government. Premier MacDonald announced in his address, at the opening of Parliament July 3, that the existing safeguarding duties would not be renewed when they expired and that they might be repealed at an earlier date. On a vote taken July 9, the Conservative proposal for free trade within the Empire and for a tariff on foreign goods was rejected by the combined Laborites and Liberals by a vote of 340 to 220.

Parliament adjourned July 26 without any serious attempt on the part of Conservatives or Liberals to embarrass the new government, but with evidences of restiveness among the more radical members of the Labor party at the moderation of its programme. During the last week in July, a strike in the Lancashire cotton industry, involving some 500,000 operatives, threatened to precipitate a cabinet crisis, but the arbitration of the dispute was agreed upon, following the intervention of Premier MacDonald. A settlement, announced August 22, fixed the reduction of wages at a 6½, in place of the 12½ per cent reduction originally imposed.

With his prestige greatly increased by the success of his visit to the United States and Canada during the summer, Premier MacDonald returned for the reassembling of Parliament on October 29 to face many pressing problems. In the session which followed, his government carried through a number of its proposals for social legislation, its unemployment-insurance measure was passed December 16 by a vote of 273 to 199, after a move for a larger dole by the Left wing of the Labor party had been rejected, its bill for the rehabilitation of the coal industry was adopted December 19, and other measures were enacted providing for widows', orphans', and old-age-contributory pensions, the development of agriculture, housing improvement, and a civil-service bonus.

The coal bill provided for the reduction of working hours in the pit bottom from eight to seven and one-half, the gradual purchase by the state of mineral rights, and the creation of a statutory obligation upon the mine owners to conform to recognized district marketing schemes for regulating their output and prices. The widows' pension bill extended the 10-shilling weekly pension to approximately 500,000 widows who were unprovided for by the original meas-



Photo by Frankham & Bonfield Ltd London
J RAMSAY MACDONALD
 Prime Minister



Photo by Walter Scott, Bradford
PHILIP SNOWDEN
 Chancellor of the Exchequer

TWO BRITISH STATESMEN

Other developments in foreign policy under the Labor government were the evacuation of the Rhineland by British troops during September, the successful demand of the British delegation at The Hague Reparations Conference in August for a larger share of German reparations than was allotted to Great Britain under the original Young Plan (see REPARATIONS), the

signing by Great Britain at the Tenth Assembly of the League of Nations in September of the so-called optional clause of the World Court statute, binding the country to submit international disputes to the compulsory jurisdiction of the Court (see *WORLD COURT*), and the submission to the League Assembly by Premier MacDonald and Foreign Minister Henderson of proposals for the revision of the League Covenant in line with the Kellogg-Briand Peace Pact. On December 13, the British Foreign Office issued the White Paper in defense of the signature of the optional clause of the World Court which advanced the revolutionary suggestion that, under the Kellogg-Briand Pact and the Covenant of the League of Nations, there can be no neutrals in future wars so far as signers of the optional clause are concerned. Political friends of the League Covenant and the Kellogg-Briand Pact have deprived nations of the right to employ war as an instrument of policy and have forbidden states which have signed them to give aid and comfort to the offender, the White Paper went on to say, "As between such states there has been, in consequence, a fundamental change in the whole question of belligerent and neutral rights."

Relations with the Nationalist Government of China became more friendly during the year, the British giving up their perpetual leasehold on the Chinkiang concession and agreeing in theory to the Nationalist programme for the abolition of extraterritoriality on Jan. 1, 1930, although stipulating that modifications in the existing system of consular jurisdiction should not take place until a modern system of jurisdiction was established by China (see *CHINA*, under *History*). In September, the Government announced that it had decided to recommend the admission of Iraq into the League of Nations in 1932 without conditions, the implication being that Britain would withdraw from its mandate over Iraq before that date (see *IRAQ*, under *History*). About the same time, the D'Abreu Mission to Argentina concluded a trade agreement with that country which gave Great Britain a considerable share in competition with rival industrial nations.

ARGENTINA, under *History*

The Government faced a difficult problem with respect to the Indian agitation for immediate independence. The question came before Parliament on November 1, following a reiteration by Lord Irwin, Viceroy of India, that dominion status was the ultimate goal of constitutional development in India desired by the British Government. The impression that the statement had been issued despite the disapproval of the Simon Commission proved groundless and the Government emerged from the debate with a victory for its Indian policy, which was opposed by Mr. Lloyd George and some of the Conservative leaders. Mr. Benn, the Secretary for India, explained that the Viceroy's statement was intended to remove doubts in India as to British persistence in the Montagu policy of eventual autonomy, as set forth in the declarations of 1917 and 1919, and that the Labor government had no intention of granting immediate dominion status to India. See *INDIA*, under *History*.

OTHER EVENTS That the net results of the new government's activities at home and abroad were generally satisfactory to the electorate was indicated on November 2, when the Labor party made substantial gains in municipal elections

held in 300 cities and boroughs in England and Wales. The failure of Communist candidates to make any impression on the voters was another feature of the elections. Further revision of the statutes of the United Kingdom and of the respective dominions in line with the changed status of the dominions as coequal members of the British Commonwealth was forecast as a result of a conference of dominion constitutional lawyers and representatives held in London in November and December. The legal experts were understood to have agreed that the system of appeals from decisions of the dominion courts to the Privy Council was out of date. Recommendations on this and other subjects were to be submitted to the next imperial conference, scheduled for 1930. See *IRISH FREE STATE*, under *History*. Important diplomatic changes occurred November 12. Sir Ronald Lindsay, permanent Under-Secretary of State for Foreign Affairs and chief of the Foreign Office, was appointed Ambassador to Washington to succeed Sir Esmé Howard. At the same time, Sir Esmond Ovey, former Ambassador to Brazil, was appointed the new British Ambassador to Soviet Russia.

The reunion of the two branches of the Scottish Presbyterian Church—the Church of Scotland and the United Free Church—took place formally in Edinburgh on October 2. The two branches had remained split since 1843. There were some evidences during the year of the development of a Nationalist movement in Scotland, with the aim of achieving a dominion status similar to that held by the Irish Free State within the British confederation.

See *UNEMPLOYMENT*, under *Great Britain*.
MOND CONFERENCES, BRITISH TRADE-UNION CONGRESS, and LEAGUE OF NATIONS For relations with dominions and other parts of the British Empire, see articles upon each.

GREECE A republic in southeastern Europe, comprising the lower Balkan peninsula and many islands in the Aegean Sea, formerly a constitutional monarchy. King George II was forced to leave Greece, Dec. 18, 1923, and the Republic was established Apr. 13, 1924, as the result of a plebiscite. In continental Greece are included Macedonia, Western Thrace, and Epirus, the chief island possession is Crete (capital, Athens).

AREA AND POPULATION The total area of Greece before the Balkan Wars of 1912-13 was 25,223 square miles, as a result of these wars, Greece added 20,730 square miles to her territory. Under the Treaty of Lausanne (1923), Greece obtained a further area of 3182 square miles, the total area of the present Greek Republic is 49,912 square miles. According to the census of May 15, 1928, the population was 6,204,684. The total population in the present territory in 1920 was 5,021,700. The number of Greek refugees from Turkey settled in Greece up to May 15, 1928, totaled 1,221,850, of which 589,420 were male and 632,430, female. Of the total number, 151,890 transferred to Greece prior to the evacuation of Asia Minor in 1922, and 1,069,960 moved subsequently. The principal cities, with their populations in 1928, are Athens, 452,919, Piræus (Παύς), 251,328, Saloniki, 236,524, Patras, 61,278.

EDUCATION School attendance is compulsory for all children between the ages of 1 and 12, although the law is not very well enforced in the country districts. In 1926-27 the total school attendance was 731,372. There were 323 infant

schools, with 375 teachers and 12,513 pupils; 687 high schools, with 2823 teachers and 92,735 pupils; 7619 primary schools, with 13,747 teachers and 632,933 pupils, and 28 commercial schools, with 269 teachers and 3013 pupils. Two universities at Athens, the National University, and the Capodistria University, had 61 professors and 9799 students, and one at Saloniki, founded in 1925, had 14 professors and 65 students. There were also various technical and agricultural schools.

PRODUCTION. Land available for cultivation in 1926 totaled 3,536,000 acres, or one-ninth of the total area of Greece, and there were about 475,000 acres of trees, shrubs, and bushes. Agricultural production increased both in quantity and value in 1928, as compared with 1927. Olive oil produced amounted to 30,419,000 gallons, a 45 per cent increase over the previous year, and was valued at \$26,650,000. The tobacco crop, estimated at 135,456,000 pounds, and valued at 2,300,000,000 drachmas (\$29,900,000), was slightly smaller than in 1927. The production of figs, raisins, and cereals, increased. The production and value of other leading crops in 1928 was as follows: Wheat, 15,767,000 bushels, \$31,200,000, barley, 10,859,000 bushels, \$9,945,000, currants and raisins, 332,895,000 pounds, \$17,160,000; wine, 62,080,000 gallons, \$9,750,000. Rye production amounted to 2,124,000 bushels; oats, 8,765,000, corn, 4,212,000, potatoes, 1,653,000.

The chief mineral products, with their values in 1927, were crude chromite, \$216,875, emery, \$293,491, iron ore, \$204,491, iron pyrites, \$342,508, crude magnesite, \$123,309, calcined magnesite, \$597,408, lignite, \$451,425, smelted lead, \$871,651. In the same year, the total value of mineral and metallurgical products sold was \$3,448,000, as compared with \$3,301,000 in 1926.

Chief among the industrial products of Greece, with the output in 1928, were: Cotton yarn, 17,064,000 pounds, wool fabrics, 4,374,000 yards, distilled spirits, 4,636,000 gallons, products of sugar and starch, 25,463,000 pounds, soap, 55,115,000 pounds, shoe leather, 15,432,000, fine leather, 3,968,000, cigarettes, 10,000,000 pounds. The total value of factory production in 1928, excluding wine and olive oil, was 6,727,182,000 drachmas (\$87,453,000), as compared with 6,115,620,000 drachmas (\$80,726,000) in 1927. In general, industry was more active in 1928 than in 1927. Improved foreign credits and political stability encouraged public-works construction and important irrigation and reclamation projects were started in eastern Macedonia, Thessaly, and Epirus. The activity on public works resulted in less unemployment.

COMMERCE. Greek exports rose to \$6,282,075 in 1928 from the 1927 figure of \$6,037,411, while imports dropped to \$12,488,122 from \$12,601,948 in 1927, thus reducing the unfavorable visible trade balance from \$6,564,537 in 1927 to \$6,206,047 in 1928. As usual, the unfavorable visible balance was offset by receipts from shipping, tourist travel, and emigrant remittances.

Exports of tobacco continued to account for about half the total value of export trade. The decline in the value of imports was attributable to smaller purchases of cattle, butter, cheese, and flour, and the lower prices of sugar and textile imports. Iron and steel, wheat, and machinery imports were larger. The United States was again the leading source of Greek imports, supplying nearly one-sixth the total, while Germany sup-

planted the United States as the leading market for Greek exports, taking 26 per cent of the total, as against 20 per cent by the United States, Italy, the United Kingdom, and France, were other leading customers, taking 16.5, 13.2, and 5 per cent of the total exports, respectively. The United Kingdom followed the United States as the chief source of imports, supplying 14.4 per cent of the total; Germany supplied 8.6, France, 6.9, and Italy, 5.2 per cent. Quantities and values of the chief imports and domestic exports in 1927 and 1928 are shown in the table on page 356.

Imports for 1929 totaled 13,275,531,000 drachmas and exports 6,985,196,000 drachmas, as compared with 12,488,122,000 and 6,282,075,000 drachmas, respectively, for 1928 (1 drachma equalled \$0.013), according to preliminary figures. The adverse trade balance was 6,290,335,000 drachmas in 1929 and 6,206,047,000 in 1928.

In October, 1929, it was announced that the Government had decided to establish a free harbor in Piræus to be devoted to foreign trade, particularly the export trade with the Orient. The harbor was to be equipped with modern warehouses and a coaling station, in the hope that it would attract traffic en route to the Orient from Rotterdam, Trieste, and other European ports.

FINANCE. The Greek budget for 1928-29 balanced at 11,115,000,000 drachmas (\$144,495,000), as compared with receipts of 8,837,000,000 drachmas (\$114,495,000) and expenditures of 8,878,000,000 (\$115,414,000) in 1927-28. For 1929-30 receipts were estimated at 9,666,000,000 drachmas (\$125,658,000) and expenditures, excluding service of the debt, at 9,658,000,000 (\$125,554,000). The fiscal year ends March 31. During 1928 the Government concluded two loan agreements—the League of Nations loan of \$9,000,000 of which the United States was expected to furnish \$12,167,000 (about £2,500,000), and the Productive Works Loan of £22,000,000. The League approved the former loan in 1927, but attempts to float it were held up pending ratification by the United States Senate, which occurred in February, 1929. Of this loan, £3,000,000 was to be used to maintain the stabilization of the currency at the rate of 375 drachmas to the pound sterling. The remainder was to be employed to balance the budget and for refugee work. The loan was issued on condition of the formation of a new Bank of Greece.

The Productive Works Loan was to be made available over a period of five years for reclamation works in northern Greece, road construction, and agricultural credits. Preliminary returns for the fiscal year 1928-29 indicated that both receipts and expenditures would be below estimates, although a slight surplus was expected. A dengue-fever epidemic was held partially responsible for the decline in revenues. Mortgaged revenues assigned to the international financial commission increased during 1928 and 1929, the gross receipts for 1928 totaling 4,063,836,000 drachmas, as compared with 3,891,700,000 drachmas in 1927. Emigrant remittances were estimated at about \$40,000,000 for 1928, as against about \$37,000,000 for the previous year.

On Jan. 1, 1929, the public debt stood at 36,783,938,000 drachmas (\$478,191,000), or a per capita debt of 8130 drachmas (\$80). The foreign debt of 25,738,690,000 drachmas was held chiefly in Great Britain, the United States, and France, the amount due to the United States Government being \$20,250,000. To meet the service of the external debt, various revenues were pledged and

GREEK IMPORTS AND EXPORTS, 1927 AND 1928

Commodity		Quantity		Value (thousands of dollars)	
IMPORTS		1927	1928	1927	1928
Cattle	number	105,081	50,428	3,528	2,032
Sheep and goats	thousands	1,233	1,310	4,230	3,447
Butter, oleo oil	1000 lbs	11,526	7,154	1,675	996
Cheese	do	9,736	2,298	1,468	366
Fish	do	53,537	41,510	4,075	3,205
Wheat	1000 bushels	15,104	17,460	26,567	30,742
Corn	do	1,236	1,000	1,443	1,403
Rice	1000 lbs	55,421	58,202	2,758	2,218
Wheat flour	1000 bbls	751	553	5,696	3,911
Beans	1000 bushels	833	527	1,831	1,375
Potatoes	do	951	1,378	851	1,126
Onions	1000 lbs	11,527	11,528	2,591	2,254
Sugar	do	132,921	134,145	7,214	5,864
Hides and skins	do	11,801	9,965	2,049	2,011
Leather	do	1,258	706	1,673	1,379
Cotton	do	7,993	7,521	1,258	1,406
Cotton yarn and thread	do	1,780	1,649	1,734	1,686
Wool yarn	do	2,899	2,815	1,854	2,400
Cotton piece goods	do	15,491	12,709	8,047	8,286
Wool cloth	do	3,264	8,125	5,576	4,883
Stockings and socks	do	284	313	1,008	1,103
Textile manufactures, other	do	16,946	18,000	9,436	5,902
Wood for building	1000 bd ft	156,966	156,794	5,447	5,279
Paper, printed matter	1000 lbs	39,434	43,288	2,878	3,277
Coal	tons	702,600	684,412	6,348	6,184
Gasoline	barrels	245,408	305,294	3,511	3,980
Kerosene	do	195,795	194,240	3,341	3,279
Mineral oils, other	tons	57,259	65,683	2,440	2,854
Iron and steel	do	96,195	124,948	6,837	8,616
Machinery	do			5,479	5,568
Automobiles, complete	number	2,271	2,175	1,991	2,032
Chemicals allied materials	tons	53,934	49,373	5,980	5,863
All other				24,780	23,987
Total				166,846	162,346
EXPORTS					
Currants	1000 lbs	179,747	175,186	10,370	12,476
Raisins	do	30,261	33,737	1,793	2,106
Figs	do	22,855	32,099	823	1,275
Olives	do	23,969	19,160	1,386	1,275
Fruits, other	do	66,085	57,001	1,102	1,172
Wine	1000 gals	36,672	32,775	6,902	6,407
Tobacco, leaf	1000 lbs	116,232	107,813	45,113	41,755
Hides and skins	do	6,240	8,836	1,843	2,407
Lead-silver ore	tons	5,947	5,928	623	616
Olive oil	1000 lbs	17,962	16,715	2,409	1,882
All other				6,460	9,308
Total				79,694	81,667

placed under control of the International Financial Commission. On May 10, 1929, an agreement for payment of the \$18,125,000 debt to the United States Government over a period of 62 years was concluded at Washington. The American portion of the League of Nations loan (\$12,167,000) was to be repaid in 20 years at 4 per cent. At the beginning of 1929, the note circulation amounted to 5,690,000,000, and gold reserves to 554,000,000 drachmas, exclusive of 372,000,000 drachmas held abroad.

COMMUNICATIONS. Of the nine systems which comprise the entire Greek railways of 1991 miles, the state railways operate 884 miles. During 1927 operating revenues of the state railways amounted to 309,401,242 drachmas, and other revenues to 3,391,807, while operating expenses reached 317,982,807 drachmas, and other expenses 14,333,226, thus leaving a deficit of 19,522,349 drachmas. In the same year, the Government railways carried 3,559,000 passengers and 1,047,000 tons of freight. There were 202 locomotives and 4094 freight and passenger cars in operation on state lines. In 1929 there were about 8611 miles of highway in Old and New Greece and 570 miles were under construction. A road-construction programme involving an estimated expenditure of about \$29,000,000 was inaugurated in the summer of 1928. The merchant marine on June 30, 1928, consisted of 515 steam- or motor-driven vessels of 100 tons or more, with

a total gross tonnage of 1,187,508. In 1927, 3581 vessels of 445 tons or over registered tons engaged in foreign trade entered Greek ports. In the same year, 5210 steamers of 2,700,657 tons and 3288 sailing vessels of 91,720 tons passed through the Corinth Canal. Telephone and telegraph lines are owned by the Government. In 1927 there were 7739 miles of telephone, and 30,894 miles of telegraph wire.

For army and navy, see **MILITARY PROGRESS** and **NAVAL PROGRESS**.

GOVERNMENT. The Republic of Greece was established by a plebiscite on Apr 13, 1924. A new constitution, published on Sept 22, 1926, was revised by the Chamber elected on Nov 7, 1926. The new constitution published on June 3, 1927, provides, among other things, that a second House (Senate) consisting of 120 members shall be established, that Parliament shall be elected by direct, universal, and secret voting, and that the Senate shall be elected partly by the people, partly by the Parliament and Senate in a common meeting, and partly by the corporations of the different professions. President in 1929, Admiral Konduriotis; the cabinet as constituted July 19, 1928, was as follows: Premier, Eleutherios Venizelos; Minister for Foreign Affairs, Alexander Karapanos; War, Themistocles Sophoulis; Marine, Pericles Argyropoulos; Interior, K. Zavitzianos; National Economy, P. Vourloumis; Agriculture, L. Kanavos; Social Insur-

ance, E. Emmanouelides; Justice, P. Petrides; Finance, George Maris; Communications, Dr. Christomanos, Education, K. Gontikas. The composition of the Chamber of Deputies elected Aug. 19, 1928, was as follows. Republican parties, 227 (including 186 Venizelos Liberals), Royalist Popular party, 22, Metaxists, one.

HISTORY

Premier Venizelos continued his active foreign policy during 1920. On March 21, a treaty of friendship was signed with Yugoslavia at Belgrade, providing for the arbitration by the League of Nations of disputes between the two countries. A week earlier, a series of economic conventions was signed by representatives of the two countries at Geneva. The treaty was considered a move on the part of Greece and Yugoslavia to present a common front toward Bulgaria in support of the Treaty of Neuilly and in opposition to Bulgaria's alleged encouragement of the formation of an autonomous Macedonian state under the protection of the League of Nations. The conclusion of the treaty with Italy's rival seemed to interpose further difficulties in the way of Premier Mussolini's plan for a compact of friendship and non-aggression among Greece, Turkey, and Italy.

An outbreak of naval rivalry between Greece and Turkey offered another serious check to the Italian plan. The announcement by the Turkish Government in May that it intended to order several warships in Italy was followed by immediate steps on the part of Greece to purchase a number of destroyers from France. Although Greek finances were in no condition to warrant additional expenditures, Premier Venizelos declared that Greece must have a navy in the Aegean as strong as the Turkish fleet.

On July 10, Turkish official organs announced that negotiation with Greece concerning the exchange of populations had been broken off, the cause apparently having been the refusal of the Turks to grant the demand that Greek nationals who held passports issued by the former Sultan's government should be allowed to return to Turkey. Premier Venizelos later announced that he had not given up hope of a settlement but feared that the difficulties of his government were not fully understood in Ankara. With the rival of a new Greek Minister of Foreign Affairs in the Turkish capital in December, hope for a settlement of the long-outstanding difficulties was renewed.

A League of Nations commission was appointed to dispose of numerous questions arising from the forced removal of some 1,500,000 Greeks from Turkey and of several hundred thousand Turks from Greece following the Lausanne Treaty of 1923. Besides failing to solve the most important questions, the commission cost the two countries between \$4,000,000 and \$4,000,000 in the five years ending in 1929, and the two countries in 1929 were attempting to dispose of outstanding questions by direct negotiation. The negotiations hinged upon five main issues: (1) The amount of compensation to be paid by Greece for damage done to Turkish property during the Greek invasion of 1922. (2) The status of the Greeks who were established in Constantinople before the conclusion of the Lausanne Treaty and the status of Turks living in western Thrace. (3) The case of those Greeks who left Turkey before the establishment of the Turkish Republic and who

were never allowed to return to liquidate their property. (4) The matter of the evaluation of property belonging to Turks in Greece and to Greeks in Turkey. (5) The alleged persecution by Greek authorities of Turks living in western Thrace.

While realizing the desirability of an early settlement of these questions, Premier Venizelos was hindered in the negotiations by the attitude of some 1,500,000 Greek refugees who threatened to turn him out of power at every suggestion of concessions to the Turks. At home, Premier Venizelos found himself confronted with increasing political difficulties as the year progressed. On January 26, largely due to his personal insistence, the Chamber of Deputies voted an investigation of alleged breaches of the common law by General Theodore Pangalos, former dictator, and three of his ministers, Tavoularis, Tantalidis, and Vogopoulos. The first Greek Senate to meet since 1862 assembled on May 16. Under the constitution of June 4, 1927, it consists of 120 members, of whom at least 90 must be elected by popular vote for a term of 10 years. Its powers are strictly limited.

The absence of Premier Venizelos at The Hague Reparations Conference during the summer was taken advantage of by his political opponents to win a number of decisive victories at municipal elections, particularly in Athens, Patras, Corinth, and Saloniki. On December 10, the resignation of President Paul Kondouriotis took place unexpectedly. Admiral Kondouriotis, who became a national hero following his defeat of the Turkish fleet in 1912, was made provisional President on the proclamation of the Republic in 1924. He resigned during the dictatorship of General Pangalos, but in 1928 again was elected President by the Chamber. He gave ill health and advanced age as the reasons for his resignation. Former Premier Zaimis, then President of the Senate, was appointed President provisionally, pending an election. On December 11, General Gonatas, Minister of Transport, whose presence in the cabinet caused Royalist Deputies to vacate their seats, presented his resignation. Minister of the Interior Argyropoulos and Dr. Pappas resigned from the government December 29, following the publication of a letter written by their leader, General George Kondyles, charging the government with leading the country into political anarchy. General Kondyles executed a *coup d'état* against General Pangalos in August, 1926.

Other events during the year included the announcement by Premier Venizelos on November 14 of the creation of a Ministry of Aviation, with himself at its head, a two-day riot and political demonstration against the Government by university students in Athens November 28 and 29, and the award by the Government on December 18 of a \$30,000,000 contract to the British firm of Henry Boot & Sons for the reclamation of waste and swamp land in Thessaly and Epirus. In August, the revelation that the mixed Greco-Bulgarian Commission appointed by the League of Nations to fix the indemnity payable to Greece by Bulgaria had cost the two countries \$2,500,000 aroused considerable feeling. The sum was almost equal to the whole amount under dispute.

GREEK ARCHAEOLOGY. See **ARCHAEOLOGY**.
GREEK STUDIES. See **PHILOLOGY**, **CLASSICAL**, for summary of recent work.

GREEN, ALICE SOPHIA AMELIA (Mrs. JOHN RICHARD). An Irish historian, died May 28, 1929, in Dublin, Ireland. She was born in Kelle, Ireland, in 1849, the daughter of Edward A. Stopford, Archdeacon of Meath, and was educated at home by private reading. In 1877 she was married to John Richard Green, historian and author of *Short History of the English People*. Until his death in 1883, Mrs. Green aided him in his work, and after his death published a revised edition of the *Short History* (1888) and in 1916 another edition with an epilogue of her own. Her first book, *Short Geography of the British Isles* (1880) was written in collaboration with her husband. She was an enthusiastic and outspoken Nationalist, an interest which is reflected in her books. *The Making of Ireland and Its Undoing* (1908); *Irish Nationality* (1911); *The Old Irish World* (1912). Mrs. Green was a prolific author, writing many books and pamphlets, all on historical subjects. When the Irish Free State Parliament was established in 1922, she was elected a member of the Senate. In 1913 the University of Liverpool made her an honorary doctor of literature.

GREENLAND. The island second in size in the world, being next to Australia. Situated in the North Atlantic to the north and east of Canada, it is the only colonial possession of Denmark. The area is variously estimated at from 826,000 to 849,000 square miles. The settled portion has an area of 46,740 square miles, with a population in 1923, of 14,804, of whom 248 were Danes and other Europeans and 14,556, natives. The colony is divided into the three provinces of North, South, and East Greenland, with 7845, 6246, and 713 inhabitants, respectively. Denmark extended its sovereignty over the entire island in 1917. The largest settlement is Sydproven, with a population of 901, and the smallest, Skansen, with a population of 49. The interior remains largely unknown. Nearly the entire country consists of a plateau from 2000 to 3000 meters above the level of the sea, and is covered by a thick, permanent coat of snow and ice, only about one-twenty-fifth of the surface being suitable for cultivation. Most of the inhabitants are located on the coast or on adjacent islands. The trade with Denmark in 1925 consisted of 3,271,000 kroner in imports and 7,192,000 kroner in exports. The trade, chiefly in seals, sealskins, fox skins, and oil is a monopoly of the Danish government. The budget for 1925-26 estimated receipts at 3,180,000, and expenditures at 3,774,000, kroner. At the head of the government is a director who resides in Copenhagen. Director in 1929, J. Daigaard-Jensen. See **POLAR RESEARCH**.

GRENADEA, gre-na'da. An insular possession of Great Britain in the Windward group of the West Indies. Area, 133 square miles, population at the census of 1921, 66,302, estimated in December, 1926, 71,621. Grenada includes half the Grenadine Islands, the other half being administered from St. Vincent. The capital is St. George with a population of about 5000. In 1927 the movement of population was. Births, 2294; deaths, 1147. In 1927 there were 58 government and government-aided schools for elementary education, with 12,605 pupils and one secondary school. The chief products, which are also the chief exports, are cacao, spices, lime juice, cotton, and cottonseed. The production of sugar was rapidly increasing, in 1927 the local production of rum was 44,446 proof gallons. In the same

year, the revenue was £155,508 and the expenditure, £131,413. The exports were £508,533 and the imports, £415,607. The total shipping entered in 1927 was 534,455 tons, nearly all British. The colony is under the Governor of the Windward Islands, whose headquarters are at St. George, but has its own institutions. Governor and Commander-in-Chief of the Windward Islands, including Grenada, in 1929, Sir Frederick Seton James; Colonial Secretary for Grenada, H. Ferguson.

GRINNELL COLLEGE. A coeducational, non-sectarian institution of higher learning in Grinnell, Iowa, founded in 1847. The enrollment for the autumn of 1929 was 809, distributed as follows: Seniors, 135, juniors, 121, sophomores, 173, freshmen, 239, graduate students, 3, unclassified, 8, school of music, 130. There were 65 faculty members. The productive funds amounted to \$1,500,000 and the income for the year, exclusive of dormitories, was \$320,000. The library contained 85,000 volumes. President, John Hanson. Thomas Main, Ph.D., LL.D.

GRUNDY, JOSEPH R. See UNITED STATES, under *Congress*.

GRYZBOW, BATTLE OF. CELEBRATION See CELEBRATIONS.

GUADELOUPE, ga'da-loop'. A French insular possession in the Lesser Antilles in the West Indies, consisting of two islands separated by a narrow channel, the one on the west being Guadeloupe proper, or Basse-Terre, and the one on the east, Grande-Terre. Combined area, 532 square miles, total area, including five small dependent islands, 688 square miles, population in 1926, 243,243. Basse-Terre is the capital, with a population of 8379, chief town and port, Pointe-à-Pitre, with 26,455 inhabitants.

There were 113 public and private elementary schools in 1926-27, with 324 teachers and 17,180 pupils. For higher education, there was one lycée with 464 pupils and a secondary course for girls at Pointe-à-Pitre, with 322 pupils. The chief products for exports are cacao, coffee, sugar, and rum. Bananas, sweet potatoes, maize, tobacco, manioc, and various vegetables are other products. In 1926 the imports were 144,849,469 francs and the exports, 167,663,138 francs. Revenue and expenditure for 1927 balanced at 29,018,596 francs, the public debt on Dec. 31, 1926, was 499,078 francs. The tropical hurricane of Sept. 12, 1928, inflicted damage estimated at between 300,000,000 and 500,000,000 francs and caused a marked setback to economic development. There is communication with France by means of two steamship companies, and a wireless station at Destitellan. At the head of the government are a governor and an elected council and the colony sends to the French Parliament at Paris one senator and two deputies.

GUAM, gwam. An insular possession of the United States, situated at the southern end of the Mariana, or Marianne, Islands in mid-Pacific about 1500 miles from Manila and 5053 miles from San Francisco. The largest and most populous island of the Mariana group, it has an area of 210 square miles and a population (in 1928) of 17,654, excluding the military and naval establishments. Capital, Agaña, with about 8500 inhabitants.

The public-school registration in 1928 numbered 3596. The appropriation of \$44,860 made from island government funds for education was supplemented by a United States appropriation

of \$13,000. Education is compulsory between the ages of 7 and 12. Spanish and English are spoken in addition to the native Chamorro. Cacao, coffee, copra, corn, rice, sugar, sweet potatoes, and timber are the chief products of the island, but only copra is exported, the shipments in 1928 totaling 5,075,747 pounds. There were about 4000 head of cattle in 1928, including 900 water buffaloes. The trade of the island is principally with the United States and Manila. In 1928 imports totaled \$454,599 and exports, \$195,862. Of the 12 ships which entered Apia, the entry port, in 1928, only four were merchant vessels.

Guam is a United States naval station, of which the governor, who is appointed by the President, is commander. Salaries of the higher government officials, the Navy doctors, and hospital corps are paid by the Federal Government. Medical care for the entire population is provided by the Navy, as there are no private hospitals or doctors in private practice. For the fiscal year 1929, the United States Government appropriated \$22,000 for medical and hospital care of the population and for the care of leprosy. Governor in 1929, Commander Willis W. Bradley, U. S. N., who succeeded Captain L. S. Shapeley, U. S. N. (retired) on June 11, 1929.

GUATEMALA, *gwá't-mála*. A republic of Central America lying between the Caribbean Sea and the Pacific Ocean, and south and southeast of Mexico Capital, Guatemala City.

AREA AND POPULATION The area is estimated at 42,353 square miles, population, according to the census of 1920, 2,001,900, estimated in 1928, 2,345,616. About 60 per cent of the population is pure Indian and the remainder is composed mainly of half-castes. From 1924 to 1928, births averaged 96,042 annually and deaths, 47,714, the average excess being 48,328. The populations of the chief cities were: Guatemala City, 115,928; Totomocapan, 30,888; Coban, 26,774; Chiquimula, 23,191; Escuintla, 20,574; and Quetzaltenango, 20,125.

EDUCATION The school age is from 5 to 17 years and the total number attending school in 1927-28 was 114,815. In 1921 there were 377,568 persons of school age. About four-fifths of the population are illiterate. Schools in 1928 numbered 3297, of which 2736 were national primary schools and 566 private institutions of learning. The school personnel numbered 3430 teachers. According to the report of the Minister of Public Education, in 1928 there were 50 schools above the primary grade with an enrollment of 3278 and an average attendance of 2775. The various schools of the University had an enrollment of 645.

PRODUCTION Agriculture is the principal source of wealth in Guatemala. The economic well-being of the country is directly and almost wholly dependent upon its coffee, which, because of its mildness and high quality, generally commands high prices. The comparatively limited annual production assures a steady market. Sugar and bananas are the other chief export crops, while wheat, corn, potatoes, and rice are produced mainly for domestic consumption. High prices for coffee continued until near the end of 1928 and in consequence, the country was generally prosperous. The business turnover was larger than ever before, government revenues increased, and the imports were the greatest on record, despite a brief political disturbance during the year

and damage to the corn crop by grasshoppers.

The coffee crop in 1927-28, amounting to approximately 100,000,000 pounds, was one of the largest ever produced, and was disposed of at excellent prices. In 1928-29 an even larger crop of 110,000,000 pounds was harvested. The banana crops of 1927 and 1928 were estimated to have been reduced by about 1,500,000 stems each year as a result of heavy winds and floods. Banana shipments to the United States in 1928 totaled 6,193,000 stems and in 1927, 6,022,000 stems. The sugar crop in 1928-29 amounted to about 33,400 metric tons, while during 1927-28 it was placed at about 29,254 tons. In 1928 it was estimated that there were 320,000 cattle, 79,000 horses and mules, 137,000 sheep and goats, and 71,000 swine in the country. The 1,316,000 acres of forest land in Guatemala contain valuable mahogany and cedar trees which are exploited to a considerable degree.

In 1929 business and economic conditions in Guatemala became unfavorable due to a continued decline in the price of coffee, political difficulties resulting in the suspension of certain constitutional guarantees, and the unprecedented rainfall, which caused flood damage to roads and crops and the interruption of traffic. The 1929 coffee crop was estimated to equal that of the previous year, but a comparatively small amount was disposed of at favorable prices.

The only minerals produced commercially are mica and gold, mica production amounting to 28,860 pounds in 1928 (14,720 in 1927), and gold production to 10,339 troy ounces (10,327 in 1927). Industrial plants consist mainly of coffee-cleaning plants, sugar mills, and distilleries, with some small factories for the manufacture of cigars and cigarettes, cotton cloth and hosiery, soap, candles, shoes, etc. There were 140 manufacturing establishments of fair size in the country in 1929, representing a capital investment of about \$18,600,000.

COMMERCE Exports in 1928 totaled \$28,212,000, or 17 per cent less than in the previous year, while imports increased by 22 per cent to \$24,145,000. The favorable balance of trade for the year was \$4,067,000. Smaller shipments of coffee and wood accounted for the decrease in exports, while the import increase was due particularly to large increases in imports of foodstuffs, railway materials, and rayon, and to larger purchases of most manufactured articles. The United States furnished 58 per cent of the total imports and purchased 54 per cent of the total exports. Germany furnished 14 per cent of the imports and took 33 per cent of the exports, and the United Kingdom supplied 11 per cent of the imports.

The values of the chief imports in 1928, with figures for 1927 in parentheses, were as follows: Cotton and manufactures, \$3,753,000 (\$3,806,000), iron and steel, \$2,088,000 (\$1,936,000), wood and iron products, \$2,006,000 (\$1,972,000), wheat flour, \$1,297,000 (\$1,121,000), other foodstuffs, \$2,460,000 (\$1,249,000), silk and rayon goods, \$1,432,000 (\$1,057,000), railway material, 1,024,000 (\$512,000), machinery, \$976,000 (\$659,000). The values of the chief exports in 1928 and 1927 were: coffee (clean), \$22,349,000 (\$27,801,000), bananas, \$3,096,000 (3,011,000), coffee (in shell), \$713,000 (\$768,000), sugar, \$374,000 (\$413,000), wood, \$338,000 (\$684,000), cacao, \$445,000 (\$485,000). In 1929 both imports and exports showed a downward trend. Banana shipments, however, were larger.

FINANCE. During the fiscal year ending June 30, 1928, ordinary revenues were 15 per cent greater than in the previous year, the increase resulting mainly in collections of import duties, which accounted for about half the total revenues. The receipts totaled 14,266,000 quetzales (one quetzal equals \$1 at par), as compared with 12,411,000 in 1926-27, while expenditures for 1927-28 were 14,129,000, and for the previous year, 12,259,000. Expenditures in 1927-28 included a payment of 250,000 quetzales toward the capital of the Banco Central de Guatemala. Chief items of expenditure in 1927-28 were: For the service of the debt, 2,905,000 quetzales; national defense, 2,108,000, education, 1,583,000; agriculture, 1,278,000, posts, telegraphs, and telephones, 1,278,000, all other, 5,036,000. The expenditure budget for 1928-29 aggregated 13,145,000 quetzales. The public debt at the beginning of 1929 amounted to \$16,837,000 of which a greater portion was held abroad. The British holdings totaled \$8,288,277.

COMMUNICATIONS. The International Railways of Central America, operating the only railroad of importance in Guatemala, had 498 miles of line in operation in 1928, which carried 2,202,000 passengers and 737,230 tons of freight. The gross receipts were \$8,407,188 and the net return after taxes amounted to \$3,068,263. In July, 1929, a connecting link of the International Railways extending 40 miles between Zacapa, in Guatemala, and San Salvador, Santa Ana, and Ahuachapán, in Salvador, was completed at a cost of \$12,000,000. In 1929 there were 1396 miles of highway. The government-owned telegraph and telephone systems in 1928 had 4430 and 4960 miles of wire, respectively, gross receipts were \$264,900 and \$154,000, respectively. There were 373 post offices. Radio communication service was established in Guatemala City, Puerto Barrios, and other cities during 1928. On Oct. 4, 1929, daily airplane service was inaugurated between Guatemala City and San Salvador, the capital of Salvador. Other air lines were in operation during the year between Guatemala City and Vera Cruz and between Los Angeles, Mexico City, and Guatemala City.

GOVERNMENT. The executive power is vested in the President elected for six years and legislative power, in the National Assembly, consisting of representatives elected for four years, and the Council of State of 13 members, part of whom are elected by the National Assembly and part appointed by the President. President in 1929, General Lázaro Chacón, elected December, 1926, for a term expiring May 15, 1933. A convention signed by the Foreign Ministers of Guatemala, Honduras, and Salvador on May 27, 1927, bound the three countries to a unified foreign policy.

HISTORY

The internal political situation, which led to the establishment of modified martial law in the latter part of 1928, remained critical throughout 1929. A rebellion broke out in the extreme northwestern part of the country and on January 17 the insurgents seized the towns of Retalhuleu and Mazatenango, cut the communications with Guatemala City, and stopped traffic across the Mexican border. Government troops attacked the two towns three days later and on January 22 the government announced that the rebellion had been crushed and a number of rebel leaders captured and executed by firing squads. The in-

surgent chiefs, Juan F. Rivas and Colonel Mariano Casado, however, were reported to have escaped into Mexico.

President Lázaro Chacón accepted the resignation of his entire cabinet on February 3 in an effort to strengthen popular support of the government. On February 12, the new cabinet was constituted as follows: Minister of Foreign Relations, Adrián Recinos; Government and Justice, Carlos Zachrisson; Finance, Rodolfo Sandoval; Public Instruction, H. Abraham Cabrera; Public Works, Daniel Hernández Figueroa; War, Miguel Larrave; Agriculture, Manuel María Heriera.

Despite the reconstitution of the cabinet, the government considered it necessary to continue for the remainder of the year the suspension of constitutional guarantees. Two citizens of the United States, J. Zenon Posadas and Alencio F. Losi, who were arrested late in February on charges of complicity in the revolt, were saved from probable execution through the intervention of United States Minister Gessler.

Negotiations for the settlement of the boundary dispute with Honduras continued during the year with such satisfactory results that on October 25, the State Department of the United States invited both governments to name delegates to meet in Washington for a further exchange of views. The United States offered to participate in the discussions if so desired. Both nations accepted and the meeting was set for Jan. 15, 1930. Friction between Guatemala and Nicaragua, which led to the severance of diplomatic relations following the Sacaca revolution in Nicaragua in 1926-27, also was eliminated and on March 11 diplomatic relations between the two countries were resumed.

Other important events in Guatemalan history during 1929 included the ratification on October 28 of the general treaty of inter-American arbitration and the protocol of progressive arbitration, which was signed at Washington in January, 1928, the drawing up of plans for a national palace at Guatemala City to cost nearly \$1,000,000, and the inauguration by the government of an intensive campaign against illiteracy, which included the creation of schools in all army barracks and posts. On November 4, the government reported that 21 persons had lost their lives as a result of the eruption of the volcano, Santa Maria, 70 miles northwest of Guatemala City. Unofficial estimates placed the number killed at 300, the injured at 200, and property damage at \$1,000,000. Sheldon Whitehouse, a career diplomat serving as counselor of the American Embassy at Madrid, was appointed the American Minister to Guatemala in November, 1929.

GUGGENHEIM FOUNDATION. See **ASTRONAUTICS**

GUIANA. See under **DUTCH GUIANA**, **BRITISH GUIANA**, **FRENCH GUIANA**

GUTH, WILLIAM WESTLEY American college president, died Apr. 19, 1929, in Baltimore, Md. He was born in Nashville, Tenn., Oct. 15, 1871, and was graduated from Stanford University in 1895. He also studied at the Hastings College of Law, was admitted to the bar in 1895, and practiced in San Francisco (1895-98). He then studied for the ministry, being ordained in the Methodist Episcopal Church in 1900 and served as pastor in West Chelmsford, Mass. (1900-01), and in Cambridge (1904-08). In 1908 he accepted the presidency of the College of the Pacific, which

he left to become president of Goucher College in 1913. He resigned from the ministry in 1919. Dr. Guth traveled widely in Egypt, Palestine, Asia Minor, in Europe, and in England. He was the author of several books of a religious nature.

GYMNASTICS. The Swiss Turn Verein again achieved the team honors in gymnastics for 1929, capturing the laurels at the national Amateur Athletic Union championships held under the auspices of the Philadelphia Turngemeinde, April 27. The individual winners of the events were: Rope Climb, Manfred Kraemer, Newark A. C.; Free Calisthenics, Alfred Jochim, Swiss Turn Verein; Long Horse, Adolph Zink, New York T. V.; Side Horse, Frank Haubold, Swiss T. V.; Horizontal Bar, Alfred Jochim, Swiss T. V.; Indian Clubs, Robert Job, Hudson Co. T. V.; Parallel Bars, Alfred Jochim, Swiss T. V.; Tumbling, William J. Heiman Jr., Overbrook High School, Phila.; Flying Rings, Alfred Jochim, Swiss T. V.; All-around, Alfred Jochim, Swiss T. V.

The winners in the intercollegiate tournament held at Philadelphia in March were: Horizontal Bars, D. O. Wells, Massachusetts Tech.; Side Horse, F. M. Adamson, Navy; Parallel Bars, J. I. Stewart, Dartmouth; Flying Rings, W. H. Reynolds, Massachusetts Tech.; Tumbling, A. H. Gould, Dartmouth; Rope Climb, W. J. Galbraith, Navy; All-around, John Menzies, U. of Chicago.

GYPSUM. In 1928 the disorganization and unsatisfactory condition, due to competition and price cutting which had been manifest in this industry since 1926, continued with the result that the quantity and value of gypsum products sold were considerably less than in 1927. This situation continued until towards the close of 1929 when better conditions prevailed, due to a realization of the value of cooperative effort on the part of the producers and a study of production and distribution costs, together with a standardized product. In 1929 there was recorded a tendency to erect new plants adjacent to the centres of consumption rather than near the mines, and as a result large plants were to be found at Chicago, Ill., Detroit, Mich., Boston, Mass., Philadelphia and Chester, Pa., Staten Island, N. Y., and Portsmouth, N. H. It will be seen that all of these plants permitted water transportation of gypsum rock from the mines to the works with resulting economies. In fact, plants located at strategic points with modern equipment were operating much more profitably than the older works.

A number of improvements were made in rotary calcining and other processes, while the utilization of byproduct gypsum in chemical plants was of increasing importance. In 1928 the total quantity of crude gypsum mined in the United States amounted to 5,102,250 short tons. The value of sales was \$32,036,163, of which 999,412 tons valued at \$1,902,034 were sold without calcining and 3,641,385 tons valued at \$30,134,129 were sold calcined. New York as a producer ranked first in the total of value of sales in 1928 with \$9,613,307, followed by Iowa with \$5,555,214, Ohio with \$3,805,795, Michigan with \$3,159,369, Texas with \$3,094,145. Imports of gypsum into the United States in 1928 had a total value of \$1,542,254, of which crude gypsum amounted to 918,586 tons valued at \$1,340,920. The leading source of production of gypsum imported into the United States was Canada with 933,478 tons valued at \$1,242,781; Mexico was second with

92,363 tons valued at \$92,563. The exports of crude gypsum in 1928 amounted to 2112 tons valued at \$23,764. In 1929 imports of gypsum into the United States amounted in value to \$1,214,238, of which 925,344 tons valued at \$1,060,874 were crude gypsum. Exports of crude gypsum in 1929 were 3777 tons valued at \$30,870.

The world production of gypsum in 1927, the last year for which complete figures were available, totaled 11,100,000 metric tons with the United States ranking first as a producer, followed by Canada with 963,677 tons, Spain with 911,346 tons, Italy with 673,931 tons, and Great Britain with 514,364 tons. In 1928 the production of gypsum in Canada amounted to 1,205,846 short tons valued at \$3,622,007, as compared with 1,063,117 tons valued at \$3,251,015 in 1927.

HABERMANN, BARON HUGO VON. A German painter, died in Munich, Feb. 27, 1929. Born in Dillingen, June 14, 1849, he attended a school for court pages and the University of Munich. Discovering a talent for water colors during the 1860s, after War, he studied under Karl von Piloty until 1879. After imitating the Romantic school with such pictures as, "The Monk" and "The Ploughman," he developed an individual style, largely through the study of French modernists, and in 1904 became the president of the Munich Secessionists, one of the earliest groups of German modernists. Baron von Habermann was appointed professor at the Munich Academy in 1905. His first original pictures were descriptive, as "The Sickroom" and "The Daughter," but he later specialized in portraits of women. He received the Order of Merit for Science and Art in 1925. His paintings hang in numerous art galleries throughout Germany, notably in the Munich Pinakothek, the Berlin National Gallery, and in museums at Frankfurt, Hamburg, Bremen, and Hanover.

HADERMANT, THEE See ARABIA

HÆMATOPHANITE. See MINERALOGY.

HAGUE TRIBUNAL. See ARBITRATION, INTERNATIONAL.

HAITI, hâïtë A West Indian republic comprising the western third of the island of Haiti, the other part being the Dominican Republic, or Santo Domingo (capital, Port-au-Prince) See DOMINICAN REPUBLIC.

AREA AND POPULATION. The area has been variously estimated at from 10,204 to 11,072 square miles, population, estimated, 1927, 2,550,000, excluding 3000 foreign white residents and the military and naval forces of the United States stationed there in conformance with the Treaty of 1915. The capital, Port-au-Prince, had a population of approximately 80,000 in 1929, excluding suburbs. Cape Haitien, about 12,500; Aux Cayes, 12,500; Gonaves, 10,000; St. Marc, 8000; Jacmel, 7500, and Port-des-Paix, 5000. The inhabitants are Negroes and mulattoes, the later descended from French settlers. The language is a dialect known as Creole French. There was a comparatively large migration to Cuba, amounting to 14,098 in 1928 and 21,619 in 1927. Many of the emigrants returned to Haiti annually after the Cuban crops were harvested.

EDUCATION. Primary instruction is free and has been compulsory since 1910. In 1927-28 there were 1179 schools with 107,551 pupils enrolled. Of the total school enrollment, about 10,000 were in the American-directed agricultural and vocational schools in 1929, and 95,000 in Haitian-controlled schools which offer the usual aca-

demic education About 10 32 per cent of the total budget was devoted to education, the appropriations being equally divided between the American- and Haitian-controlled institutions. In recent years, the rural schools have been much improved Secondary education is provided by national lycees and by private institutions The University of Haiti was established in 1921

PRODUCTION. Eric Haiti is preponderantly agricultural Coffee, cotton, tobacco, logwood, sugar, and cacao are exported in considerable volume, but prosperity follows the trend of coffee production and prices. Haiti experienced an exceptionally prosperous year in 1928 due to a large coffee crop, which amounted to 90,712,000 pounds, valued at \$17,916,000, as compared with a crop of 63,257,000 pounds, valued at \$11,384,000, in 1927 In 1928-29 crops were less satisfactory, coffee exports declined sharply, and a severe depression ensued The 1928 cotton crop was smaller than in 1927 but brought higher prices, virtually the entire crop being exported Cotton exports totaled 9,761,000 pounds in 1927-28, valued at \$2,002,000, as compared with 10,805,000 pounds, valued at \$1,467,000, in 1926-27 The export crop of sugar amounted to 13,475 metric tons of raw, and 3200 tons of refined, sugar, cacao production remained practically stationary, while tobacco production expanded to 2,500,000 pounds. Livestock in 1927 consisted of 67,000 cattle, 185,000 swine, 5000 sheep, 216,000 goats, 115,000 horses, and 233,000 mules and asses.

Mineral resources are considerable although undeveloped They include copper, coal, and iron, for the working of which some concessions have been granted, also gold, silver, antimony, tin, sulphur, kaolin, limestone, porphyry, nickel, and gypsum In 1928 there were two sugar mills, a logwood factory, a cottonseed-oil plant, and a number of smaller manufacturing plants supplying local requirements Among the minor products manufactured in Haiti, of little commercial importance but typical of domestic life, are baskets, ropes, fish nets, and hammocks.

COMMERCE. The foreign trade of Haiti declined sharply during the fiscal year ending Sept. 30, 1929, from the totals reached in the banner year, 1927-28, the total trade amounting to \$33,962,000, or a decrease of \$12,915,600 from 1927-28. The 1928-29 trade, however, exceeded the 1926-27 figure of \$31,050,400, which according to the *Monthly Bulletin* of the Financial Adviser-General Receiver for September, 1929, represented what was considered a normal year Imports in 1928-29 were valued at \$17,238,000, as compared with \$20,248,000 in the previous year, and exports amounted to \$16,724,000, as compared with \$22,667,000 in 1927-28. There was an import excess of \$514,000, as contrasted with an export surplus of \$2,419,000 in 1927-28 France continued as the leading market for Haitian products, taking 55 29 per cent of the total value, as compared with 49 77 per cent in the preceding year Exports to the United States declined from 8 18 per cent of the total in 1928 to 7 81 per cent of the total Imports from the United States also declined from 75 34 per cent of the total value in 1928 to 68 85 per cent of the total in 1929 Depressed business conditions in 1929 were accompanied by the failure of a number of business firms.

FINANCE In the budget for the fiscal year ending Sept. 30, 1930, issued by decree of Presi-

dent Borno on Aug. 16, 1929, total expenditures were fixed at 40,090,989 gourdes and the revenues were estimated at 40,100,000 gourdes (one gourde being equivalent to \$0 20) The largest item of expenditure was the sum of 13,464,962 gourdes set aside for the service of the public debt Other items were Interior, 11,576,645 gourdes, Public Works, 5,716,440, Agriculture, 2,841,666, Justice, 1,327,095, Public Instruction, 1,947,268, Labor, 945,000, Finance, 889,980, Foreign Relations, 584,200, Worship, 457,672, Commerce, 340,060 Customs receipts were calculated at 33,600,000 gourdes (actual receipts were 45,082,000 in 1927-28), and internal taxes at 6,200,000 gourdes (4,242,000 in 1927-28) Miscellaneous receipts were placed at 800,000 gourdes in 1929-30 and amounted to 1,047,000 in 1927-28. In 1927-28 export duties amounted to 7,364,602 gourdes, or 31 14 per cent of the total customs receipts of 45,082,092 gourdes. In 1928-29 actual revenues totaled \$8,504,305, or 15 6 per cent less than in 1927-28, while actual expenditures were \$8,823,000, or 7 6 per cent more than in the previous year. Customs receipts in 1928-29 declined by 21 8 per cent to \$7,049,530

The gross public debt of Haiti on July 31, 1929, totaled 88,757,000 gourdes, as compared with 94,860,000 on the same date in 1928, and 100,107,000 in 1927 Assets July 31, 1929, amounted to 33,968,000 gourdes

COMMUNICATIONS In 1928 there were 158 miles of railway line, all privately owned, the gross receipts from which totaled \$261,000 A highway system of 930 miles connects almost all of the principal towns and production centres and provides the leading means of transportation Much of the system is suitable for automobile travel In 1927-28 the telegraph system had 1777 miles of wire and gross receipts amounted to \$36,960, while the telephone system had 4888 miles of wire and gross receipts amounted to \$102,700 An air-mail line Haiti and other Caribbean countries United States was inaugurated Jan. 9, 1929

GOVERNMENT The constitution as adopted June 12, 1918, provides for the National Assembly to consist of the Senate and House of Representatives This body has never been elected Instead, the legislative functions are carried on by the Council of State, consisting of 21 members appointed by the President and holding office at his pleasure and apportioned among the several departments, who were supposed to act until the President fixed the date for the election of the Assembly As he had never done so, this body still functioned at the end of 1929 Executive power is vested in the President elected for six years by the Council of State He acts through a ministry of five members The President in 1929 was Louis Borno, who was elected Apr. 10, 1922, and reelected Apr. 10, 1926

HISTORY

An outbreak in Haiti in December, 1929, which resulted in the declaration of martial law by the American forces of occupation and in a clash between marines and a mob of 1500 Haitians at Aux Cayes, December 7, in which five Haitians were killed and 20 wounded, attracted the attention of the United States to its relations with the Negro republic. The outbreak was primarily the result of the internal political situation, which was complicated by American support of President Borno and his administration. Poli-

ties in Haiti is carried on largely by the educated mulattoes. The great bulk of the population (85 to 90 per cent) is totally illiterate and, generally speaking, takes part in the political life of the country, if at all, under the direction of the mulattoes and a few educated Negroes.

Trouble had been brewing for some time under the régime of President Borno, who had ruled the country since 1922. Constitutional amendments adopted in January, 1928, authorized the Government to curtail the freedom of the press, abolish jury trials, and to replace all judges in 1929. The term of the Presidency was extended from four to six years, but the incumbent was made ineligible for reelection. Government organs, however, contended that the amendment did not apply to President Borno, as he was in office at the time the amendment was passed. The President's long silence as to his plans led the Opposition to fear he would be a candidate for reelection with the support of the American officials and the agitation against his régime was increased. On November 27, Borno announced that he would not accept a third term. The Opposition was not satisfied, however, as the President is chosen by the Council of State, which Borno appointed and controlled.

A further cause of unrest was the announcement of President Borno on October 12 that because of the "passions" of the Opposition, elections for the Legislature, which he had promised in April, 1928, would be held in January, 1930, would again be postponed. No elections had been held in Haiti since 1917. Following this announcement, a number of leading Haitians organized the National League of Constitutional Action, which demanded the restoration of the Haitian constitution and the "reinstatement of the nation in its right of sovereignty." A public meeting called by the league was broken up by the police under orders of the Borno government, several speakers were arrested, and a number of Opposition newspapers were suppressed.

The prevailing unrest found expression on October 31, when students of the Central School of Agriculture struck because the Government had reduced by \$2000 a \$10,000 scholarship fund at the school. The strike spread to other colleges and professional schools and finally to employees in the customs office at Port-au-Prince and to dock workers and other laborers. Martial law was declared in Port-au-Prince and Cape Haitien by Colonel Richard Cutts, commander of the U. S. Marines in Haiti, on the night of December 4, after customs employees had destroyed office furniture and injured two United States officials. Minor clashes between excited mobs and the American Marines or members of the Haitian National Guard occurred on December 5 and 6, followed by the trouble at Aux Cayes December 7.

The U. S. State Department took cognizance of the seriousness of the situation on December 4, by making public a message sent to President Borno, commending him upon his decision to withdraw from the presidential race. On December 6, additional Marines were dispatched to Haiti and, on the following day, President Hoover sent a message to Congress asking for an appropriation of \$50,000 to send to Haiti a commission to investigate the situation and to "endeavor to arrive at some more definite policy than at present." The President had recommended the dispatch of such a commission to

Haiti in his regular message to Congress on December 4.

The cruiser *Galveston*, with a marine detachment of 50 men, arrived at Jacmel December 8 and within a few days the situation had quieted to such a degree that President Hoover ordered the marine reinforcements en route from the United States diverted to the American naval base at Guantanamo. A modified system of martial law continued in force for some time, but there were no further disturbances.

On December 15, the presidents of seven Haitian political organizations dispatched petitions to President Hoover asking for American supervision of the legislative elections in April. They stated that free and impartial elections could not be held under the existing French electoral system, and requested that provision be made for the election of the President by direct suffrage instead of by the Council of State, as provided in the constitution. At the end of the year, observers reported that the agitation against the Borno government was continuing and that further disturbances might be expected unless more satisfactory provision was made for a popular election. The United States House of Representatives on December 18 approved President Hoover's recommendation for the sending of a commission to Haiti, but no action had been taken by the Senate up to the end of the year.

President Borno, on November 26, appointed a new cabinet, consisting of Antoine C. Sansaricq, Foreign Minister; Francis Salgado, Finance Minister; Charles de Delha, Minister of the Interior; Hannibal Price, Minister of Education; and Charles Riboul, Minister of Justice. A treaty fixing the boundary line between Haiti and the Dominican Republic, signed Jan. 21, 1929, was ratified by Haiti on February 11 and by the Dominican Republic on February 25. The resignation of Dr. A. C. Mill-pugh, American Financial Adviser to the Haitian government, was announced in January. The reasons for his withdrawal were not given.

HALDANE, J. S. See **PHILOSOPHY**.

HAMILTON, WILLIAM PETER. An American editor, died in Brooklyn, N. Y., Dec. 9, 1929. He was born in England, Jan. 20, 1867, and began newspaper work in 1880 on the staff of the *Pall Mall Gazette*, for which he traveled as correspondent to many parts of the world. He served as lieutenant of the British Auxiliary Forces, the Royal Engineers, and was war correspondent in the first Matabele war, South Africa (1893-94). He went to America in 1899, where he joined the staff of the *Wall Street Journal*, of which he became editor in 1908. Mr. Hamilton was a contributor on financial and economic topics to many magazines. He wrote *The Stock Market Barometer* (1922).

HAMILTON COLLEGE. A nonsectarian institution for the higher education of men in Clinton, N. Y., founded in 1812. A total of 433 students was registered for the 1929 autumn session, distributed as follows: Seniors, 84; juniors, 85; sophomores, 112; and freshmen, 152. There were 43 members of the faculty for the year 1929-30. The productive funds of the college were approximately \$4,223,327 and the income for the year 1928-29 was \$381,784. The library contained 130,330 volumes and 30,325 pamphlets. President, Frederick C. Ferry, Ph.D., Sc.D., LL.D.

HAMILTON SALE. See **ART SALES**.

HAMPTON, HERBERT. An English sculptor and painter, died in London, Feb. 13, 1929. Born in 1862, he attended Bishop-Stortford College, and later studied art at Westminster, the Slade Schools, London, and at Paris. Mr. Hampton was chosen to design a number of important public memorials, including Queen Victoria's memorials at Ipswich, Lancaster, New Zealand, and India; the Lord Abedare Memorial for Cardiff, Wales; the Hon. William Rolleston Memorial for New Zealand, and that for the Maharaja Mayurbhanj. Among Hampton's portraits are those of Queen Mary, Lord Kelvin, Maharaja Tagore, and Raja Ban Bahari. He also painted a number of ideal interpretations, several, such as "Appolo," "Orpheus," and "The Huntress," being hung in the Royal Academy, London, or the Salon, Paris.

HAMPTON NORMAL AND AGRICULTURAL INSTITUTE. An institute founded in 1868 in Hampton, Va., for the education of Negroes and Indians. The enrollment for the autumn term of 1929 was 1003, while that for the two summer sessions was 1138. The faculty for the autumn school session ending May 29 numbered 10. Productive funds on June 30, 1929, amounted to \$9,268,083 and the income from all sources was \$601,371. There were 70,354 volumes in the library. Acting principal, George P. Phenix.

HANDBALL. Alfred Banuet, of the Olympic Club, San Francisco, was the champion handball player in the United States in 1929. He triumphed over Joseph Griffin of the Detroit Y. M. C. A. in the final of the senior four-wall championship held at the New York Athletic Club in the late part of March, and paired with his clubmate, Lane McMillan, to capture the doubles event with ease. The one-wall singles title contested at the 7th Regiment Armory in New York in March went to Mike Schmookler, of the Trinity Club, Brooklyn, while Eckard Galowin and Seymour Alexander of the Trinity Club earned the doubles championship. F. Olney of the Los Angeles A. C. captured the junior singles championship at his home club in February, while the doubles event was taken by Joe Powers and Harry Goube, of the Los Angeles A. C. in March.

HANNAUER, GEORGE. An American railway president, died Nov. 2, 1929, in New Haven, Conn. He was born Dec. 19, 1872, in St. Louis, Mo. He began work with the Terminal Railroad Association in St. Louis in 1890. In 1903-07 he was superintendent of the Wiggins Ferry Company, after which he became superintendent of the Indian Harbor Belt Railroad, being promoted to general superintendent in 1911 and to general manager in 1912. In 1920 he also became vice president, and in 1922 relinquished his duties as general manager. He was selected as president of the Boston & Maine Railway in 1927 and soon distinguished himself in connection with his able work on the financial and physical rehabilitation of this system. Mr. Hannauer was known as an authority on railway terminal operation in which he had spent the greater part of his career.

HARBORS. See PORTS AND HARBORS.

HARMSWORTH, SIR HILDEBRAND AUBREY. An English journalist, died in London, Apr. 18, 1929. He was born in 1872, and was educated under private tutors and at Merton College, Oxford. At the age of 16, he joined his brothers, Lord Northcliffe and Lord Rothermere in journalism. He himself started the *New Liberal*

Review in 1901, and was sole proprietor of the *Globe*, a newspaper, 1908-11. He was twice an unsuccessful candidate for the House of Commons, first contesting Gravesend as an Imperial Liberal in 1900, and again in 1906 contesting Mid Salop as a member of Mr. Chamberlain's fiscal reform party. In 1922 he was created a baronet.

HARRISON, CHARLES CUSTIS. An American educator, former provost of the University of Pennsylvania, died in Philadelphia, Pa., Feb. 12, 1929, where he was born May 3, 1844. He was graduated from the University of Pennsylvania in 1862, receiving the A. M. degree in 1865. He was engaged in the sugar-refining industry from 1863-92. Having been trustee of the University of Pennsylvania since 1876, Mr. Harrison was appointed acting provost in 1895, and the following year made provost, retaining that position until 1911. He devoted his energies to developing the university and during his administration the assets increased from \$5,000,000 to \$17,000,000, and 27 dormitories, the museum, law school, engineering and dental buildings, gymnasium, and Henry Phipps Institute were added. The honorary LL. D. degree was conferred on Mr. Harrison by Columbia, 1895; Princeton, 1896; Yale, 1901, and the University of Pennsylvania, 1911.

HARRISON, (LOVELL) RINGE. American landscape painter, died in Woodstock, N. Y., May 11, 1929. He was born Oct. 28, 1854, in Philadelphia, Pa. He studied art in Philadelphia and in Paris with Carolus Duran and under Cabanel. Because of ill health, Mr. Harrison traveled and painted in Australia, the South Sea Islands, and the western part of the United States from 1889 to 1893. He was especially famous for his scenes of snow and city streets. His paintings are found in the museums of Europe and America, and he received medals at expositions in Paris and in the United States. In 1910 he was a director of the landscape school of the Art Students' League in New York; he was a member of the National Institute of Arts and Letters, National Academy of Design, and the Union Internationale des Arts and des Lettres. Among his best-known paintings are "November" (Metropolitan, Marcellus), "Return from the First Communion", "Summer Idyl", "Calling Home the Cows", "The Hidden Moon", "Quebec from the River", "The Flatiron Building in a Blizzard", "Fifth Avenue at Twilight". In 1909 he published *Landscape Painting*.

HARSEBERGER, JOHN WILLIAM. American botanist, died in Philadelphia, Pa., Apr. 27, 1929. He was born Jan. 1, 1869, in Philadelphia and was graduated from the University of Pennsylvania in 1892. He made botanical expeditions to Europe, Brazil, Argentina, Chile, Mexico, Alaska, Arizona, Utah, Canada, West Indies, southern Florida, in the Northwest, and in the Eastern States. In 1892 he returned to the University of Pennsylvania as instructor in botany and zoology, becoming assistant professor in 1907 and professor in 1911. He lectured in the Society for the Extension of University Teaching and in farmers' institutes in Pennsylvania, 1904-06. He was in charge of nature study, Pocono Pines Assembly, in the summers of 1903-08, of ecology, Maine Biological Laboratory, Cold Spring Harbor, N. Y., 1913-21, and of botany, Nantucket Maria Mitchell Association, 1914-15. His writings include *Maze, a Botanical and Economic Study* (1893); *The Botanists of Philadelphia and their Work* (1899); *A Phytogeographic Survey of*

North America (1911), in *The Vegetation der Erde* series; *Vegetation of South Florida* (1914), *The Vegetation of the New Jersey Pine Barrens* (1916); *Pastoral Agricultural Botany* (1920).

HARVARD UNIVERSITY. A nonsectarian institution of higher education for men in Cambridge, Mass., founded in 1636. The number of students enrolled for the year 1929-30 was 8312, distributed as follows: College, 3202, including 568 seniors, 705 juniors, 857 sophomores, 987 freshmen, and 85 out of course. Graduate schools: Arts and science, 945; business administration, 1011; education, 289; Professional schools: *Financing*, 283; theology, 85; law, 1639; medicine, 616; dentistry, 108; public health, 21; architecture, 73; landscape architecture, 58. Special students, 56; Bussey Institution, 20. For the summer session of 1929, the registration was 3076. The officers of instruction for 1929-30 numbered 1427, of whom 261 were professors, 87, associate professors, and 138, assistant professors. Among those who assumed permanent chairs during the year were: Edward Sampson Thurston, professor of law; Albert Hertlein, associate professor of civil engineering; Sidney Bradshaw Fay, professor of history; Aiden Benjamin Dawson, associate professor of zoology; Baron Alexander von Staël-Holstein, professor of Central-Asian philology; and Harry Hemley Plaskett, associate professor of astrophysics.

The list of visiting professors and lecturers during the year included Henri Guy, president of the University of Grenoble, who came as exchange professor from France for the first half-year; Marcel Aubert, professor of medieval archaeology in the École Nationale des Chartes, Paris, came as lecturer on fine arts for the first half-year; and Leon Rohin, professor of the history of ancient philosophy at the Sorbonne, Paris, came as lecturer on philosophy for the first half-year. England was represented by three lecturers: Arthur Darby Nock, fellow of Clare College, Cambridge, as lecturer on the history of Christianity during the first half-year; Benedict Humphrey Sumner, lecturer and tutor in modern history in Balliol College, Oxford, as lecturer on history during the second half-year; and William Boothby Selbie, principal of Mansfield College, Oxford, as the William Belden Noble lecturer in the field of religion. The German lecturers were: Wolfgang Laepe, professor of the German language and literature in the University of Kiel, as lecturer on German for the first half-year; and Otto von Guericke, professor of physics in the University of Göttingen, as lecturer on physics during the first half-year.

Svein Rosseland, director of the astronomical observatory at the University of Oslo, lectured on astronomy; and Tibor Rádó, lecturer on mathematics in the University of Szeged, lectured on mathematics for the first half-year. Otis Johnson Todd, professor of Greek in the University of British Columbia, came as lecturer on Greek and Latin; William Hung, professor of history in Yenching University, was again lecturer on Chinese history; and Robert Alexander Falconer, president of the University of Toronto, came as the Ingersoll Lecturer on the Immortality of Man. Among the lecturers from American colleges and universities were: Chauncy Brewster Tinker of Yale University, in fine arts; Thomas Harrison Reed of the University of Michigan, in government; John Paul Nafe of Clark University, in psychology; James Blaine Hedges of

Clark University, in history; Ernest Stacey Griffith of Syracuse University, in government; and Arthur McCandless Wilson of Grinnell College, in history. The Western exchange professor chosen for the second half-year of 1929-30 was Walter Silz, assistant professor of German, to lecture at Carleton, Grinnell, and Pomona Colleges. Walter Bradford Cannon, George Higginson, professor of physiology, was chosen as exchange professor from Harvard to France for the second half-year.

The total productive funds of the university in June, 1929, were \$92,978,138; and the total income for the year, including gifts for immediate expenditure, was \$12,888,034. The operating expenses for the year ending June 30, 1929, were \$11,608,095 and were budgeted from the following sources of income: Funds and gifts, \$5,691,539, and operating receipts, \$5,916,556, including tuition fees, \$2,781,198, dormitory rentals, \$768,647, income of dining halls and Harvard Union, \$828,065, income from athletic sports, \$853,446, and other operating income, \$685,200. The Harvard House Plan, which was made possible by a gift in 1928 of more than \$11,000,000 by Edward S. Harkness, had advanced to the stage where the first two houses, Dunster and Lowell, named after the earliest and latest presidents of the university, were ready for occupancy. In September, 1930, Professor Chester Noy, who had been appointed head of Dunster House and Prof. Julian Lowell Coolidge head of Lowell House. The plan called for the construction of several additional residential units to house the three upper classes, each house to represent a cross-section of the college, thus promoting a better understanding between diverse groups of undergraduate students.

A school of city planning, made possible by a grant from the Rockefeller Foundation, was founded as part of the faculty of architecture. Prof. Henry Vincent Hubbard of the school of landscape architecture being chosen as head. The Charles D. Norton chair of regional planning, held by Professor Hubbard, was endowed by James P. Curtis; the degree of master in city planning will be awarded. Two new institutes were founded in connection with the law school: The Institute of Criminal Law, under the direction of Prof. Francis Bowes Sayre, will study the problem from the point of view of guilt-finding and of the treatment of those individuals who are convicted. The Institute of Comparative Law, headed by Prof. Josef Redlich, will afford students a concrete basis of ideas from the law of other countries on which to build the legal reforms of the future. A new gymnasium also was completed during the year.

The requirements for a knowledge of languages were changed so that a grade of 70 per cent in the admission examination in advanced German or French would be accepted in satisfaction of the reading requirements in those languages. The library contained 2,866,200 volumes and pamphlets. President, Abbott Lawrence Lowell, Ph.D., LL.D.

HASTINGS. THOMAS American architect, died Oct. 22, 1929, in Mineola, N. Y. He was born in New York City, Mar. 11, 1860, and was graduated from École des Beaux Arts, Paris, in 1884. The following year, with John M. Carrère, he formed the firm Carrère & Hastings, which soon established for itself a high place among archi-

teacts Their first notable pieces of work were the Ponce de Leon and Alcazar hotels in St. Augustine, Fla. They designed the New York Public Library at Fifth Avenue and Forty-second Street, St. Ambrose Chapel in the Cathedral of St. John the Divine, the memorial amphitheatre where the Unknown Soldier is buried at Washington, the pedestal for the statue of Lafayette in the Louvre, Paris, the American Embassy and Devonshire House in London, and many other well-known buildings Mr Hastings received many honors in recognition of his attainments, among them membership in the National Academy of Design and the American Academy of Arts and Letters, and he was made Chevalier of the Legion of Honor

HAUK, MINNIE A famous German dramatic and coloratura soprano, died in Lucerne, Switzerland, February 6 She was born in New York, Nov 16, 1852 Trained under A Errani in New York and M Strakosch in Paris, she won immediate success at her debut as Amina in Bellini's *Somnambula* (Brooklyn, Oct. 13, 1866) Two years later, she sang at Covent Garden During 1870-73 she was a member of the Hofoper in Vienna, and during 1873-77 of the Komische Oper in Berlin After that, until her retirement from the stage in 1890, she sang only as guest in the principal opera houses of Germany, Austria, France, Belgium, England, and the United States In 1881 she married the celebrated traveler Count Ernst von Hesse-Wartegg, and with him made three tours around the world During the war, her entire fortune was swept away, but as soon as her plight became known, a fund was raised by Geraldine Farrar and the Music Lovers' Foundation of New York In 1919 her eyesight began to fail and by 1922 she was almost totally blind During her brilliant career, she appeared in about 100 operas, her most famous role being Carmen, which she sang over 500 times in French, German, Italian, and English She was not only a great singer, but also a remarkable actress She wrote her autobiography under the title, *Memoirs of a Singer* (London, 1925)

HAVERFORD COLLEGE. An institution of higher education under the control of the Society of Friends in Haverford, Pa., founded in 1833 Registration for the autumn term of 1920 totaled 297 students, distributed as follows Graduates, 7, seniors, 58, juniors, 68, sophomores, 82, and freshmen, 82 There were 37 members on the faculty The productive funds of the institution amounted to \$4,210,289, par value, and the total income for 1928-29 was \$477,777 The endowment was increased by \$12,850, and \$25,750 was expended for new buildings The library contained 113,000 volumes President, William Wistar Comfort, Ph D., Litt D, LL D.

HAWAII, ha-wai' A territory of the United States, consisting of a group of islands in the north central Pacific Ocean, formally annexed, Aug 12, 1898 The nine inhabited islands with their respective areas in square miles are as follows Hawaii, 4015, Maui, 728, Oahu, 599; Kauai, 547, Molokai, 261, Lanai, 139, Niihau, 97, Kahoolawe, 69, Midway, 27 Capital, Honolulu, on the island of Oahu The population according to the census of 1920 was 255,912, as compared with 191,909 in 1910 On June 30, 1929, the Board of Health estimated the population at 357,619, of which 236,577 were American citizens and 121,072 aliens. The population

was divided by race and nationality as follows: American, British, German, Russian, 38,006; Japanese, 137,407, Filipino, 63,869, Portuguese, 20,717, Chinese, 25,211, Hawaiian, 20,479, Caucasian-Hawaiian, 16,087; Asiatic-Hawaiian, 10,598, Porto Rican, 6023, Korean, 6393; Spanish, 1851; others, 508. The birth rate in 1928 was 33.84 per 1000 population, as compared to 37.16 for 1927, the total births being 11,543 The death rate for 1928 was 11.7 per 1000 population, as compared to 11.87 for 1927, the total of deaths being 3092 The infant mortality rate was 83.69, as compared with 95.97 for 1927 and 104.21 for 1926. Marriages for the year were 2736, or 8.02 per thousand population Honolulu, the largest city, had an estimated population in 1928 of 113,000

EDUCATION Hawaii's public-school system is centralized under Territorial control. All public schools are under the direction of the superintendent of public instruction and commissioners appointed by the governor The total expenditures for public schools, including the teachers' normal and training school for the year ending June 30, 1928, was \$5,41,788 During the school year 1928-29, there were maintained 250 schools with 2485 teachers and 70,332 pupils There were 65 private schools with 440 teachers and 9497 pupils The University of Hawaii at Honolulu had 38 instructors and 536 students in 1927. English is the language of instruction

PRODUCTION AND COMMERCE Agriculture is the main industry of the islands and the two chief export crops are sugar and pineapples, although coffee, hides, honey, sisal, bananas, rice, wool, tobacco, and cotton also are exported. Production of raw cane sugar during the crop year 1928-29 was estimated at 852,000 short tons, as compared with about 904,000 tons in the previous year

The pineapple crop amounted to 8,633,000 cases of 24 cans each, as compared with 8,879,000 cases in 1927 Pineapple exports for 1928 amounted to \$40,871,000, or about \$6,000,000 more than in the previous year Investments in the pineapple industry at the end of 1928 were estimated at \$16,381,500 for canneries and \$13,958,500 for fields, the total acreage under cultivation being 49,356 The 1928 coffee crop was estimated at 6,750,000 pounds, 12 per cent larger than in 1927, but shipments to the United States were only 3,700,000 pounds, or one-third less than in the previous year Banana shipments declined from 217,000 bunches in 1927 to 183,500 bunches Livestock on the islands in 1927 included 168,000 cattle, 17,000 swine, 15,000 sheep, and 20,000 horses, mules, and asses Manufacturing consists principally of the canning of pineapples and the preliminary processing of sugar, which is shipped to the United States for refining The manufacture of paper and building material from cane pulp was under experiment

Commerce of the islands is largely with continental United States, the value of shipments to the mainland in 1928 totaling \$116,956,000, as compared with \$109,236,000 in 1927, and \$98,261,000 in 1926 Exports to other countries in 1928 amounted to \$2,624,000 Imports from the United States in 1928 were \$77,824,000 and in 1927, \$79,630,000, while imports from other countries in 1928 totaled \$10,362,000 and in 1927, \$9,172,000 Raw and refined sugar and canned pineapple are the chief exports to the United States, the respective values in 1928 being \$72-

036,000 and \$39,589,000 Shipments from the United States to Hawaii included vegetable food products, textile products, lumber, iron and steel, nonmetallic minerals, oils, machinery, chemicals, and a wide variety of other manufactures Imports from foreign countries consisted mainly of jute from India, nitrates from Chile, silks from China and Japan, native foodstuffs from Japan, meat and butter from Australia and New Zealand Canada, Great Britain, and the Philippines took considerable quantities of canned pineapple

FINANCE Receipts by the various counties showed a decline during the year June 30, 1929, the total receipts for the year, as compared with the receipts for the previous fiscal year The revenue of the government for 1928-29 was \$11,926,631 and expenditures (not including capital outlays), \$10,682,110, as against a total income of \$11,579,668 and expenditures (not including capital outlays) of \$9,579,058 for the previous year Including capital outlays, the total expenditure in 1927-28 amounted to \$12,709,000 Total resources on June 30, 1929, were \$2,389,512 The bonded indebtedness, which stood at \$28,585,000 on June 30, 1928, was increased by \$1,175,000 on Feb 1, 1929, by an issue of 4½ per cent public-improvement bonds

COMMUNICATIONS In 1928 there were about 1038 miles of railways operating on the various islands, of which railway companies operating public lines had 368 miles The remainder consisted mainly of private lines operated by plantations, but which carried passengers as well as freight During the year ending June 30, 1928, the public lines carried 2,211,000 tons of freight and 1,073,000 passengers A number of the islands have excellent highways and in 1928 there were 36,300 motor cars registered, 23,000 of which were in the city of Honolulu New vessels were added in the same year to the fleet of 16 small steamers which provided regular service to all important points in the islands There were 64,862 miles of telephone wire, and 22,031 instruments operated by four companies on June 30, 1928 On Nov 1, 1929, an inter-island commercial air service was inaugurated

GOVERNMENT The territorial elections are held regularly in November of each even year, to elect the delegate to Congress for two years, one-half of the Hawaiian Senate for four years, and all the members of the Hawaiian House of Representatives for two years The sessions of the Legislature are held biennially in odd-numbered years Governor in 1929, Lawrence M Judd

HAWKES, MCDON GALL An American lawyer, died in New York, Mar 22, 1929, where he was born July 29, 1862 He attended schools in Germany and France and, having received the M A degree from Columbia in 1885 and the A B degree in 1886, he was graduated from the law school in 1887 Admitted to the bar in the year of his graduation, he practiced in New York until his death In 1899 he became first vice president of the New York Republican County Committee and as commissioner of docks and ferries in New York, 1902-03, he was instrumental in carrying out the Chelsea improvement He served as bridge and tunnel commissioner of New York State, 1907-28 Mr Hawkes aided in the foundation of the French Institute in the United States, and was chairman of the trustees of the French-American Chamber of Commerce, Inc

HAY. The total hay crop of the United States in 1929 was estimated by the Department of Agriculture at 114,039,000 tons, which was 7 8 per cent larger than the crop of 1928 and 7 9 per cent larger than the average production of the five years 1923-27 The 1929 crop was larger than in 1928 in the area extending from the New England States westward to South Dakota and southward to Tennessee South and west of this area production was less than in 1928 in most States Due to a small carryover of old hay the average December 1 farm price of hay was practically the same as that of the previous year, \$11 77 per ton, although the crop was larger The total farm value at these prices was \$1,349,000,000 in 1929 and \$1,240,000,000 in 1928 The crop of 1929 was made up of 101,715,000 tons of tame hay and 12,924,000 tons of wild hay Although nearly 1,000,000 acres more of wild hay were cut, the production was practically the same as in 1928 as a result of lower yields per acre in some of the prairie hay States

The yields of tame hay in the leading States were estimated as follows Wisconsin, 7,390,000 tons, New York, 6,653,000; Iowa, 6,342,000; Illinois, 5,554,000, Missouri, 5,211,000, California, 5,178,000, Michigan, 5,022,000, and Ohio, 5,009,000 The average yield per acre ranged from 0 01 of a ton in Georgia to 3 52 tons in Arizona As in the preceding year the States growing hay crops wholly or largely under irrigation reported the higher average yields per acre The average farm price per ton on Dec 1, 1929 ranged from \$8 50 in North Dakota to \$22 in Rhode Island The more important wild-hay-producing States in 1929 and their estimated yields were as follows Nebraska, 2,652,000 tons, Minnesota, 2,010,000, South Dakota, 1,712,000, and Kansas, 1,080,000 These four States produced over half of the total crop of wild hay The average yield per acre varied from 0 65 of a ton in South Dakota to 1 70 tons in Delaware, and the farm price per ton on December 1 from \$6 20 in Ohio to \$16 in Florida

The tame hay crop of 1929 included 29,847,000 tons of alfalfa hay (see ALFALFA), 26,991,000 tons of mixed clover and timothy hay, 13,390,000 tons of red, alsike, and crimson clover hay, 10,338,000 tons of timothy hay, 4,323,000 tons of soy bean, cowpea, and peanut hay, and 2,350,000 tons of sweet-clover hay The production of clover hay showed a marked increase over the yield in 1928 During the fiscal year ended June 30, 1929, the United States exported 12,000 tons and imported 36,000 tons of hay Amendment No 2 of the official hay standards, effective Nov 1, 1929, issued by the Department of Agriculture, provided for slight changes, the principal ones being the reduction of the color specifications for No 1 grade from 50 per cent to 45 per cent green in the timothy and clover group, from 60 per cent to 50 per cent in the prairie hay and grass hay groups, and from 45 to 40 per cent in the Johnson grass and Johnson grass mixed hay group

HAYTI See HAITI
HEADLAM-MORLEY, SIR JAMES WYCLIFFE English historian, died Sept 6, 1929, in Wimbledon, England He was born Dec 24, 1863, and was educated at Eton and at King's College, London, and at the University of Berlin From 1886 to 1891, he was a fellow of King's College, and after his years in Germany, he lectured for the Cambridge University Extension He was professor of Greek and ancient history at Queen's College, London (1894-1900), staff inspector of

secondary schools for the Board of Education (1902-20) and a member of the Prime Minister's committee on modern languages (1917-18). From the outbreak of the World War, he worked with the propaganda organization set up at Wellington House (1914-17), was assistant director of the political intelligence bureau in the Department of Information (1917-18), and of the Political Intelligence Department in the Foreign Office 1918-20. He went as a member of the political section of the British delegation to the Peace Conference at Paris (1919). In 1920 the post of historical adviser was created for him in the Foreign Office and there he served until retirement in 1928. He was made commander of the Order of the British Empire in 1920 and upon retirement was knighted. He wrote *On Election by Lot at Athens*, *Life of Bismarck*, *Classical Studies in Germany* (reports issued by the Board of Education), *The History of Twelve Days*, *The German Chancellor and the Outbreak of War*, *The Issue*, *British Documents on the Origin of the War* (vol. xi, being "The Outbreak of War," of which he was editor).

HEART DISEASE. Dr. C. D. Kerley, well known as a pediatrician, discussed "Children Apt to Develop Heart Disease" in the *Journal of the American Medical Association* for February 16. The susceptible child is in the first place the one who is sensitive to rheumatic and other infections, while those with chorea and pains in the lower limbs are more threatened than those without them. If a child presents two or all three of these peculiarities, he is particularly sensitive in this respect. It is very apparent that any focus of local infection like infected tonsils must be removed. Pains in the legs worse in bad weather include the so-called growing pains and, if this symptom is present, no time should be lost in removing infected tonsils, teeth, etc. The author is a great believer in giving these children courses of sodium salicylate, oil of wintergreen and other substances containing salicylic acid, although he does not in this connection mention aspirin, which should relieve the leg pains. This salicylic-acid treatment in advance has been termed unscientific, but, as long as there is a possibility that it can prevent the development of endocarditis, it will find users. In some instances, this liability to rheumatism runs in families and it is in such familial cases that the best prophylactic resources should be utilized.

HEJAZ or HEDJAZ. See ARABIA.

HELMOLTZ. See CHEMISTRY, INDUSTRIAL.

HELMOLTZ, HELMOLT, HANS FERDINAND. A German editor and historian, died Mar. 18, 1929. He was born July 8, 1865, in Dresden, and studied philosophy and history at Leipzig and Bonn. He was appointed to an editorial position in the Bibliographic Institute at Leipzig. His published works include *König Rupprechts Zug nach Italien* (1892), *Fabrics und Süber* (1895), *Weltgeschichte* (9 vols., 1899-1907; English translation, 1902-08), a study based on the ethnographic method and prepared with the aid of 37 specialists, *Ranko-Bibliographie* (1910), *Briefe Gustav Freytags an A. von Stosch* (1913), *Dresden* (1914), *Ehrenbuch des deutschen Volkes* (1923), *Hindenburg* (1926).

HENDERSON, BERNARD WILLIAM. An English historian and educator, died in Windsor Forest, Jan. 11, 1929. Born in London, Nov. 4, 1871, he attended Lincoln College, Oxford. Elected fellow of Merton College, 1894, he also served as

librarian, 1897-1901. He then joined Exeter College, where he remained as tutor from 1902 until his death, also being librarian, 1904-06 and 1916-24, sub-rector, 1905-13 and 1915-18; and senior tutor, 1919-24. At various times, Dr. Henderson served as examiner at London, Cambridge, and Oxford universities. Oxford conferred on him the M.A., and D.Litt. degrees. A student of Roman history, he wrote several books on the subject, which were important for their scholarship, original viewpoint, and vivid style. These were *Life and Principate of the Emperor Nero* (1903), *Civil War and Rebellion in the Roman Empire* (1908), contributions to *A Companion to Latin Classics* (1911), *The Study of Roman History* (1919), *Life and Principate of the Emperor Hadrian* (1923), and *Five Roman Emperors* (1927). He also wrote a history of Merton College, several volumes of poetry, and one Greek history, *The Great War Between Athens and Sparta* (1927).

HENRI, ROBERT. American painter, died in New York City, July 12, 1929. He was born in Cincinnati, Ohio, in 1865, studied art in the Pennsylvania Academy of Fine Arts in Philadelphia, 1886-88, in the Académie Julien and École des Beaux Arts, Paris, 1888-91, and studied without instruction in France, Spain, and Italy. Returning to America, he settled in New York, where he became a leader in the radical movement in American art, and as head of the New York School of Art, the "Independent School," exercised a wide influence. Henri's art was characterized by daring, individuality, sincerity of purpose, and simplicity. His works are in galleries and museums all over the United States and in Europe, and he received numerous prizes and medals. Among his best-known pictures are "La Neige," purchased by the French government for the Louvre; "Spanish Gipsy," in the Metropolitan Museum of New York; "The Equestrian," Carnegie Art Institute, Pittsburgh; "Young Woman in Black," Art Institute of Chicago; "Girl with Fan," Pennsylvania Academy of Fine Arts, Philadelphia; and "Laughing Girl," Brooklyn Institute Museum. He was a member of the National Academy and the American Institute of Arts and Letters.

HENRY, PRINCE OF PRUSSIA (HEINRICH ALBERT WILHELM). German admiral, died Apr. 20, 1929, in Hennelmark, Germany. The second son of Frederick III, Emperor of Germany, and brother of William II, he was born Aug. 14, 1862, in Potsdam, Brandenburg, and educated in the Gymnasium at Kassel (1875-77), and in the Marine Academy (1884-86). He traveled around the world in 1878-80, visited the United States in 1882-84 and 1903, and South America in 1914. In 1880 he was made a naval officer, rising in rank until he became admiral in 1901. In 1906 he was chief of the active battleship fleet and general inspector of the marine. He also was made a field marshal in the Prussian army. In the World War, he held chief command of the German fleet.

HERBETTE, MAURICE. French Ambassador to Belgium, died in Paris, Nov. 3, 1929. He was born in Paris, Nov. 11, 1871, and was educated at the Condorcet Lyceum and the French Gymnasium of Berlin. He entered the diplomatic service as an attaché to the French Ambassador in Berlin. He was chief of the bureau of communications, sub-director of the International Unions, and chief of the cabinet and of the bureau of personnel in the Office of Foreign Affairs. In 1922 he

was appointed Ambassador to Belgium. He wrote *Une Ambassade turque sous le Directoire*, *Une Ambassade persane sous Louis XIV*, a translation of Prince von Bulow's *Politique allemande*, and *L'Avenir de la France*. He was a commander of the Legion of Honor.

HERCULANEUM. See ARCHAEOLOGY

HEREDITY. See EMBRYOLOGY

HERRICK, MYRON T. American Ambassador to France, died in Paris, Mar 31, 1929. He was born Oct 9, 1854, in Huntington, Ohio. After studying at Oberlin College and Ohio Wesleyan University, he was admitted to the bar in 1878. He practiced law in Cleveland until 1886, when he turned to business, holding important offices in Cleveland and New York corporations. Active in politics, he went six times as delegate to Republican National Conventions, was a presidential elector-at-large of Ohio in 1892, and a member of the Republican State Executive Committee and the Republican National Committee. He served with the rank of colonel on the staff of McKinley when the latter was Governor of Ohio and was himself Governor of that State, 1903-06. President Taft appointed him Ambassador to France in 1912, and he held that post until December, 1914, part of the time at the request of President Wilson.

In 1921 Mr. Herrick was again appointed Ambassador to France by President Harding, where he remained until his death. Ambassador Herrick won the admiration of the French people by his refusal to leave Paris when the French government fled to Bordeaux at the beginning of the World War, and he further endeared himself to the French and to Americans in France by his war-relief activities. He organized the American Relief Clearing House in Paris and established the American Ambulance Hospital at Neuilly, France.

In 1915 France awarded him the Grand Cross of the Legion of Honor and at his death in Paris showed him great and unusual honor. Ambassador Herrick's reception of Lindbergh in Paris when the aviator made his famous flight across the Atlantic was considered in both France and the United States a friendly and gracious gesture. He was interested in fair credit, giving as one of his reasons for accepting the ambassadorship to France the opportunity to study that country's excellent system. His *Rural Credits* was published in 1914. A biography of Myron T. Herrick by Col T. Bentley Mott, U. S. A., was published in 1929.

HESSE, hēs. Since November, 1918, a republican state of the German Republic, situated in the western part of Germany, formerly a grand duchy of the German Empire. Area, 2968 square miles; population, at the census of 1925, 1,347,279. The capital is Darmstadt with a population of 89,465. Other important cities are Mayence, or Mainz, with 108,537 (with suburbs), Offenbach, 79,362, Worms, 47,015, and Giessen, 33,600. In 1928 there were 1013 public elementary schools, with 3876 teachers and 149,307 pupils. The areas and yields of the chief crops in 1927 were: Wheat, 79,700 acres, 64,753 tons; rye, 154,215, 112,741; barley, 113,317, 91,630; oats, 118,555, 80,453; potatoes, 150,277, 909,128; 34,247 acres were under vines, yielding 5,120,544 gallons of wine, valued at 24,232,904 marks. On Dec 21, 1928, there were 313,200 cattle, 42,300 sheep, 329,900 swine, and 117,800 goats. The ordinary revenue and expenditure for the

year 1928 were estimated to balance at 170,667,666 marks. The funded debt as of April, 1928, was 73,495 marks, the floating debt, 29,164,000 marks; and the Reichsmark debt, 12,935,375 marks. The government has a unicameral legislature and a responsible ministry. As a result of the elections held on Nov. 13, 1927, the Landtag (70 members elected for three years), the new Diet is composed as follows: Socialists, 24, Democrats, 5, German People's party, 7; Centre, 13, German Nationalists, 3; Hessian Peasants Union, 9, Communists, 6, other parties, 3. The cabinet, nominated on Feb 14, 1928, was as follows: Premier and Minister of Education, Herr Adelung (Socialist), Finance and Justice, Herr Kirmberger (Centre), Interior, Herr Leuchner, Labor and Economic Affairs, Herr Korell (Democrat).

HICKSITE FRIENDS. See FRIENDS

HIDES. See LEATHER

HIGH BLOOD PRESSURE. See ARTERIO-SCLEROSIS AND HIGH BLOOD PRESSURE

HIGH SCHOOLS. See EDUCATION IN THE UNITED STATES

HIGHWAYS, HIGHWAY BRIDGES. See ROADS AND PAVEMENTS, BRIDGES

HILLIS, NEWELL DWIGHT. An American Congregational clergyman and author died in Bronxville, N. Y., Feb 25, 1929. Born in Magnolia, Iowa, Sept 2, 1858, he was graduated from Lake Forest University in 1884, and from the McCormick Theological Seminary, Chicago, in 1887. He was ordained into the Presbyterian ministry in 1887, and as pastor of the First Church, at Peoria, Ill., 1886-89, he became known for his eloquence and enthusiasm. His reputation for scholarship was increased by his pastorate at Evanston, Ill., 1889-95. He then was called to the independent Central Church of Chicago, where he remained until 1899. Dr. Hillis succeeded Lyman Abbott as pastor of the Plymouth Congregational Church, Brooklyn, in January, 1899, where his tremendous activity gained a following comparable to that of his noted predecessor, Henry Ward Beecher. He became president of the Plymouth Institute, an educational institution, at its foundation in 1914. Dr. Hillis in business ventures was far less successful than in the pulpit, and his financial criticism during the years 1911-14, and the failure of various undertakings in which he was involved. Nevertheless he enjoyed the support and confidence of his parishioners in his various difficulties.

Dr. Hillis in addition to his work in the church, traveled continually as an untiring lecturer. At the outset of the World War, 1914, he was outspoken in his denunciation of alleged German atrocities, and in his criticism of the United States Government's neutrality policy. He became pastor emeritus of Plymouth Church in 1924, but he retained his presidency of the Institute until his death. His vigor brought him a reputation in Europe, as well as in the United States, and several of his 20 volumes of sermons were translated into foreign languages. His numerous books include *A Man's Value to Society* (1896), *Great Books as Life Teachers* (1899), *Influence of Christ in Modern Life* (1900), *Success Through Self-help* (1903), *The Fortune of the Republic* (1906), *Contagion of Character* (1911), *Prophecy of a New Era* (1912), *Lectures and Orations of Henry Ward Beecher* (1913), *The Story of Phadrus* (1914), *German Atrocities* (1918), *The Blot on the Kaiser's 'Southceon*

(1918); *Rebuilding the Ruined Lands of Europe* (1919); and *The Better American Lectures* (1921).

HISPANIC SOCIETY OF AMERICA, THE. An international organization founded in 1904, in New York City, to establish a public library and museum designed to be a link between the English-, Spanish-, and Portuguese-speaking peoples, and to advance the study of the Spanish and Portuguese literature, and history, and the study of the countries wherein Spanish and Portuguese are or have been spoken languages. Since 1904, when a collection of paintings, manuscripts, maps, and coins, and a library of about 40,000 volumes were placed in charge of the society, valuable additions have been made to this collection, and a number of temporary exhibitions have been held of the works of noted Hispanic artists. Membership in the society is limited to 100, is honorary, and includes specialists and scholars of all nationalities distinguished in the Hispanic field. The society has published over 200 catalogues, reprints of old manuscripts, and monographs. The *Revue Hispanique* is published every two months in Paris. The president for 1929 was Archer M. Huntington and secretary, George Bird Grinnell. The museum and headquarters of the society are at 150th Street, West of Broadway, New York City.

HISTORICAL ASSOCIATION, AMERICAN. A society for the promotion of historical studies and writings, formed in 1884 by a group of American scholars and chartered by Congress in 1889. Under provision made by the United States Government, it publishes annual reports and is charged with the office of communicating its proceedings and its information on the state of historical study and writing to the secretary of the Smithsonian Institution, for transmission to Congress. In 1929 the association had a membership of 3700, who represented not only every State of the Union but also Canada and many European and South American countries. It invites to membership not only those who are engaged in historical work and teaching but all who feel a sufficient interest in historical science to prompt them to join.

The forty-fourth annual meeting opened Dec. 30, 1929, and was held in Durham and Chapel Hill, N. C. Among the subjects of papers delivered and topics discussed at the various conferences were the following: "The Theory of Persecution during the Middle Ages"; "Opportunities for Research in American History"; "Erasmus and Toleration"; "The Revolt in the Old Southwest"; "The Content and Scope of American Social History"; "The Historical Importance of Parthia"; "Andrew Jackson, a Century Estimate"; "Nineteenth Century Nationalism"; "The Rehabilitation of a Rural Commonwealth"; "Diplomatic Episodes of Modern European History"; "The Industrial Revolution in the Twentieth Century"; "The League of Nations"; "The Great Plains and the American Frontier"; "The Place of Bolshevism in the History of Russian Socialism"; and "Imperial Unity, 1760-74." During the presentation of the paper on Imperial Unity by Clarence E. Carter of Miami University, it was announced by Randolph G. Adams, director of the University of Michigan Library, that the university had recently obtained the papers of Gen. Sir Thomas Gage, British commander-in-chief in America, 1763 to 1775.

For the encouragement of historical research, the association offers two biennial prizes of \$200 each for the best monograph, printed, or in manuscript, in the English language, submitted by a writer who has not achieved an established reputation. The Herbert Baxter Adams Prize, awarded in odd years for an essay in the history of the Eastern Hemisphere, and in even years the Justin Winsor Prize for an essay in the history of the Western Hemisphere, are the insular possessions of the United States. The Herbert Baxter Adams Prize was awarded in 1929 to H. S. Commager for his work, *Struensee and the Reform Movement in Denmark*.

The George Louis Beer Prize of \$250, which was established in honor of its founder, the late George Louis Beer, for the best work upon any phase of European international history since 1895, was awarded for 1928 to Sidney B. Fay for *Origins of the World War*, and for 1929 to M. B. Giffen for *Fashoda, the Incident and the Diplomatic Setting*. The John H. Dunning Prize, awarded biennially in accordance with the terms of the bequest of Miss Mathilde M. Dunning for the best historical essay, dealing preferably with the Southern States during the reconstruction period, was presented in 1929 to Hayward J. Pearce, Jr., for his paper, *Benjamin H. Hall: Secession and Reconstruction*.

The official organ of the association is the *American Historical Review*, a quarterly. The *Annual Report* contains proceedings, important papers read at the annual meetings, texts of significant documents, reports on American archives, reports on history teaching, and papers on agricultural history. Officers for 1929 were: President, James Harvey Robinson, first vice president, Everts B. Greene, second vice president, Ephraim D. Adams, secretary, Dexter Perkins, treasurer, Charles Moore, assistant secretary-treasurer, Patty W. Washington, editor, Allen R. Boyd. The officers elected for 1930 were: President, Everts B. Greene, first vice president, Ephraim D. Adams, second vice president, Carl Becker. Headquarters are at 40 B Street S W, Washington.

HISTORY. See LITERATURE, ENGLISH AND AMERICAN, FRENCH LITERATURE, GERMAN LITERATURE, ITALIAN LITERATURE, SCANDINAVIAN LITERATURE, SPANISH LITERATURE.

HOBART COLLEGE. An institution for the higher education of men in Geneva, N. Y., founded chiefly under the auspices of the Protestant Episcopal Church in 1822 and permanently chartered by the Regents of the University of the State of New York in 1825. William Smith College, a coordinate institution for the separate instruction of women, administered by the Hobart College corporation, and with instruction given by the Hobart College faculty, was established in 1908. The student enrollment in Hobart College for the autumn of 1929 was 335, while the enrollment in William Smith College was 146. The combined faculty of the two colleges numbered 40. The endowment amounted to \$1,200,000, and the income for the year was approximately \$200,000. There were 87,000 volumes in the library. During 1929 Geneva Hall, the oldest building on the campus (1822), was remodeled and refurbished for dormitory use at a cost of \$75,000. An endowment campaign also was launched to raise \$1,000,000 for new buildings and \$1,000,000 for instruction. President, Murray Bartlett, D.D., S.T.D., LL.D.

HOCKEY. Professional hockey enjoyed more popularity in 1929 than ever before in its history in America, and the work of the Boston Bruins of the National Hockey League in capturing the world's championship and the Stanley Cup was superb. Embracing as it did the close of one season and the opening of a new one, 1929 showed that the Bruins were far and above the best team in the league. The Boston team led its section of the league, defeated the leaders of the other division, the Montreal Canadiens, for the league championship and then proceeded to carry off the Stanley Cup in equally as sensational a manner.

In the post-season play-off series, Boston went through five games without suffering a defeat, downing the Canadiens for the league championship by scores of 1-0, 1-0, and 3-2. The Bruins followed this triumph by taking the final of the Stanley Cup series from the New York Rangers with two straight victories, 2-0, and 2-1. In the race for individual scoring honors, Ace Bailey of Toronto captured the laurels with 32 points. Nels Stewart of the Montreal Maroons was second with 20, while Howie Morenz of the Montreal Canadiens and Blair of Toronto tied for third place with 27 points each.

The Boston Tigers won the Canadian-American League, Tulsa was first in the American Hockey Association, while Vancouver earned the laurels in the Pacific Coast League. Oakland showed the way in the California Hockey League, and in the Canadian Professional League the "A's" were beaten by Windsor in the

Although there was no college league the Yale University was recognized as the best six, the Blue losing but one game out of seventeen, winning 15 and tying one. In addition most of the hockey-playing American Yale conquered such strong Canadian rivals as McGill and Toronto University.

HOFFMANNSTHAL. *hoffmanns-tal*, Hugo (HOFFMANN) von Austrian poet, died July 15, 1929, in Rodaun, Austria. He was born in Vienna, Feb. 1, 1874, and studied at the university in that city. He began his literary career at the age of 18, when he published under the name, "Theophil Morren," a short lyric-dramatic study, *Gestern* (1892). His best-known works are the librettos written for Richard Strauss's music *Der Rosenkavalier*, which was heard in New York in 1913, is especially famous. His verse is lyrical and romantic. Others among his works are *Ausgewählte Gedichte* (1903), *Das Mädchen der 672. Nacht, und andere Erzählungen* (1904), *Victor Hugo* (1904), *Vorspiele* (1908), *Prosaische Schriften* (1907), *Jedermann, ein altes Spiel erneuert* (1912), *Ariadne auf Naxos* (1912), *Prinz Eugen, der Edle Ritter* (1915), *Alkestis* (1916), *Rodanuner Nachklänge* (1920), *Der Tod des Tizian* (1920), *Der Schweserige* (1921), *Die Frau ohne Schatten* (1921), *Das grosse Welttheater*, a mystery play (1923).

HOGS. See LIVESTOCK, also VETERINARY MEDICINE.

HOLLAND. See NETHERLANDS, THE.

HOLY CROSS, COLLEGE OF THE A Roman Catholic college for men under the Society of Jesus in Worcester, Mass., founded in 1843. The enrollment for the autumn of 1929 totaled 1079, with a distribution as follows: Graduate school of chemistry, 7, with course seniors, 190; juniors, 168, sophomores, 219, and freshmen, 253; science course seniors, 8, juniors, 17; sophomores, 15, and freshmen, 27; in general course

seniors, 36; juniors, 46, sophomores, 44, and freshmen, 53. The faculty numbered 88. The library contained 10,000 volumes. President, the Rev. John M. Fox. S. J.

HOLZ, holts, Anno A German poet and critic, died in Berlin, Oct. 25, 1929. He was born in Rastenburg, East Prussia, Apr. 26, 1863, but while a child, he moved with his parents to Berlin. There, in 1882, he published his first volume of poems, *Klingenscherer*, which won the Augsburg Schiller Prize. His modern tendencies, photographic realism modeled upon Zola, were manifested in *Deutsche Weissen* (1884, with Jerschke) and in *Buch der Zeit* (1885). Among his other works are *Neue Giese* (1892, in collaboration with Johannes Schlaf), *Sozialists kroten* (1896), *Die Kunst, ihr Wesen und ihre Geseze* (1891 et seq.), *Revolution der Lyrik* (1899), *Die Heuschmiede*, a poetical drama in one act (1902), *Lieder auf ewer alten Laute* (1903), *Dafnus* (1904), *Frei*, a comedy (1905), *Sonnenfischer*, a tragedy (1908), *Ignorabimus*, a tragedy (1913), *Das ausgewählte Werk* (1919); *Kinderparadies* (1924), *Sieben Bulhonen Jahre vor meiner Geburt* (1925), *Gottor und Goltzen* (1925).

HOME DEMONSTRATION WORK. See AGRICULTURAL EXTENSION WORK.

HOME ECONOMICS. See AGRICULTURAL EXTENSION WORK, FOOD AND NUTRITION.

HOME MANAGEMENT. See AGRICULTURAL EXTENSION WORK.

HOMICIDE. See CRIME.

HONDURAS, *hön-dö-ras*. A Central American republic, bounded on the north and north-east by the Caribbean Sea, on the southeast by Nicaragua, on the southwest by Salvador and the Pacific Ocean, and on the west by Guatemala. Capital, Tegucigalpa.

AREA AND POPULATION. The estimated area is 44,275 square miles, population, according to the census of 1926, 700,811, mostly Indians with a strain of Spanish blood. The chief towns with their populations in 1926, the latest available statistics, are Tegucigalpa, 26,736, San Pedro Sula, 16,881, La Ceiba, 12,136, Cholutea, 10,444, Santa Rosa de Copan, 9795, Comayagua, 9413, Juticalpa, 9591. The chief ports are Amapala on the Pacific and Porto Cortez and Omoa on the Atlantic.

EDUCATION. Elementary education is free and compulsory between the ages of 7 and 15. In 1928 there were 95,188 children of school age, of whom 36,484, or 38.3 per cent, attended school. The 1055 primary schools had 1355 teachers. There were also 12 secondary schools with 393 pupils, and engineering, law, and medical schools, with 131 students. The National University at Tegucigalpa had 75 students in 1925.

PRODUCTION, ETC. The principal occupation is agriculture and the chief products bananas and coffee. Bananas are grown mostly along the Atlantic coast and constitute the main export. Both the banana and coffee crops were unusually large in 1928, and the coffee crop, which is the mainstay of the central and Pacific coast sections, was of exceptional quality. The sugar crop was short, due to a shortage of laborers and adverse weather conditions. In the year 1928, 31, 1928, banana exports totaled 1,100,000 bunches, valued at \$18,671,000, as compared with 17,090,000 bunches valued at \$13,581,000 in the previous year, coffee exports amounted to 5,140,550 pounds, valued at \$829,000, as compared

with 3,153,000 pounds in the previous year; and sugar exports set a record of 50,298,000 pounds, valued at \$1,451,500, due to heavy production in the previous season. Banana exports in 1929 amounted to 28,241,608 bunches.

Silver and gold are the only minerals mined in commercial quantities, although deposits of zinc, copper, lead, iron, and coal have been found. Silver exports in 1927-28 amounted to 2,032,000 ounces, valued at \$1,213,000, and in the calendar year 1928, to 138,700 pounds valued at \$1,250,000. There is little manufacturing, except for the making of sugar.

COMMERCE. In 1929 foreign trade showed large increases in 1927-28, the exports rising to the record figure of \$23,143,000, as compared with \$17,546,000 in the previous year, while imports amounted to \$12,574,000, as compared with \$10,630,000 in 1926-27. Bananas constituted 80 per cent of the total exports, the remainder consisting of other foodstuffs. The United States took 76.3 per cent of the total exports and supplied 79.4 per cent of all imports. About two-thirds of all the imports were manufactures. The United Kingdom, Germany, and France were other leading sources of imports, and a considerable proportion of the exports went to the United Kingdom and Germany. In 1928 Honduran imports totaled \$12,573,595 and the exports \$23,142,738, as compared with imports of \$10,630,418 and exports of \$17,546,290 in 1927.

Imports in 1927-28 were divided in general categories as follows: Manufactures, \$8,359,000, foodstuffs and beverages, \$2,182,000, raw materials, \$1,955,000, live animals, \$71,000. The values of exports for the same categories were: Foodstuffs and beverages, \$21,308,000, bullion and coin, \$1,273,000, raw materials, \$411,000, live animals, \$101,000.

FINANCE. The budget for the fiscal year 1929-30, as amended and approved by a special session of Congress on Aug. 10, 1929, balanced at 13,101,922 pesos (one peso equals about \$0.50). The estimated receipts included 4,134,000 pesos from customs duties, 2,519,000 from monopolies, 1,705,000 from various services, 987,000 from internal revenue stamps and stamped paper, 3,322,100 of special revenues, and 1,318,922 of miscellaneous income. The chief items of expenditure were: Government, 1,755,863 pesos, public works, 3,903,504, public credit, 2,494,138, war and marine, 1,699,863, public instruction, 1,209,304, treasury, 1,040,203.

The budget for 1928-29 estimated receipts and expenditures at 10,706,000 pesos. The estimated revenue for 1929-30 was considerably above the actual receipts in 1927-28, which amounted to only 12,029,870 pesos. The increase of 1,072,053 pesos was provided for by a gambling-license tax passed by Congress in 1929, which was expected to yield 1,000,000 pesos. In 1927-28 ordinary revenues and expenditures totaled 12,030,000 and 11,365,000 pesos, respectively, the revenues showing a 13 per cent increase over those for the previous fiscal year. The public debt on July 31, 1928, amounted to approximately 28,364,000 pesos (\$14,182,000), of which 11,200,000 pesos represented the external debt.

COMMUNICATIONS. In 1929 there were about 1048 miles of railway line and 361 miles of highway. Of the highway, 113 miles was macadam. The road budget increased from \$44,411 pesos in 1926-27 to \$48,000 in 1929-30, the new administration inducted into office in February,

1929, having announced the construction and improvement of highways as one of its principal aims. At the end of the fiscal year 1926-27, there were 5300 miles of telegraph wire and gross receipts from operation during the year totaled 778,000 pesos. On the same date, there were 4646 miles of telephone wire and 1963 instruments, the gross receipts for the year being 71,747 pesos.

GOVERNMENT. According to the constitution of Oct. 3, 1924, the executive power is vested in the President nominated and elected by popular vote, and holding office for four years, legislative power is in the Congress of Deputies consisting of 43 members chosen for four years directly by popular vote. In 1924 the constitution was amended to provide for a permanent commission of five members which transacts the routine business for Congress while that body is not in session. President in 1929, Dr. Vicente Mejia Colindres, who assumed office Feb. 1, 1929, for a four-year term.

HISTORY

Active steps toward the solution of the boundary dispute between Honduras and Guatemala were continued by the State Department of the United States during 1929 and on October 25 the State Department notified both governments that it felt the discussions had reached a point where further progress could best be realized by a frank and friendly exchange of views. Both governments accepted invitations to meet in Washington for the discussions, and also the offer of the State Department to participate, if so desired. The first meeting was scheduled to take place Jan. 15, 1930. For the background of the dispute, see article on HONDURAS in the 1928 NEW INTERNATIONAL YEAR BOOK.

New territorial disputes arose during 1929 with other Central American countries. On January 6, the Government made public notes of protest which were addressed to the governments of Nicaragua and Colombia with regard to the disposition of the Quitasueño and Roncador Keys in a treaty signed between the two countries. The note stated that Honduras held "titles of undoubted ownership" to the Keys and was disposed "to maintain its rights by respectful but firm protests."

Another boundary dispute with Nicaragua promised to result from the action of United States Marine aviators in bombing territory along the border in connection with efforts to eradicate Nicaraguan bandit or insurgent forces. On April 10, Honduras addressed a note of protest to the United States, alleging that the Marines had dropped several bombs on the Honduran town of Las Limas, that marine forces had crossed into Honduran territory on three different occasions, and that Nicaraguan constabulary had raided Honduran territory, killing two citizens and wounding a third. The U. S. State Department on the same day made public a dispatch from Nicaragua, denying that Las Limas had been bombed, but stating that both Las Limas and Brail "were so close to the border that both countries claim them." On April 13, Coronado Garcia, secretary of the Honduran presidential staff, issued a statement to the effect that the territory in question was not within the limits disputed by Nicaragua. "Las Limas belongs to Honduras," he said, "and the jurisdiction of this country has always been recognized."

On July 21, President Colindres called an ex-

traordinary session of Congress to approve presidential decrees establishing martial law along the Nicaraguan border. The decrees were deemed necessary because of repeated depredations across the border by Nicaraguan armed bands.

Dr Colindres was inaugurated as President on February 3, after Congress on January 19, by a vote of 40 to 3, had formally approved his election. The retiring executive, President Barahona, paid high tribute to the United States for the sympathetic aid which he said had been extended to Honduras during the civil war and other troublesome problems which confronted the country when he became President in 1925.

A new immigration law, passed by Congress on Feb 12, 1929, placed further restrictions upon the admittance of immigrants to the country. One section of the law prohibits the entry of persons who "advise, teach, or proclaim non-recognition of the authorities of Honduras or its laws or the overthrow of the government by force or violence, if they are acknowledged opponents of all organized government, or teach, proclaim, or practice the destruction of property." This measure was considered to be aimed principally at Communist agitators, whose activities have been reported from various Central American and South American countries.

The Liberal party won all eleven seats contested for Congress in orderly elections held October 27. In the municipal elections of November 26, the Liberals, of whose party President Colindres was a member, won 175 out of 273 municipalities and gained control of all except three of the larger cities.

HONDURAS, BRITISH See **BRITISH HONDURAS**

HONG KONG. A possession of Great Britain at the mouth of the Canton River, about 90 miles to the south of Canton, comprising an irregularly shaped island, 11 miles long from east to west, varying from 2 to 5 miles in breadth, with an area of 32 square miles, also the opposite Peninsula of Kowloon, separated from it by a strait about a half-mile wide. Total area, 391 square miles. In 1916 a scheme was begun for the reclamation of 9,500,000 square feet of land from the sea in Kowloon Bay, this project was still in progress in 1929. The population, according to the census of 1921, was 625,166, of whom 612,310 were Chinese, estimated at the end of 1927 at 977,900, of whom 961,400 were Chinese. The movement of population in 1927 was Registered births, 7500, deaths, 14,761. In the same year, the number of Chinese immigrants was 544,447 and the number of emigrants, 600,233. Victoria, the chief business centre is on Hong Kong Island and had a population of 323,273 in 1921. While education is not compulsory, the schools are under government inspection and required to keep certain standards. The total number of pupils in all schools in 1927 was 49,111 and the total expenditure on education, \$1,091,423. For higher education, there is the British University of Hong Kong which is attended mostly by Chinese students.

The principal industries are sugar refining, shipbuilding, rope making, the manufacture of tobacco, cement, and knit goods, and tin refining. The latest available statistics for trade are those of 1925 when the imports were valued at £43,484,410, and exports £40,353,906. The revenue for 1927 was £2,134,453 and the expenditure £2,084,606. In 1927, 51,289 vessels (including 24,

054 junks and 7893 steamships under 60 tons) representing altogether 36,834,014 tons, entered and cleared in the foreign trade. Of these, 3861, with a tonnage of 9,600,440, were British ocean-going steamers. The colony is under a governor aided by executive and legislative councils. Governor in 1929, Sir Cecil Clementi (appointed in 1925).

HOPS. The production of hops in 1929, as reported by five producing countries, including the United States, to the International Institute of Agriculture, Rome, was 128,041,000 pounds, an increase of 22.7 per cent over the preceding year and 31.6 per cent above the average for the five years 1923-27. The area devoted to hops in these countries in each of the two years was 133,000 acres. The 1929 yields of the European countries reporting were estimated as follows: England and Wales 40,219,000 pounds, Germany 30,074,000 pounds, Czechoslovakia 19,941,000 pounds and Belgium 6,207,000 pounds. In 1927 the production in Ukraine, which produces the bulk of the crop of the Soviet Republics, was 6,753,000 pounds, or practically the same as the average production for Russia in the five years 1909-13. Poland in 1927 yielded 4,318,000 pounds. The Canadian production is about 1,000,000 pounds and the Australian, 2,000,000 pounds annually.

As estimated by the Department of Agriculture, the United States produced 33,220,000 pounds in 1929, compared with 32,944,000 pounds in 1928 and 27,635,000 pounds, the five-year average. The area dropped from 26,200 acres in 1928 to 24,000 in 1929, but yields averaged 6 per cent above those of the year before. Farm prices averaged only 11.4 cents per pound on Dec 1, 1929, compared with 19.3 cents a year ago, indicating a total farm value of \$3,788,000 in 1929 and of \$6,365,000 in 1928. As in previous years, yields were recorded only for the Pacific Coast States. Oregon produced 18,445,000 pounds on 17,000 acres, California, 9,700,000 pounds on 5000 acres, and Washington, 5,075,000 pounds on 2900 acres. The average yields per acre were 1085, 1940, and 1750 pounds, respectively. The average farm price on Dec 1, 1929, in each one of these States was 8 cents a pound below the corresponding price the year before. For the fiscal year ended June 30, 1929, the United States exported 8,836,000 pounds, as against 11,812,000 pounds in the preceding fiscal period. The imports for the year amounted to 649,000 pounds. Comparatively large stocks remaining unsold in England in the spring and summer of 1929 affected the international trade in hops and especially the market for hops produced in the United States.

HORTICULTURE. Horticulture in its many phases, both commercial and amateur, continued to be an important factor in human welfare in 1929. Commercial production proceeded in a normal manner, substantial but not oversized crops were grown and marketed in an orderly fashion and generally with greater profit to the grower than in the case of the bumper crops of the preceding year. Part of the decline in fruit production was the result of disastrous frosts in the central valleys of California in April, the temperatures being, according to the *California Citigraph*, the lowest reached at that season in 51 years. The losses were early estimated at some \$50,000,000 but later it became evident that in certain fruits the decreased crops would bring proportionately greater returns, thus partially offsetting the expected losses.

Ornamental horticulture increased its hold on the American people as evidenced in a rapid expansion of the garden-club movement among home owners. The greater proportion of leisure accruing to the American people as a result of improved practices and management in the various industries was reflected in an increased interest in the finer things of life, including gardens. The investment of the American people in home gardens is really tremendous—comparable to, according to the eminent horticulturist, Dr. J. H. Bailey, if not exceeding, that in commercial horticulture.

PRODUCTION IN 1929 A study of crop production figures released Dec. 18, 1929, by the Bureau of Agricultural Economics, U. S. Department of Agriculture, showed a rather curious situation. Fruit yields almost without exception dropped below those of 1928, while yields of vegetables were consistently larger. However, the differences in most instances were not sufficiently large to upset market conditions, in fact, the smaller crops of fruits very generally brought greater returns to the growers than did the oversized crops of 1928.

The total yield of all kinds of apples in the United States in 1929 was 139,754,000 bushels as compared with 186,893,000 bushels in 1928, peaches in 1929 are estimated at 45,998,000 bushels, nearly 13 million bushels less than in the preceding year. Pears in 1929 were 20,903,000 bushels, declining from 24,212,000 bushels of 1928, yet the total farm value of the pear crop was considerably larger in 1929, grapes declined from 2,671,076 tons in 1928 to 2,022,417 tons in 1929, oranges from Florida and California dropped more than 20,000,000 boxes from 53,705,000 in 1928 to 33,100,000 in 1929, yet the 1929 orange crop sold for over 11 per cent more, the grapefruit from Florida declined from 10,600,000 boxes in 1928 to 6,500,000 boxes in 1929, yet the net returns to the growers were considerably larger.

Lemon yields in California in 1929 were 5,900,000 boxes, just 2,000,000 below 1928, cranberries in 1929 are computed at 541,000 barrels as compared with 551,000 barrels in 1928, pecans yielded 27,588,000 pounds in 1929, considerably less than the 41,972,000 pound crop in 1928, strawberries, with 331,441,000 quarts in 1929, differed very little from the 1928 crop of 334,331,000 quarts and sold for approximately the same money, watermelons and cantaloupes were the only fruits to show increases in 1929—65,283,000 watermelons were sold in 1929 as compared with 61,380,000 in 1928. Cantaloupes yielded 16,840,000 crates in 1929 as compared with 15,416,000 crates in 1928.

Vegetables increasing in yield include sweet potatoes, 84,661,000 bushels in 1929, 77,661,000 in 1928, asparagus, 9,907,000 crates in 1929 as compared with 9,150,000 crates in 1928, snap beans, 167,600 tons in 1929, 145,500 tons in 1928, cabbage, 1,069,400 tons in 1929 as compared with 984,200 tons in 1928, carrots, 10,256,000 bushels in 1929, 6,992,000 bushels in 1928, cauliflower, 6,450,000 crates in 1929, 5,031,000 crates in 1928, celery, 8,686,000 crates in 1929, 7,624,000 crates in 1928, canning sweet corn, 639,300 tons, as compared with 592,900 tons in 1928; lettuce, 20,325,000 crates in 1929, 18,382,000 crates in 1928, onions, 25,967,000 bushels in 1929, 20,454,000 bushels in 1928; green peas, 287,500 tons, as compared with 277,000 tons in 1928;

spinach, 189,500 tons in 1929, 140,800 tons in 1928, tomatoes, 1,846,100 tons in 1929, 1,394,000 tons in 1928. The few vegetables to show decreased yields in 1929 were white potatoes, 357,451,000 bushels, as compared with 465,350,000 bushels in 1928. Paradoxically as it may seem, the much smaller 1929 crop sold for nearly twice as much as the 1928 crop. Cucumbers declined slightly in 1929 to 8,644,000 bushels, eggplant dropped from 896,000 bushels in 1928 to 713,000 in 1929, peppers from 4,466,000 bushels to 4,103,000 bushels in 1929.

FOREIGN TRADE According to data presented by the Department of Commerce in the *Monthly Summary of Foreign Commerce* of the United States, Part I, October, 1929, there was a material gain in the value of exported horticultural products—\$132,955,383 for the 10 months ended Oct. 31, 1929, as compared with \$113,798,634 for the same period in 1928. Imports, on the other hand, show comparatively slight change in value—\$114,331,887 in 1929 and \$111,290,538 in 1928. Underlying causes for the notable increase in value of horticultural exports lie in conspicuous increased value of grapefruit, oranges, and apples (boxed and barreled stock). Barreled apples exported in the 1929 period were valued at \$10,143,399 as compared with \$4,943,888 in 1928, an increase of more than 100 per cent. Dried and evaporated fruit exports, on the other hand, declined in value, principally because of material reductions in raisins in both value and quantity. Vegetables, and vegetable products showed consistent but not striking gains in 1929 as compared with 1928 and nursery stock imports declined somewhat despite the impending quarantines on fruit stocks.

FOREIGN FRUIT CROPS Large crops of apples and pears in continental Europe materially lessened the demand for American and Canadian fruit, a situation offset in part by the small American crop Canada, on the other hand, produced an apple crop approximately 25 per cent above the 5-year average, 1924-1928, the greatest increase occurring in Nova Scotia. Canadian pear, peach, grape, and plum yields were, on the other hand, lower than in 1928. A large crop of oranges in Spain and Italy also tended to lessen the European demand for American apples. The Australian apple crop of 1928-1929 season was small with the exception of Western Australia. Severe January frosts greatly reduced the West Mexican crop of winter vegetables, especially tomatoes and peppers. Smaller prune crops in France and Jugoslavia indirectly effected the American prune market, tending to maintain high prices. At the Imperial Fruit Show held in Birmingham, England, October 25 to November 2, fine exhibits of apples were presented by Canada, Australia, and New Zealand, and of oranges by South Africa, indicative of the strong competition offered American fruit in English markets.

COOPERATIVE MOVEMENTS The newly created Federal Farm Board proved a rock of refuge to certain cooperative organizations in 1929, loaning money to the badly distressed Florida citrus interests, to the raisin growers of California, and other large fruit growing and marketing enterprises. In all cases, the loans were secured on actual property and were not subsidies but rather temporary aid for the improvement of marketing facilities. The California Raisin Marketing Board had a successful year, assisting materially in the marketing of the largest citrus crop ever pro-

duced in California. The exchange handled 52,266 carloads of oranges and grapefruit and 13,151 carloads of lemons, slightly more than 75 per cent of the total crop grown in the State. Shipments to European markets were increased and national advertising campaigns conducted as aids in disposing of the large crop. The California Walnut Growers Association handled a large crop of walnuts with substantial profits to the grower. Evidence was thus presented that the well-organized, well-managed cooperatives have a real and almost irreplaceable function in horticulture, as well as other enterprises. Aided by the Federal Farm Board, the cooperative marketing movement is certain to gain momentum and become an increasing support to American horticulturists.

PROTECTIVE MEASURES. The year 1929 went on record as a notable year in the regulation of the movement of plant and plant products within and into the United States. Drastic action was, of course, required in the case of the Mediterranean fruit fly in Florida and on July 30 the Secretary of Agriculture announced that on and after July 1, 1931, by amendment to Quarantine 37, Malahoe cherry, Myrobalan plum and other fruit stocks will be excluded from entry into the United States. Supplementing an earlier promulgation forbidding the entry on and after July 1, 1930, of apple, pear, quince, and Mazzard cherry stocks, the new ruling practically excludes all fruit stocks and will necessarily have a widespread influence on American horticulture. The period of readjustment will be undoubtedly difficult but it is generally conceded the American nurserymen may be counted upon to meet the emergency. See ENTOMOLOGICAL, ECONOMIC.

Incidental to a study of the Mexican fruit worm in southern Texas, a census was made of the citrus trees in the Rio Grande Valley. Of a total of over 3 million trees, about 70 per cent was grapefruit and 28 per cent, orange.

A very destructive disease of peach trees, known under the curious name of phony disease, necessitated the issuing of a quarantine restricting the movement of peach and nectarine trees from the infected area in Georgia, where thousands of acres of peach orchards have been killed or rendered useless by the disease, the nature of which is not yet understood. Concrete evidence of the need and effectiveness of quarantines is presented in a total during the year ended June 30, 1929, of 5461 lots of intercepted insects and plant diseases forwarded to Washington for identification and in a total of 19,934 interceptions of prohibited plants and plant products during the same period, the data being obtained from the annual report of the chief of the Plant Quarantine and Control Administration.

RESEARCH ACCOMPLISHMENTS. Striving toward the goal of an effective horticultural practice resting on established truths rather than empirical findings, the research workers in horticulture and allied subjects made substantial progress in 1929. Further evidence was secured at the Oregon Experiment Station (*Bulletin 254*), showing that pears have a definite storage life beyond which they will not ripen satisfactorily, irrespective of conditions under which held. The same station (*Bulletin 252*) developed a new system of grading pines based on separation by specific gravity in salt solutions of definite densities. The Maryland Experiment Station (*Amer Soc Hort. Sci. Proc.* 25, 1928, pp. 162-164), reported that the male parent of apple seedlings exerted a significant in-

fluence on the growth of the young tree. The California Experiment Station (*Calif Citrogr.* 14, 1929, No. 9) presented evidence that grapefruit, lemon, and orange trees require minute quantities of boron for their proper development but that appreciable amounts were toxic. Comparable observations in the case of the tomato plant were made at the Maryland Experiment Station (*Plant Physiol.* 4, 1929, No. 1). Studies at the Maryland Experiment Station of the chemical composition of garden peas, ripening at different times, showed no influence of temperature upon composition or quality of freshly harvested peas provided the peas were gathered at the correct stage. Further proof was forthcoming at the California Experiment Station (*Amer Soc Hort Sci. Proc.* 25, 1928, pp. 13-16) that male asparagus plants are more productive than female plants, sufficiently so to justify rejecting the latter for planting.

The remarkable increase in framed workers in horticulture was indicated in the presidential address presented at the 25th annual meeting of the American Society for Horticultural Science (*Amer Soc Hort Sci. Proc.* 25, 1928, pp. 378-395). In 1903 the combined horticultural staffs of colleges in 44 States embraced 101 members, as compared with 529 in 1928. The qualitative gain in the same period is shown in the statement that in 1928 there were 53 horticultural students working for the degree of doctor of philosophy.

MISCELLANEOUS. Nut culture received much needed help in 1929 in the form of the Federal Experiment Station at Shreveport, La., for studies in pecan culture and in a \$200,000 gift from W. K. Kellogg for the foundation of a chair of nut culture at Michigan State College. At the same time, Mr. Kellogg deeded to the college a tract of 800 acres near Battle Creek to be used as a field station for nut investigation.

Announcements were received in the United States of the Ninth International Horticultural Congress to be held in London, Aug. 7 to 15, 1930, immediately preceding the Fifth International Botanical Congress to be held at Cambridge. Propagation, vegetative and seminal, was to be the principal subject for discussion by the visiting horticulturists.

NECROLOGY. Henry Daggett Hooker, Jr., horticultural chemist at the University of Missouri and author of many fundamental bulletins on horticultural subjects, died October 26 at the untimely age of 37 years. Combining a splendid training with unusual energy and capacity for clear thinking, Dr. Hooker had quickly become one of the foremost leaders in scientific horticulture. Frank Henry Hall, long associated with New York State Station at Geneva as editor and lastly as a horticulturist, died October 17 at the age of 63 years. From a horticultural standpoint, Mr. Hall was best known for his work in the classification of vegetable varieties, being joint author of the *Peas of New York*, recently published by the station.

BIBLIOGRAPHY. The number of new books on horticultural subjects appearing during the year was rather limited, particularly from American sources. Notable among the new accessions were M. Arthold, *Handbuch des Weinbaues* (Vienna, 1929), E. C. Auchter and H. B. Knapp, *Orchard and Small Fruit Culture* (New York, 1929), A. D. Edwards, *Rock Gardens* (London, 1929), A. D. Hall, *The Book of the Tulip* (London, 1929), P. Kache, *Die Prams des Baumschulbetriebs* (Ber-

lin, 1929), R. W. Rees, *Pear Survey of the United States and Canada* (Rochester, 1929); C. W. J. Unwin, *Sweet Peas, Their History, Development and Culture* (Cambridge, England, 1929); A. E. Wilkinson, *Practical Vegetable Culture* (New York, 1929), I. Preston, *Garden Lakes* (New York, 1929), A. F. Calvert, *Daffodil Growing for Pleasure and Profit* (London, 1929)

HOUSEHOLD ECONOMICS. See AGRICULTURAL EXTENSION WORK

HOWARD UNIVERSITY. A nonsectarian institution for the higher education of men and women in Washington, D. C., incorporated by Act of Congress, Mar. 2, 1867, "for the education of youth in liberal arts and sciences," open to students without regard to race, but principally for the education of Negroes. The registration in the several colleges and schools of the university for the summer school and autumn quarter of 1929 totaled 2354, distributed as follows: College of liberal arts, 600; college of education, 466; school of applied science, 71; school of music, 40; school of religion, 33; school of law, 68; school of medicine, 370; academic evening classes, 300; summer session, 402; special students, 4. The faculty in the autumn of 1929 totaled 206 members, divided as follows: Academic, 76; medical, 69; dental, 13; pharmaceutical, 5; law, 12; religion, 9; music, 9; applied science, 13. The total endowment amounted to \$843,406, the endowment income for 1928-29 was \$42,889. The total income for 1929 from all sources was \$588,903, and the expenditures were \$561,373. The United States Government appropriated \$320,000 toward salaries and other expenses for 1929-30 and \$240,000 toward the completion of a chemistry building, the latter sum being appropriated by the second session of the Seventieth Congress and approved by the President on March 4, 1929. The school of medicine received an appropriation of \$82,000 from the General Education Board, the larger portion of which is to be devoted to the training of men of distinguished ability for full-time positions in the pre-clinical laboratories. The General Education Board also appropriated \$80,000 to be used over a period of four years for raising the salaries of teachers in the undergraduate schools. The department of zoology in the college of liberal arts received an appropriation of \$80,000 from the Julius Rosenwald Fund for the development of graduate work in research over a period of five years. Miscellaneous donations totaled \$54,796. The library contained 48,625 volumes. Administrative officers: Mordecai Wyatt Johnson, S.T.M., D.D., president, Emmett J. Scott, A.M., LL.D., secretary-treasurer.

HUDSON RIVER BRIDGE. See BRIDGES.

HUNGARY. A kingdom of central Europe, formerly constituting, with Austria, the Dual Monarchy of Austria-Hungary. Capital, Budapest.

AREA AND POPULATION. Before the World War, Hungary had an area of 125,609 square miles, area at the time of the census of 1920, 35,875 square miles. Population before the War, according to the census of Dec. 31, 1910, 20,880,487, population at the census of Dec. 31, 1920, 7,980,143, estimated in 1928, 8,598,574. After the census of 1920 was taken, an additional area of 36 square miles, with a population of 7000 was awarded to Hungary. Budapest, the capital, had a population of 971,169, excluding suburbs, in 1927. Other cities with a population of more than

100,000 in the same year were: Szeged, 124,347, and Debrecen, 107,976. The movement of population in 1927 was Births, 218,548; deaths, 150,675, marriage, 77,026. The population of 1927 was distributed according to religion about as follows: Roman Catholics, 5,485,056, or 64.3 per cent; Hungarian Evangelicals, 1,771,122 or 20.8; Augsburg Evangelical, 525,515, or 6.2; and smaller numbers of Greek Catholics, Greek Orthodox, and Unitarians. The Jews numbered 476,860, or 5.6. Of a total of 5620 emigrants in 1928, 5471 went to the United States.

EDUCATION. In the school year 1926-27, there were 6541 elementary schools with 688,768 pupils and 17,012 teachers. There were also 4457 general and 1230 agricultural continuation schools. There were 20 training colleges for elementary school-teachers for men and 25 for women, with 567 teachers and 5936 students. Primary schools for boys and girls numbered 174 and 237, respectively, with a total of 83,792 pupils and 4199 teachers. For secondary education, there were 27 gymnasia, 71 realgymnasias, 22 modern schools, and 32 girls' secondary schools. The total number of teachers in these secondary schools was 2994 and the number of students, 61,017. Hungary has four universities and since 1919 an independent faculty of economics at Budapest all maintained by the state. In 1920-27 the University of Budapest had 371 professors and 5396 students, the University of Szeged, 107 and 1137, the University of Pecs, 71 and 1005, and the University of Debrecen, 63 and 952. There are also many theological schools and a number of technical institutions for higher learning, such as technical high schools, etc.

PRODUCTION. In 1928 about 60 per cent of the total area of Hungary, or 13,810,000 acres, comprised arable land, 4,147,000 acres were permanent meadow and pasture, 797,000 acres were devoted to trees, shrubs, and bushes, and 2,696,000 acres to forests. Abundant crops in 1928 resulted in a rise in the total value of agricultural production to \$674,000,000 from a total of \$623,000,000 in the previous year. The value of field crops in 1928 amounted to \$580,000,000, including: Wheat, \$122,000,000, rye, \$332,800,000, corn, \$49,900,000, and potatoes, \$16,500,000. Grain exports failed to increase, however, as grain was held for higher prices. The acreage of all principal crops increased slightly, with the exception of corn and rye. Prohibitive interest rates, running as high as 15 per cent, and the difficulty of finding markets abroad for farm products in the face of protective-tariff barriers continued as the primary reasons for unsatisfactory agricultural conditions. The area and production of the principal crops in 1927 and 1928 are shown in the accompanying table.

HUNGARIAN CROPS AREA AND PRODUCTION

Crop	Area *		Production *	
	1927	1928	1927	1928
Wheat	4,049	4,138	76,938	92,087
Rye	1,656	1,641	23,368	32,539
Barley	1,009	1,014	23,685	27,872
Oats	646	650	22,513	28,725
Corn	2,639	2,637	68,348	43,325
Potatoes	645	655	73,665	47,280
Sugar beets	160	164	1,455 *	1,100 *
Grapevines	544	548	51,567 *	21,955 *
Tobacco	58	58	69,095 *	46,415 *

* Thousands of acres.

* Thousands of units—bushels, except as indicated.

* Unit, metric ton

* Unit, gallon of must. * Unit, pound.

Livestock in the country in 1928 consisted of 2,662,000 swine, 1,805,000 cattle, 1,566,000 sheep, 40,000 goats, and 918,000 horses. Industrial production in 1927 was valued at \$469,000,000, as compared with \$385,000,000 in 1926. In 1928 there were 200,000 cotton spindles and 1760 looms, as contrasted with 131,000 and 1500, respectively, in the preceding year. In general, the industrial situation showed moderate improvement over 1927 and unemployment was negligible. Industrial production in metric tons in 1928, with figures for 1927 in parentheses, was as follows: Coal, 783,000 (840,000), lignite, 6,243,000 (6,203,000), iron ore, 203,000 (195,000), pig iron, 284,000 (300,000), steel ingots and castings, 486,000 (472,000), cement, 426,000 (417,000). Alcohol production was 11,016,000 gallons in 1928 and 10,778,000 in 1927. The value of iron, metal, and machinery products in 1927 amounted to \$80,623,000, of food products and tobacco, \$205,225,000, of stone and glass, \$24,918,000, of textiles, \$60,014,000, of chemicals, \$32,390,000.

Industries continued active in 1929, but a general business stagnation was in evidence for the greater part of the year, attributed mainly to the lack of foreign funds, internal political difficulties, and the reparations question (see below, under *History*).

COMMERCIAL Imports in 1928 amounted to \$207,952,000, as compared with \$200,345,000 in 1927, or an increase of 4 per cent, while exports increased by 2 per cent to \$143,193,000 from the 1927 figure of \$139,843,000. The adverse trade balance of \$64,759,000 was thus somewhat greater than in the preceding year. The influx of foreign capital and greater investment and building activity were reflected in considerable increases in imports of machinery and apparatus, hides and skins, paper and paper products, automobiles, wood products, and coal. While raw-cotton imports increased, imports of practically all classes of textiles decreased due to the growth of domestic manufacture.

Agricultural products were again the chief articles of export, although exports of some farm products were considerably smaller than in 1927. The proportion of manufactured articles in the export trade rose to 35 per cent in 1928 from 30 per cent in 1927. Czechoslovakia, Germany, and Austria were the chief sources of imports and also Hungary's principal customers in 1928. Of the exports, Austria took 34, Czechoslovakia 17, and Germany 11 per cent, while, of the imports, Czechoslovakia supplied 22, Germany 19, and Austria 16 per cent. Imports from the United States were valued at \$7,128,000 in 1928, as compared with \$4,245,000 in 1927. The value of the foreign trade by principal commodities is shown in the accompanying table. The unfavorable trade balance in 1929 was \$4,000,000, or more than \$60,000,000 less than in 1928.

FINANCE. The budget for 1929-30 estimated receipts at 1,112,000,000 pengos (par value of pengo, about \$0.1749) and expenditures at 1,429,000,000, as compared with estimated receipts of 1,360,000,000 and expenditures of 1,358,000,000 in 1928-29. The actual budget operations in the fiscal year ending June 30, 1928, resulted in a surplus of 90,000,000 pengos, which was used for capital investment. The receipts for the first half of 1929-30 were considerably below estimates. The chief revenue items in the latter budget included direct taxes, 181,000,000 pengos,

HUNGARY'S IMPORTS AND EXPORTS BY LEADING COMMODITIES

[In thousands of dollars]

Commodity	1927	1928
IMPORTS		
Rice	2,343	2,001
Fruits and nuts	3,178	3,415
Tobacco	3,745	3,269
Hides and skins	2,772	3,410
Leather	4,387	3,825
Cotton, raw	2,478	3,876
Cotton yarn	6,747	5,516
Wool yarn	3,945	3,088
Silk, silk yarn	2,807	3,159
Cotton fabrics, woven	16,083	14,434
Wool fabrics	10,022	8,212
Silk and rayon fabrics	6,842	6,660
Textile manufactures, other	6,878	6,832
Clothing and millinery	2,096	2,557
Timber, rough	3,529	3,789
Firewood	5,761	6,485
Wood, hewn or sawn	13,574	14,964
Paper	5,119	5,811
Coal, coke, briquets	10,061	10,894
Petroleum, crude	2,199	2,400
Mineral oils, refined	2,426	2,293
Glass and glassware	2,102	2,426
Iron and steel	7,145	6,979
Copper, crude	2,981	3,129
Machinery, electric	2,398	3,736
Machinery, other	8,282	8,445
Automobiles, complete	1,794	2,499
Chemicals and allied products	7,586	8,131
All other merchandise	51,325	54,398
Bullion and coin	3,085	2,838
Total	200,345	207,952
DOMESTIC EXPORTS		
Cattle	7,936	6,626
Swine	5,238	5,164
Meats	1,817	2,118
Poultry, dressed	5,802	5,449
Eggs	4,189	2,957
Wheat	18,367	15,430
Rye	7,095	6,031
Corn	1,274	2,266
Wheat flour	12,979	15,072
Beans	1,466	1,796
Fruits, fresh	1,583	2,034
Sugar	5,224	4,809
Tobacco	819	2,273
Horses	2,702	2,267
Feathers	3,826	3,747
Wool	2,678	2,832
Cotton fabrics	2,789	2,457
Seeds	3,168	3,007
Iron and steel	4,739	5,936
Machinery, electric	2,761	3,263
Machinery, other	8,062	4,277
All other merchandise	41,635	44,376
Bullion and coin	3,673	773
Total	139,848	143,193

customs, 128,000,000, turnover taxes, 115,000,000, stamps and dues, 102,000,000; tobacco monopoly (gross), 158,000,000, posts, telegraphs, and telephones (gross), 113,000,000; state railways (gross), 315,000,000, all other, 320,000,000. The principal items of expenditure included state railways (gross), 319,000,000 pengos, education, 148,000,000; national defense, 151,000,000; posts, telegraphs, and telephones, 109,000,000, debt service, 93,000,000, tobacco monopoly, 75,000,000, all other, 534,000,000.

The public debt on Jan. 1, 1929, was reported at 2,906,612,000 pengos (\$508,366,000), of which 1,161,527,000 gold kronen (\$235,325,000) represented pre-war debt. In addition, a loan with the nominal value of \$36,000,000 was contracted in 1928 with the Swedish-American Match Trust. The note circulation at the end of December, 1928, amounted to 513,000,000 pengos, the gold reserves to 201,000,000, and foreign assets to 54,000,000, as compared with a note circulation of 487,000,000 pengos, reserves of 197,000,000, and foreign

assets of 114,000,000, on the same date in 1927. Under the revised Young Plan, signed Jan. 20, 1930, at The Hague, Hungary agreed to pay \$2,000,000 in reparations annually until 1943 and \$2,700,000 annually from then until 1966 inclusive.

COMMUNICATIONS The government owned 1925 miles of the 4374 miles of railroad line which it operated in 1927-28. In addition, there were a few private lines in the country, the most important being the Duna-Sava-Adria Railroad, with 356 miles of line. In the year ending June 30, 1928, the government-operated lines carried 87,448,000 passengers and 30,186,000 metric tons of freight, and the gross receipts totaled 297,110,000 (\$51,875,000), as against expenditures of 288,712,083 pengos. The net income was 8,397,596 pengos in 1927-28 and 13,445,128 in 1926-27. In 1928 the government-owned telegraph and telephone systems had 51,174 and 273,584 miles of wire, respectively, while their respective receipts for the year ending June 30 were \$816,000 and \$5,299,000.

GOVERNMENT. Technically, Hungary is a constitutional monarchy with the throne vacant. The Horthy régime, which won control of the government on Aug. 7, 1919, decided that the question of who was to be chosen monarch would be postponed until the nation was liberated from external pressure. Nicholas Horthy de Nagybánya was elected Regent on Mar. 1, 1920, to rule in the interim. The Legislature has two Houses, the Lower House of 245 members, and the Upper House consisting of the six following groups—(1) elected representatives of the former hereditary members, (2) members elected by the county councils and municipalities, (3) heads of the various religious communities, (4) high dignitaries of the State, (5) representatives of scientific institutions and the chambers of commerce; (6) life members appointed by the head of the state. Following the elections of Dec. 20, 1926, the Lower House was constituted as follows: Party of National Unity, 171, Christian Social Union, 35, Socialists, 14, various other parties, 25.

The ministry, originally formed on June 17, 1922, was reorganized Sept. 5, 1928, as follows: Prime Minister, Count Stephen Bethlen, Minister of Foreign Affairs, Dr. Louis Walko; Interior, Dr. Béla Seitovszky; Public Economy, Dr. John Bud, Finance, Dr. Alexander Wekerle, Agriculture, John Mayer, Commerce, Maximilian Herrmann, Public Instruction, Dr. Count Kuno Klebelsberg, Justice, Dr. Tibor Szitvay (appointed Feb. 5, 1929); National Defense, Count Charles Csáky; Social Welfare, Dr. Joseph Vass.

HISTORY

Three major issues agitated Hungary's domestic and foreign politics during 1929. The question of the revision of the Treaty of Trianon through which Hungarian minorities were incorporated in the neighboring states of the Little Entente, and that of the termination of the Regency and the selection of a new King, had been acute for a number of years. The third issue, that of reparations and the indemnification of Hungarian optants in Yugoslavia, Rumania, and Czechoslovakia, whose properties were confiscated at the close of the World War, came suddenly to the fore in connection with the efforts to liquidate the reparations question at the Hague Conference held during the month of August, 1929.

The desperate financial condition of both Austria and Hungary led the Allies to agree in 1922-23 that full reparations payments from these two countries should be suspended until 1943. For the period 1923-43, Hungary's quota was fixed at \$40,000,000. Subsequently, a moratorium granted Austria was extended to 1968. Count Bethlen, the Hungarian Premier, contended that the Allies in 1923 had verbally promised that reparations would not be required of Hungary after 1943. The Committee on Eastern Reparations, which met at Paris during 1929 in an effort to arrive at a satisfactory solution of the reparations problem in so far as it affected Austria, Hungary, and Bulgaria, for ratification at The Hague Conference in January, 1930, was unable to reach an agreement concerning Hungary. The greatest obstacle to a settlement was Hungary's refusal to waive her claims to the properties of the optants confiscated by Rumania and the Little Entente countries, in return for a reduction in the Hungarian reparations quota. Premier Bethlen on December 10 demanded that the two problems be dealt with separately. In support of his stand, he pointed out that Paragraph 250 of the Treaty of Trianon provided that the confiscation of the property of Hungarian nationals by other countries could be taken before international arbitral courts for adjudication. That the optants' case had not been referred to arbitration by the League Council was attributed to the attitude of France and the countries of the Little Entente. On December 12, the Rumanian Foreign Minister replied that Rumania would refuse to sign the Young Plan and that there could be no general peace in Middle Europe unless the Little Entente's standpoint on the optants was accepted. Premier Bethlen had indicated, however, that Hungary would be willing to pay reparations after 1943 provided the optants' cases were submitted to arbitration, and since there were only 350 optants involved, an agreement at the second Hague Reparations Conference did not seem impossible.

Originally, Hungary's claims against Rumania for confiscated property of optants aggregated 600,000,000 gold crowns (about \$120,000,000). Through the intervention of the League of Nations, this claim was reduced to 300,000,000. In 1929 the Hungarians offered to settle for 130,000,000 gold crowns, but the highest the Rumanians would offer was 100,000,000. The optants' claims against Czechoslovakia and Jugoslavia were estimated on the basis of awards already made at about 170,000,000 gold crowns, making a total Hungarian claim of about 300,000,000 (\$60,000,000).

The campaign for the revision of the Trianon Treaty proved a fertile source of internal political disputes, as the question became complicated with the agitation against the continuance of the Horthy régime and in favor of the possible crowning of Prince Otto, 16-year-old son of the late Emperor Charles and Empress Zita, who was a student at the University of Louvain, Belgium. The Christian Socialist party withdrew its support from Count Bethlen's coalition government on February 20, on the ground that he had failed to make a clear pronouncement in favor of the ultimate crowning of Prince Otto. Ten days earlier, the Premier had stated that while his greatest individual desire was to witness the revision of the treaty, he considered it the government's duty "to keep far off the chiques which

wish to roast their small game near the flames of the revision." In Czechoslovakia, Rumania, and Jugoslavia, the revisionist agitation in Hungary continued to evoke bitter criticism and hostility. The Czechoslovakian press denounced even those Hungarians who advocated a partial revision of the treaty as having in mind the eventual extension of Hungarian dominion over alien races formerly held in subjection.

Hope that Italy's rivalry with France in southeastern Europe would lead to her support of Hungary's demand for treaty revision received additional encouragement when Signor Dino Grandi, who later in the year became Minister for Foreign Affairs in Mussolini's new cabinet, paid an official visit to Budapest on May 2. Signor Grandi made the significant announcement that the tie between the two countries, symbolized by the recently concluded alliance, would "grow stronger and stronger." The Italians were also relied upon to support the Hungarian reparations position at the second Hague Conference.

Later in May, Premier Bethlen contributed two important announcements to the revisionist and royalist restoration debates. One was that while Hungary "would never rest until her lost territories were restored," the government was determined to postpone the questions of revision "until a general pacific atmosphere develops." The other was, "The Hungarian people are convinced that the rule of the elected Regent, Admiral Horthy, is best and will not change as long as he lives." The latter statement created much excitement in Budapest, and Count Andrássy, leader of the Legitimists, declared (previous to his death on June 12) that it was the desire of the people that the Horthy régime be terminated without delay.

Support of the Socialist party was secured in July for the agitation for revision of the treaty, through a deal dictated by political exigencies. The Socialists had previously refused to join the movement on the ground that a change of boundaries was not desirable while the country "was enslaved by a reactionary government." The announcement, however, that a delegation of members of the British Labor party would visit Hungary to study the economic condition of the country as affected by the treaty led the Premier to promise the Hungarian Socialists the full right to hold meetings and broader suffrage in municipal elections in return for their intercession with their British contrives on behalf of the revisionist movement. It was hoped that this agreement presaged the further introduction of democratic methods of government in Hungary, but both Regent Horthy and Premier Bethlen declared shortly afterward that the time was not ripe for experimentation with Western democracy in Hungary.

Other developments of the year included the decision of the Hungarian-Czechoslovak mixed arbitral tribunal on February 5 that Czechoslovakia must indemnify Archduke Friedrich of Hungary and hundreds of other Hungarians for properties confiscated by the Czechs after the conclusion of the peace treaties, the announcement in August of the breakdown of similar negotiations with Rumania; the conclusion of a five-year arbitration treaty with Bulgaria on July 22, and the ratification by the Hungarian Lower House on June 19 of the Kellogg-Briand Peace Pact. See REPARATIONS, also CZECHOSLOVAKIA and RUMANIA, under *History*.

HURRICANE. See METEOROLOGY

HUSSERL, EDMUND. See PHILOSOPHY

HYDRAULIC-FILL CONSTRUCTION. See DAMS

HYDROELECTRIC DEVELOPMENTS. See WATER POWER

HYDROGEN. See CHEMISTRY, INDUSTRIAL; PHYSICS

HYDROMETALLURGY. See METALLURGY
HYER, ROBERT STEWART. American university president, died May 29, 1929, in Dallas, Tex. He was born in Oxford, Ga., Oct. 18, 1860, and was graduated from Emory College in 1881. He was professor of physics at Southwestern University from 1882 to 1911, and, after 1897, president. When the Southern Methodist University was established in Dallas, Tex., in 1911, he became the first president and head of the department of physics, retiring in 1919 as emeritus president.

HYPERTENSION. See ARTERIOSCLEROSIS AND HIGH BLOOD PRESSURE

IBERO-AMERICAN EXPOSITION. See EXPOSITIONS

ICE CREAM. See DAIRYING

ICE HOCKEY. See HOCKEY

ICELAND. An island state united with Denmark by the Act of Union of Nov. 30, 1918. Situated to the northwest of Great Britain (to which it is next in size of European islands), and with its northern coast touching the Arctic Circle, Iceland has an area of 39,709 square miles, population according to the census of 1920, 94,690, estimated at the end of 1927, 103,307. The capital, Reykjavik, had a population of 24,304 in 1927. All the other towns had populations of less than 3000. The number of foreign-born inhabitants is very small and consists chiefly of Danes and Norwegians. The movement of population in 1927 was: Births, 2642; deaths, 1282; marriages, 594. Religious freedom is complete, but there were only 463 dissenters from the endowed national church, the Evangelical Lutheran, at the census of 1920. Primary instruction is compulsory between the ages of 10 and 14, children up to the age of 10 years being privately educated as a rule.

In 1920 there were 209 elementary schools, with 318 teachers and 6485 pupils, several continuation schools, and a university at Reykjavik. Of the total area, about 68 per cent is highland; 12 per cent, glaciers, 10 per cent, lava, and 6 per cent, lowland. Only about one-fourth of 1 per cent of the area of the island is under cultivation, producing chiefly hay, potatoes, and turnips. The crops in 1927 were: Hay, 3,010,000 cwt.; potatoes, 84,000, and turnips, 37,000. Livestock in the same year totaled 52,800 horses, 27,900 cattle, 590,000 sheep, 2800 goats. The value of the fish catch in 1926 was estimated at 24,656,000 crowns, of which the cod fishery contributed 21,999,000, and the herring fishery, 2,657,000 crowns (one crown exchanged at approximately \$0.215 in 1928). In 1928 the fish catch was estimated at 80,000 tons, which compared with 60,000 tons in the previous year.

Economic conditions in Iceland showed steady improvement during 1928 and 1929. Exports in 1928 amounted to 74,000,000 crowns, as compared with 54,400,000 in 1927 and 44,000,000 in 1926, while import values for the same years were 54,000,000, 50,000,000, and 51,000,000 crowns, respectively. Fish and fish products make up the bulk of the exports. In 1929 about 200,000 sheep

were exported as salted mutton Wool is another important export item The chief imports in 1928 were cereals and other foodstuffs, textile manufactures, timber and wooden products, coal, metals, and hardware, and vessels, carriages, and machinery The bulk of Iceland's trade is carried on with Denmark, Great Britain, Norway, Sweden, and Germany, in the order named

The budget for 1929 estimated revenues at 10,883,600, and expenditures at 10,847,000 crowns This represented a considerable increase over the budget estimates for 1928, which placed revenues at 10,362,000 and expenditures at about 10,367,000, crowns In 1927 actual receipts amounting to 2,027,405 crowns on Jan 1, 1928, amounted to 11,174,000, and actual expenditures to 12,066,000, crowns A comparatively large reserve fund, amounting to 2,027,405 crowns on Jan 1, 1928, was invested by the state in different loans On the same date, the public debt stood at 11,288,750 crowns, of which 7,050,079 were held abroad, mainly in Denmark

There are no railroads in Iceland, inland travel being mainly by carriage, motor vehicle, or on horseback In 1928 there were 568 miles of highway, mostly in the southern lowlands Steamers and motor vessels are used for coastal traffic In the same year, there were 240 post offices and seven wireless stations The electric and telephone systems had a total of 111,000 lines of line at the end of 1927 The merchant marine in 1927 consisted of 81 steam vessels of 23,788 gross tons, 215 motor vessels of 5472, and 20 sailing vessels of 558; or a total of 316 vessels of 29,818 gross tons

Executive power is vested in the King of Denmark who acts through a responsible ministry, and legislative power in the King and Althing or Parliament, which consists of 42 members, of whom six are elected for eight years by proportional representation for the whole country, and 36 for four years by universal suffrage The Althing is divided into two Houses, of which the Upper has 14 members and the Lower, 28 The right to vote is possessed by both men and women over the age of 25 King in 1929, Christian X, President of the Council and Minister of Trade and Communications, Tryggyr Thorhallsson, Justice and Ecclesiastical Affairs, Jonas Jonsson, Finance, Magnus Kristjansson

IDAHO. POPULATION According to the Fourteenth Census, the population of the State on Jan 1, 1920, was 431,866 The estimated population on July 1, 1928, was 546,000 The capital is Boise

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929

Crop	Year	Acreage	Prod Bu	Value
Hay	1929	1,196,000	2,872,000	\$30,752,000
	1928	1,148,000	2,766,000	30,123,000
Wheat	1929	1,083,000	25,515,000	24,353,000
	1928	1,160,000	28,972,000	25,913,000
Potatoes	1929	102,000	17,136,000	20,664,000
	1928	116,000	19,790,000	8,874,000
Dry beans	1929	92,000	2,116,000	5,819,000
	1928	86,000	1,634,000	5,882,000
Apples	1929		5,500,000	6,050,000
	1928		5,500,000	4,125,000
Oats	1929	151,000	6,040,000	2,899,000
	1928	137,000	6,439,000	3,081,000
Barley	1929	147,000	5,728,000	3,784,000
	1928	144,000	6,192,000	3,901,000
Corn	1929	54,000	1,944,000	1,837,000
	1928	58,000	2,488,000	2,245,000

* Tons.

MINERAL PRODUCTION. The production of the five metals gold, silver, copper, lead, and zinc, on which almost the entire yearly total of the mineral industry of the State depends, was for all these metals, except lead, in greater quantity for 1928 than for 1927 Lead, however, contributes of itself, the chief part of the value of the State's mineral product, and in 1928 lead was not only produced in less quantity, but commanded a lower average price at the mine Consequently, in succession to that of the previous year, the metal production of 1928 scored a second sharp reduction in value The value of the output of the five metals for 1928 was \$26,667,706, for 1927 it had been \$28,104,413 There were produced of lead, in 1928, 290,645,905 pounds, valued at \$0 058 a pound, in 1927, 302,038,423 pounds, at \$0 003 Zinc production was for 1928, 62,526,648 pounds, 1927, 53,556,345, copper 1928, 2,072,165 pounds, 1927, 2,173,163, gold, 1928, 20,980.38 fine ounces, 1927, 15,315 67, silver, 1928, 8,998,330 fine ounces, 1927, 8,901,409 The chief mineral products outside of this dominant metal group were stone, clay products, and phosphate rock The aggregate value of the mineral product of the State was, for 1927, \$29,183,929, for 1926, \$31,752,821

The value of the gold, silver, copper, lead, and zinc produced from ore mined in Idaho in 1929, according to Federal estimates, was about \$32,278,490 Substantial increases were recorded in the production of silver, copper, lead, and zinc, and the value of the combined output was greater than any year since 1918, despite a slight decrease in the output of gold

The mine output of gold in 1929 was valued at about \$403,100 Output of silver increased nearly 6 per cent, to about 9,535,000 ounces, but the value decreased to about \$5,091,690, on account of a fall in the average price of silver The output of lead increased to about 304,230,000 pounds in 1929, and the value to about \$19,318,600 Zinc recovered from ore and concentrate increased to about 99,100,000 pounds in 1929, and the value to about \$6,590,150

TRANSPORTATION. The total number of miles of railroad line under operation on Jan 1, 1929, was 2938 91 There was no reported construction of additional mileage in 1929

MANUFACTURES According to the biennial Federal Census of Manufactures published by the U S Department of Commerce in 1929 and dealing with the operations of 1927, there were in the State, in 1927, 470 manufacturing establishments These employed 13,513 wage earners, whose wages for the year totaled \$18,970,043 Materials and supplies used in production cost \$47,927,463 Manufactured products attained the combined value of \$86,256,399

EDUCATION The population of school age in the school year 1929-30 numbered 143,322 In 1928-29 the total school enrollment was 106,032, of whom 95,799 were in grade schools and 25,000 in high schools Approximately one of every four residents of the State was attending school in 1929 The illiteracy rate—1.5 per cent—was lower in only two States, Iowa and Nebraska The institutions of higher education are the University of Idaho at Moscow, the College of Idaho at Caldwell, and the State normal schools at Lewiston and Albion

CHARITIES AND CORRECTIONS. The central State authority in matters of welfare in 1929 rested in the Department of Public Welfare, which con-

ducted a health service, food and drug inspection, work in child hygiene, a board of eugenics, and supervision of several State institutions. The latter were the Northern Idaho Sanitarium, Orofino, with about 350 inmates, State School and Colony, Nampa, 375 inmates, Idaho Soldiers' Home, Boise, and Lava Hot Springs, a public resort, at Lava. The State Penitentiary, at Boise, directed by a board consisting of the Governor, Attorney-General, and Secretary of State, contained 408 prisoners on Nov 30, 1928.

LEGISLATION. The State Legislature met in regular biennial session, adjourning March 7. A system of taxation of State and national banks was enacted. A comprehensive plan of State revenue, however, failed of passage. A number of acts affecting highways and automobiles were passed. An appropriation of \$19,500 was made for further building at the State normal school at Lewiston.

POLITICAL AND OTHER EVENTS. The policy of placing grade school pupils in the hands of male teachers for at least one year out of four was proposed by State Commissioner of Education Vincent as essential to giving pupils the experience of masculine discipline. The discovery of new gold deposits in the neighborhood of Wallace, reported by a prospector, was the occasion of a gold rush, somewhat reminiscent of earlier times, in October. Lieutenant-Governor W. B. Kinn was captured by bandits between Lewiston and Orofino in June, but escaped, and his three captors were later captured and sent to prison. The State Supreme Court, in the matter of an inheritance tax case, interpreted the law as requiring that two payments of State inheritance tax must be made where a wife, inheriting under her husband's will, herself died before the estate, probated in another State, had been closed.

OFFICERS. Governor, H. C. Baldrige, Lieutenant-Governor, Oscar E. Hailey, Secretary of State, Fred E. Lukens, Auditor, E. G. Gallet, State Treasurer, Byron Defenbach, Attorney-General, W. D. Gillis, Superintendent of Public Instruction, Myrtle R. Davis, Inspector of Mines, Stewart Campbell.

JUDICIARY. Supreme Court Justices, William E. Lee, Alfred Budge, Raymond Givens, Bertram S. Varian, T. Bailey Lee.

IDAHO, UNIVERSITY OF. A coeducational State institution of higher learning in Moscow, Idaho, founded in 1889, with a southern branch in Pocatello, established by act of the State Legislature and opened in the autumn of 1927. The total enrollment at Moscow in the autumn of 1929 was 2007, distributed as follows: Junior college, 370, letters and science, 431, agriculture, 133, engineering, 191, law, 21, mines, 58, forestry, 98, education, 277, business, 189, special courses, 19, and nonresident, 220, the total enrollment at Pocatello was 524. The enrollment for the 1929 summer session was 240 at the university and 78 at the southern branch. The faculty in 1929 numbered 160. The physical plant of the university was valued at \$2,807,000 and that of the southern branch at \$640,000, making a total of \$3,447,000. The productive funds of the university amounted to \$2,016,460, and the income for 1928-29 was approximately \$1,250,000. The library contained 90,000 volumes. The outstanding achievement of the year was the establishment of the university junior college at Moscow, coordinate with the southern branch

at Pocatello. The junior college offers two years of work, admitting to the colleges of letters and science, law, education, and business administration. President, Frederick James Kelly, Ph.D.

ILLINOIS, POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 6,485,280. The estimated population on July 1, 1928, was 7,396,000. The capital is Springfield.

Chicago's population, late in 1926, was estimated on the basis of birth rates and school assessors' statistics as being 3,151,989, an increase of 16.7 per cent over the 1920 official census. The population of the metropolitan area of the city was estimated at 4,100,000. In 1928 the U. S. Bureau of the Census estimated the population of Chicago as of July 1, at 3,157,400.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Corn	1929	8,900,000	311,500,000	\$224,280,000
	1928	9,570,000	367,488,000	257,242,000
Hay	1929	3,594,000	5,602,000 *	63,230,000
	1928	3,156,000	4,154,000 *	53,462,000
Oats	1929	4,281,000	141,738,000	56,695,000
	1928	4,649,000	174,338,000	66,248,000
Wheat	1929	2,451,000	36,537,000	40,498,000
	1928	1,567,000	22,932,000	25,693,000
Barley	1929	456,000	12,084,000	6,767,000
	1928	680,000	20,060,000	10,422,000
Potatoes	1929	63,000	5,040,000	7,812,000
	1928	70,000	7,700,000	5,005,000

* Tons

MINERAL PRODUCTION. Coal, which furnishes the chief part of the value of the State's yearly mineral product, and which forms the basis of an active industry in the production of pig iron, was more extensively mined in 1928, owing largely to the conclusion of labor difficulties at the mines. There were produced in 1928, 55,948,199 short tons of coal, the production of 1927 had been 46,848,224 tons. In value the coal production was \$112,095,000 for 1928, for 1927, \$101,356,000. The coke production likewise rose, to 3,240,964 tons of beehive coke in 1928, from 3,013,940 in 1927, but declined in value to \$19,867,463 for 1928, from \$21,076,519 for 1927. Blast furnaces of the State shipped 4,094,514 long tons of pig iron in 1928, in 1927, 3,466,203, in value, \$73,524,773 in 1928 and \$66,442,068 in 1927. Outside the coal and iron group the most important mineral industry in the State is that of clay products. These attained, for 1927, \$34,346,886, for 1926, \$37,030,004. In the cement industry, the shipments of 1928 were 7,405,067 barrels, those of 1927, 7,061,240. The value of shipments was, 1928, \$11,602,848, 1927, \$11,312,783. Petroleum production declined somewhat in quantity to 6,459,000 barrels for 1928, from 6,994,000 for 1927. The steady and heavy production of sand, gravel, and low-grade stone added materially to the annual mineral product. The value of all minerals produced, with the exception of such items as pig iron smelted from imported ore, was, for 1927, \$180,288,000, for 1927, \$237,241,000.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 12,118.47. There were built, in 1929, 3.85 miles of additional second, and 7.87 of third, track.

MANUFACTURES. According to the biennial Census of Manufactures published by the U. S. De-

partment of Commerce in 1929, there were in the State, in 1927, 14,711 manufacturing establishments. These employed 623,468 wage earners, whose wages for 1927 totaled \$914,102,612. Materials and supplies used in manufacture cost \$2,921,092,107. The manufactured products attained the combined value of \$5,386,003,235.

EDUCATION The minimum school term for the public schools of the State was lengthened by enactment to 8 months, from 7, and the provisions for compulsory attendance were rendered more stringent. According to State Superintendent Blair, in the *Journal of the National Education Association*, an outstanding feature of the year's developments was the adoption of the equalizing principle in the employment of the fund for State distribution. Improvement was made in the law for the certification of teachers, and a retirement system was established in the State teachers' colleges, which received a material increase of appropriations. The school population of the State for the academic year 1927-28 was estimated at 2,011,890. There were enrolled in the public schools 1,378,751 pupils. Of these, 1,109,823 were in the elementary and 268,928 in the high-school grades. Expenditure for public-school education in 1928 was current, \$113,871,353; capital outlay, \$29,549,919. The salaries of teachers averaged \$1604.01 a year. Among 43 counties there were 114 consolidated school districts.

CHARITIES AND CORRECTIONS Supervisory powers over a great number of institutions of care and custody rested in 1929 with the Department of Public Welfare, created in 1917. Its officials included, under the director of public welfare, an alienist, a criminologist, a superintendent of prisons, a superintendent of Charities, a supervisor of paroles, and superintendents of both the adult blind and of the visitation of children.

Under the superintendent of charities were the State hospitals for the insane, colonies for the feeble-minded and for epileptics, State schools for the deaf and for the blind, training schools for delinquent boys and for delinquent girls, the State Eye and Ear Infirmary, the Industrial Home for the Blind, homes for disabled ex-soldiers and sailors, for soldiers' widows and for soldiers' orphans. Under joint control of this official and of the University of Illinois were the State research and educational hospitals. The institutions of a strictly penal character were under the supervision of the superintendent of prisons. The State alienist headed the State Psychopathic Institute. On July 1, 1929, the State's mental hospitals contained 21,869 patients, the feeble-minded and epileptic colonies, 4137 and 491, respectively, the delinquent schools, 774 boys and 522 girls, and the penal institutions, 8030 prisoners. The total number of persons in institutions of the State was 37,342.

LEGISLATION. The State Legislature met in regular session, adjourning on June 20, after a protracted session. The most conspicuous measure that it passed was that providing a gasoline tax of 3 cents a gallon, to go into effect on August 1. The gasoline tax had long been opposed by the legislators from Chicago and Cook counties. The law provided a division of the tax proceeds in the proportion of 1 cent to the State and 2 cents to the individual counties. The proceeds of the tax were to be expended on road improvement. A bill was enacted to create a force of 300 State highway police, to be invested

with full police powers. An election commission of three was charged with the duty of studying the working of the election laws of the State and reporting thereon to the legislative session of 1931.

By statute was formed a new governmental body, the State judicial advisory council, conceived on the plan of the similar body existing in Cook County. The State council was to consist of 15 members, some legislators and some members of bench and bar. It was charged to study the State laws with reference to judicial organization and to procedure. By the Chicago Board of Trade Act, the securities listed on that board were exempted from qualifying under the "blue-sky" law, a like measure similarly exempted securities of the Chicago Curb Association. Another enactment affecting Chicago as a financial centre was the Call-money Act, which made it legal to charge above 7 per cent on collateral loans in writing, and thus removed from the local market a handicap imposed by an earlier statute restricting interest to 7 per cent.

A number of laws affecting the status of women were enacted. One of these strengthened the county system of mothers' pensions by appropriating \$500,000 to reimburse counties from State funds, up to 50 per cent of their pension disbursements. Women were admitted to jury service, and a number of bills bearing on jury service by women were passed, subject to confirmation by referendum. The schooling requirement to qualify a child of fourteen years to go to work was raised to passage through the eighth grade, from the former requirement of passage through the sixth. The obligatory minimum school year was made 8 months, instead of 6. The school distribution fund was increased to \$10,000,000 a year, from \$6,000,000. A new State system of certification for teachers was adopted.

Chief among the many enactments especially concerning Chicago were a series of acts to enable the city to carry out the solution, sought for many years, of its transit problem. With the reported approval of the transit companies affected and of the City Council, the latter was empowered to enter into a contract with a future unified company, to issue a terminable operating permit, to establish a city regulatory commission and to proceed to build subways. Without the transit companies' approval a bill was passed authorizing a fixed franchise term of 40 years. Nine associate judges were added to the municipal court of Chicago.

The Chicago Sanitary District was granted the power to issue \$27,000,000 of bonds without the sanction of a popular referendum, for the reported purpose of constructing the works of sewage disposal and the like required under the terms of the decree of the United States Supreme Court in the Great Lake diversion suit. A large increase of \$35,000,000 was made in the tax levy allowed to the Chicago Board of Education. A bond issue for the purpose of building an elevated two-deck highway through the West Park district, to the total of \$20,000,000, became law, subject to approval by referendum. A measure to prohibit the sale, possession, or use of the machine guns extensively employed in the feuds of the Chicago gangsters was enacted, but incurred much ridicule as not likely to be observed by the lawless, and was vetoed by Governor Emmerson.

POLITICAL AND OTHER EVENTS. In conformity with the previous report of Charles Evans

Hughes as special master, the United States Supreme Court rendered on January 14 a decision against the Chicago Sanitary District in the suit brought by a number of the Lake States to prevent the District's diverting water from Lake Michigan in excess of its permitted allowance. Under the decision the District was required to proceed as soon as possible to dispose of its sewage in such manner as would render the diversion of lake water for that purpose needless. The course of the District in diverting 8500 cubic feet a second, instead of the 4167 feet allowed it by Federal permit was held a defiance of the Federal authority. It remained possible for the District to divert water within the legal limit for the purpose of canal navigation. The water level of the Great Lakes rose later to exceptional height by reason of a wet spring. Nevertheless Special Master Hughes held further hearings and ordered on December 13 that the District's diversion of water be reduced to 6500 cubic feet a second by July 1, 1930. At that date the North Side sewage disposal plant, which the District had under construction, was expected to be complete. Three other plants were to be completed in 1933, 1935, and 1938, respectively.

A deficit in the municipal finances occurred in the city of Chicago. It was necessary as early as the outset of April for the city to negotiate a loan on tax anticipation warrants, to the total of \$40,000,000. The difficulty grew directly out of the popular vote at the spring municipal elections, which went against further bond issues. By the end of June Cook County was reported to have against it \$2,500,000 in bills payable and to be without further means to pay salaries. The county treasurer issued an appeal for the prepayment of taxes, but this brought in only a few thousands of dollars. The county's mid-September pay roll of \$400,000 was not met when due. The city's deficit at the end of the year was estimated at \$12,500,000 with regard to operating and maintenance expenditure, but the service of the city debt, which was covered by separate tax levies, was unaffected. Budget proposals carrying heavy reductions in the number of city and county employees were made. A school building loan of \$40,725,000 was secured on future taxes, and an advance from this paid December's teaching salaries.

The locks at Government Dam No. 51, at Golconda, Illinois, were completed at the end of July, affording passage for vessels from and to the Ohio River. On the Illinois River the State proceeded with its project of carrying through the Illinois Waterway from Chicago to the Ohio River, despite the exhaustion of a \$20,000,000 bond issue for the purpose. The State constitution, however, was held to prohibit the application of ordinary revenue to such a purpose, and Governor Emmerson sought in October to obtain Federal aid to the extent of some \$5,000,000 estimated as necessary for completing the waterway.

A series of legislative measures having been enacted to enable Chicago to bring about a consolidation of transit lines, the city authorities proceeded in the late summer to the work of drafting a consolidation ordinance for submission to a referendum vote. Negotiations were also held with the transit companies on the chief points at issue. The campaign to abate crime in Chicago continued in 1929, with repeated round-ups of criminal suspects. There occurred none the less on February 24 a massacre of 7 mem-

bers of one of the North Side criminal gangs, of which the perpetrators could not be found. The Chicago *Daily Journal* ceased separate issue August 21, being absorbed by the Chicago *Daily News*. The *Journal* was at the time 85 years old and the longest established of the evening dailies of the State. A municipal airport for amphibian planes, situated in Grant Park, was dedicated June 24.

The State of Illinois gained a judgment on July 30, in the Federal District Court, in a suit brought by the Standard Oil Company for the recovery of \$2,000,000 paid the State in gasoline taxes in 1928, the decision bore on similar contests over the gasoline-tax law, affecting tax collections of some \$6,500,000. A State Supreme Court decision found that wagering at dog races was legal within the provisions of the pari-mutuel system for horse races. Allegations of abuse in the distribution of prize-fight tickets were followed by the resignation of the State Athletic Commission and the appointment on August 9 of two new commissioners. An effort was made late in the year to organize the coal-mine labor of the State under an organization known as the National Miners' Union, which was antagonistic to the United Mine Workers, the organization previously in control.

OFFICERS. Governor, Louis L. Emmerson, Lieutenant-Governor, Fred E. Sterling; Secretary of State, William J. Stratton, Treasurer, Omer N. Custer; Auditor of Public Accounts, Oscar Nelson; Attorney-General, Oscar E. Carlson; Superintendent of Public Instruction, Francis G. Blair.

JUDICIARY. Supreme Court. Chief Justice, William M. Farmer, Associate Justices, Oscar E. Heard, Clyde E. Stone, Paul Samuelli, Frederic R. DeYoung, Warren W. Duncan, Frank K. Dunn.

ILLINOIS, UNIVERSITY OF. A coeducational, State institution of higher learning in Urbana-Champaign, Ill., founded in 1867. The enrollment in the autumn of 1929 was 12,413, of whom 9097 were men and 3316 were women, distributed among the several colleges as follows: Liberal arts and sciences, 4155; commerce and business administration, 1990; education, 881; engineering, 1741; agriculture, 692; music, 152; journalism, 75; law, 292; library, 131; graduate school, 948; medicine, 548; dentistry, 168; pharmacy, 668. The 1929 summer-session enrollment was 2423, of whom 1391 were men and 1032 were women. The number of persons on the teaching staff above the rank of assistant was 737, in the grade of assistant or lower there were 459, and administrative officers totaled 26. The library contained 800,330 volumes and 164,750 pamphlets. The productive funds from Federal endowment totaled \$649,013, and from private gifts, \$464,071. The income for the year 1928-29 was \$6,926,602, of which \$4,837,887 was from the State. During 1928-29 a laboratory of applied mechanics and an addition to Lincoln Hall were constructed. During 1929-30 work was to be begun on a new building for the College of Medicine in Chicago. President, David Kinley, Ph.D., LL.D.

ILLINOIS CRIME SURVEY. See CRIME.
ILLITERACY. See EDUCATION IN THE UNITED STATES.

ILLUMINATION. See ELECTRIC LIGHTING.
"T.M. ALONE" INCIDENT. See PROHIBITION.

IMAMATE OF YEMEN. See ARABIA.

IMMIGRATION. During the fiscal year 1929, there were admitted into the United States 279,678 immigrants and 199,649 non-immigrant aliens. There departed from the country 69,203 emigrants and 183,295 non-emigrant aliens. Of the permanent immigration of the year, Europe furnished 158,598, North and South America, 116,177, and Asia, 3758. The four principal sources were Canada with 64,440 immigrants; Germany, 46,751 immigrants, Mexico, 40,154; and Great Britain and Northern Ireland, 23,576. No other country contributed more than 20,000 immigrants. The sex distribution was 142,132 males and 137,546 females. Of the total group, 47,935 were under 16 years of age, 207,990 were from 16 to 44 years, and 23,753 were over 44 years. Two-thirds of the immigrants were single (182,307).

The records of the Bureau of Immigration of the Department of Labor showed that the total number of deportations of aliens found to be unlawfully in the country reached 12,908 for the year, as compared with 11,025 for the fiscal year 1928. A total of 18,127 alien applicants were debarked from entering the country, 16,094 rejections occurring at land border ports, and

2033 at seaports. In the rejections at land-border ports, the great majority of the cases were turned back because of improper immigration visas. The accompanying table gives a summary of immigration facts for the year by racial groups.

Important laws were enacted during the year. Under the Act of Mar. 2, 1929, an alien resident of the United States, concerning whose admission to the country no record was available, was entitled to registration provided he entered the country prior to June 3, 1921, had resided in the United States continuously since such entry, was a person of good moral character, and was not subject to deportation. The Act of Mar. 4, 1929, made reentry after deportation a felony, punishable by fine and imprisonment, and also provided that any alien deported shall be forever barred from admission into the country. However, this last section was modified by the law of June 24, 1929, which provided that aliens deported prior to Mar. 4, 1929, had permission to re-apply, if permission had already been granted prior to that date.

COMPARISON OF QUOTA WITH NON-QUOTA IMMIGRANTS. The following table indicates that the number of immigrants coming from non-quota

NET INCREASE OR DECREASE OF POPULATION BY ADMISSION AND DEPARTURE OF ALIENS, YEAR ENDED JUNE 30, 1929, BY RACE OR PEOPLE, SEX, AND AGE PERIODS

Race or people	Aliens admitted			Aliens departed			Increase (+) or decrease (-)
	Immigrant	Non-immigrant	Total	Emigrant	Non-emigrant	Total	
Total	279,678	199,649	479,327	69,203	183,295	252,498	+ 226,829
African (black)	1,254	2,935	4,189	425	1,351	1,776	+ 2,413
Armenian	929	210	1,139	26	71	97	+ 1,042
Bohemian and Moravian (Czech)	1,427	1,180	2,587	1,808	1,827	3,115	- 548
Bulgarian, Serbian, and Montenegrin	685	680	1,365	1,341	1,195	2,536	- 1,171
Chinese	1,071	6,947	8,018	3,486	5,390	8,886	- 868
Croatian and Slovenian	1,075	727	1,802	176	189	365	+ 1,437
Cuban	2,141	6,232	8,373	1,166	6,802	7,968	+ 405
Dalmatian, Bosnian, and Herzegovinian	119	174	293	147	738	1,085	- 792
Dutch and Flemish	2,949	4,062	7,011	1,101	3,685	4,786	+ 2,225
East Indian	56	162	218	67	77	141	+ 74
English	29,846	41,810	71,656	9,960	53,615	63,575	- 8,081
Finnish	509	1,574	2,083	487	2,030	2,517	- 434
French	16,927	9,607	26,534	1,621	9,221	9,842	+ 16,732
German	55,631	26,519	82,150	7,883	19,677	27,020	+ 55,130
Greek	4,025	2,358	5,783	1,793	1,669	1,462	+ 1,921
Hebrew	12,479	3,407	15,886	189	1,389	1,578	+ 14,308
Irish	30,922	7,865	38,787	1,650	6,011	7,070	+ 31,717
Italian (north)	2,631	4,759	7,390	3,828	4,849	8,675	- 1,285
Italian (south)	16,452	16,691	33,143	8,610	10,253	18,863	+ 14,280
Japanese	716	7,562	8,278	931	8,812	9,743	- 1,465
Korean	49	57	106	32	49	81	+ 25
Lithuanian	409	430	839	270	330	600	+ 239
Magyar	1,342	1,499	2,841	820	1,096	1,916	+ 925
Mexican	38,980	3,405	42,385	7,172	3,328	10,500	+ 31,885
Pacific Islander	4	27	31	3	8	11	+ 20
Polish	3,507	2,453	5,960	2,316	3,011	5,327	+ 613
Portuguese	853	2,598	3,451	1,961	1,811	3,772	- 321
Rumanian	585	573	1,158	689	941	1,630	- 472
Russian	1,792	1,734	3,086	548	1,431	1,979	+ 1,107
Ruthenian (Rusniak)	532	118	650	26	86	112	+ 538
Scandinavian (Norwegians, Danes, and Swedes)	19,428	13,098	32,526	2,746	10,521	13,269	+ 19,257
Scottish	21,926	12,087	34,013	1,677	7,544	9,221	+ 24,792
Slovak	2,443	1,273	3,716	477	853	1,290	+ 2,526
Spanish	899	6,016	6,935	1,565	5,411	6,976	- 41
Spanish American	3,259	4,812	8,071	1,755	5,072	6,827	+ 1,244
Syrian	632	638	1,270	175	466	641	+ 321
Turkish	127	182	309	61	127	188	+ 79
Welsh	1,659	861	2,520	115	403	518	+ 2,002
West Indian (except Cuban)	380	1,820	2,200	761	2,636	3,397	- 1,197
Other peoples	488	407	845	202	418	620	+ 225
SEX							
Male	142,182	117,710	259,842	46,533	110,148	156,681	+ 103,161
Female	137,546	81,939	219,485	22,670	73,147	95,817	+ 123,668
AGE							
Under 16 years	47,935	10,128	58,063	4,246	10,647	14,893	+ 43,170
16 to 21 years	69,072	10,627	79,699	3,850	8,972	12,822	+ 66,877
22 to 29 years	85,222	47,800	132,822	16,207	41,365	57,572	+ 75,250
30 to 37 years	36,907	48,189	85,096	17,502	47,850	65,352	+ 19,744
38 to 44 years	16,790	34,018	50,808	11,397	30,165	41,562	+ 9,240
45 years and over	23,753	49,092	72,845	16,001	44,296	60,297	+ 12,548

countries is almost as large as those admitted from Europe.

IMMIGRANT ALIENS ADMITTED

Fiscal year	Canada and Newfoundland	Mexico	Central and South America	Europe
1925	102,753	32,964	3,669	148,366
1926	97,368	48,316	4,481	155,562
1927	84,580	67,721	5,548	168,968
1928	75,281	59,016	5,917	168,513
1929	66,451	40,154	5,280	158,598

It will be noted that there has been a constant decline in the number of immigrants from Canada, while immigration from the United States has fluctuated in both directions. On the other hand, comparatively few permanent immigrants come to the United States from Central America and South America. It would appear that the trend has been upward in recent years, and the Secretary of Labor expects continued increases. Europeans who probably originally should have liked to have come to the United States, except for quota restrictions, are now coming in increasing numbers to South American countries. While these persons themselves cannot hope for admission to the United States, except within quotas of their native countries, their own children born in the Western Hemisphere will not labor under such disabilities. It is not unlikely that the future will see a sizable immigration to the United States from Latin America.

MEXICAN LABOR. The total number of Mexican immigrants admitted during the fiscal year 1929 was 40,154. During the same period, 10,500 Mexican aliens left the country. Over 94 per cent of the alien entrants via the southern land border were born in Mexico, 10,544 gave Mexico as their country of birth, 1329 claimed European nationality, principally Germany, Russia, England, and Spain, 595 claimed birth in China, 208 in other Asiatic countries, and 402 in other countries.

Among the Mexican immigrants, the unskilled workers continued to predominate, 11,581 giving their occupation as that of common laborer and 3167 as farm laborer. There were 4252 Mexican immigrants recorded as skilled laborers, 1266 as servants, 732 as professional persons, 1295 in miscellaneous occupations, and 16,687 as having no occupation. During the year, there evidenced itself in some of the Southern States a decided reaction in favor of Mexican labor. In Texas, for instance, a measure was introduced in the State legislature seeking to make it difficult for Mexicans to leave the State. The demand for farm hands and for railroad construction workers made the retention of Mexicans in the country a matter of considerable importance, not only to the States of New Mexico, Arizona, and California, but even so far in the interior as Colorado. In this last State, Mexican farm laborers were being used extensively on the beet sugar plantations. This tendency favorable to Mexico is interesting in the light of the agitation that has appeared in a number of States, calling for the restriction of immigration. The 1928 YEAR BOOK recorded the introduction of such a measure in Congress.

INTERNATIONAL ALIEN CONFERENCE. The First International Conference on the Treatment of Foreigners adjourned in December, after having met for one month at Paris, without accomplishing its chief aim, i. e., the conclusion of a convention outlining the general governmental control of alien residents and alien business interests.

This conference, which was organized by the League of Nations, first began its sessions on November 5, with representatives from 40 countries present. The United States and Russia also sent unofficial observers. A draft convention which had been prepared was submitted to the conference, article by article. It immediately became evident that there were a series of contradictions in the convention that, in effect, would succeed in

IMMIGRATION QUOTAS

Country	Nat. origins	Free quota
Afghanistan	100	100
Albania	100	100
Angola	100	100
Arabian Peninsula	100	100
Armenia	100	124
Australia (including Tasmania, Papua and all islands appertaining to Australia)	100	121
Austria	1,413	785
Belgium	1,804	512
Bhutan	100	100
Bulgaria	100	100
Cameroon (British mandate)	100	100
Cameroon (French mandate)	100	100
China	100	100
Czechoslovakia	2,874	3,073
Danzig, Free City of	100	228
Denmark	1,181	2,789
Egypt	100	100
Estonia	116	124
Ethiopia (Abyssinia)	100	100
Finland	471	100
France	3,086	3,954
Germany	25,937	51,227
Great Britain and Northern Ireland	65,721	34,007
Greece	807	100
Hungary	369	473
Iceland	100	100
India	100	100
Iraq (Mesopotamia)	100	100
Irish Free State	17,853	28,567
Italy	5,802	3,842
Japan	100	100
Latvia	236	132
Liberia	100	100
Liechtenstein	100	100
Lithuania	306	314
Luxembourg	100	100
Monaco	100	100
Morocco (French and Spanish zones and Tangier)	100	100
Muscat (Oman)	100	100
Nauru (British mandate)	100	100
Nepal	100	100
Netherlands	3,153	1,648
New Zealand	100	100
Norway	2,377	6,453
New Guinea, including appertaining islands (Australian mandate)	100	100
Palestine, with Trans Jordan (British mandate)	100	100
Persia	100	100
Poland	6,524	5,928
Portugal	440	503
Ruanda and Urundi (Belgian mandate)	100	100
Rumania	295	603
Russian (European and Asiatic)	2,784	2,248
Samoa, Western (mandate of New Zealand)	100	100
San Marino	100	100
Siam	100	100
South Africa, Union of	100	100
Southwest Africa (mandate of the Union of South Africa)	100	100
Spain	252	131
Sweden	3,314	9,561
Switzerland	1,707	2,801
Tanganyika (British mandate)	100	100
Syria and the Lebanon (French mandate)	123	100
Togoland (British mandate)	100	100
Togoland (French mandate)	100	100
Turkey	228	100
Yap and other Pacific islands (Japanese mandate)	100	100
Jugoslavia	845	671

nullifying one another. Thus, one article granted sweeping liberties to the foreigner, while another in effect specifically declared that the freedom of the high contracting parties as regards the admission of foreigners or policing measures was not affected. The revision of the convention failed to meet with the general consent of the delegates who voted down the adoption of the disputed articles in their new form, the conference encountered another difficulty in the handling of the problem of the taxation of foreign business interests.

QUOTAS. Despite President Hoover's request for repeal, Congress on June 13 voted to retain the national-origins clause in the immigration law. This clause had been debated since 1924 and on a number of occasions Mr. Hoover, both as Secretary of Commerce and as Republican nominee, had declared himself as opposed to the system for admitting new immigrants. On July 1, the new quotas were put into effect. The table on page 385 contrasts the quotas under the national-origins dispensation with the quota system operating up to June 30. It will be observed that the nations to suffer heaviest from the new quota system are Germany, the Irish Free State and Norway, while Great Britain and Northern Ireland and Italy are to be the chief gainers.

IMPORTS. See articles on various countries and special articles such as AGRICULTURE, CORN, IRON AND STEEL, ETC.

INCINERATION. See GARBAGE AND REFUSE.

INCOME TAX. See TAXATION.

INDEPENDENT METHODISTS. See METHODISTS.

INDEX NUMBERS. See FINANCIAL REVIEW, STATISTICS.

INDIA. A dependency of the British Empire comprising all that part of the Indian peninsula which is directly governed by British officials or indirectly governed through the rulers of native states subject to the British Parliament. Capital, Delhi.

AREA AND POPULATION. The total area, includ-

miles, of which 1,094,300 square miles were in the British provinces. The total population in 1921 was 318,942,480, as compared with 315,156,890 in 1911. The population of the British provinces in 1921 was 247,003,293, as compared with 243,933,178 in 1911. In 1923 the census commissioner for India estimated the population at about 319,000,000, or a gain of 1.2 per cent over 1911, average density, 177 to the square mile, maximum provincial density, 608 to the square mile in the Province of Bengal. Over 90 per cent of the population was classed as rural, only 9½ per cent living in towns of 5000 or more.

The following table from the *Statesman's Year Book for 1923* gives the area and population of all the British-governed divisions of India according to the census of 1921.

The area and population of the Indian states and agencies subject to the British government at the time of the 1921 census are shown in the following table.

INDIAN STATES AND AGENCIES AREA AND POPULATION

State or Agency	Area in square miles in 1921	Population in 1921
Assam (Manjuri) State	8,456	384,016
Baluchistan States	80,410	378,977
Baroda State	8,127	2,126,522
Bengal States	5,434	896,926
Bihar and Orissa States	26,648	3,959,669
Bombay States (including States in Western India Agency)	63,453	7,409,429
Central India Agency	51,531	5,997,023
Central Provinces States	31,176	2,066,900
Gwalior State	26,357	3,186,075
Hyderabad State	82,698	12,471,770
Kashmir State	84,258	3,320,518
Madras States Agency	10,696	5,460,312
Mysore State	29,475	5,978,892
Northwest Frontier Province (Agencies and Tribal areas)	25,500	3,825,136
Punjab States Agency	37,059	4,416,036
Rajasthan Agency	128,987	9,844,384
Sikkim	2,818	81,721
United Provinces States	5,949	1,134,881
Total States	711,032	71,939,187
Total India	1,805,332	318,942,480

BRITISH TERRITORIES IN INDIA

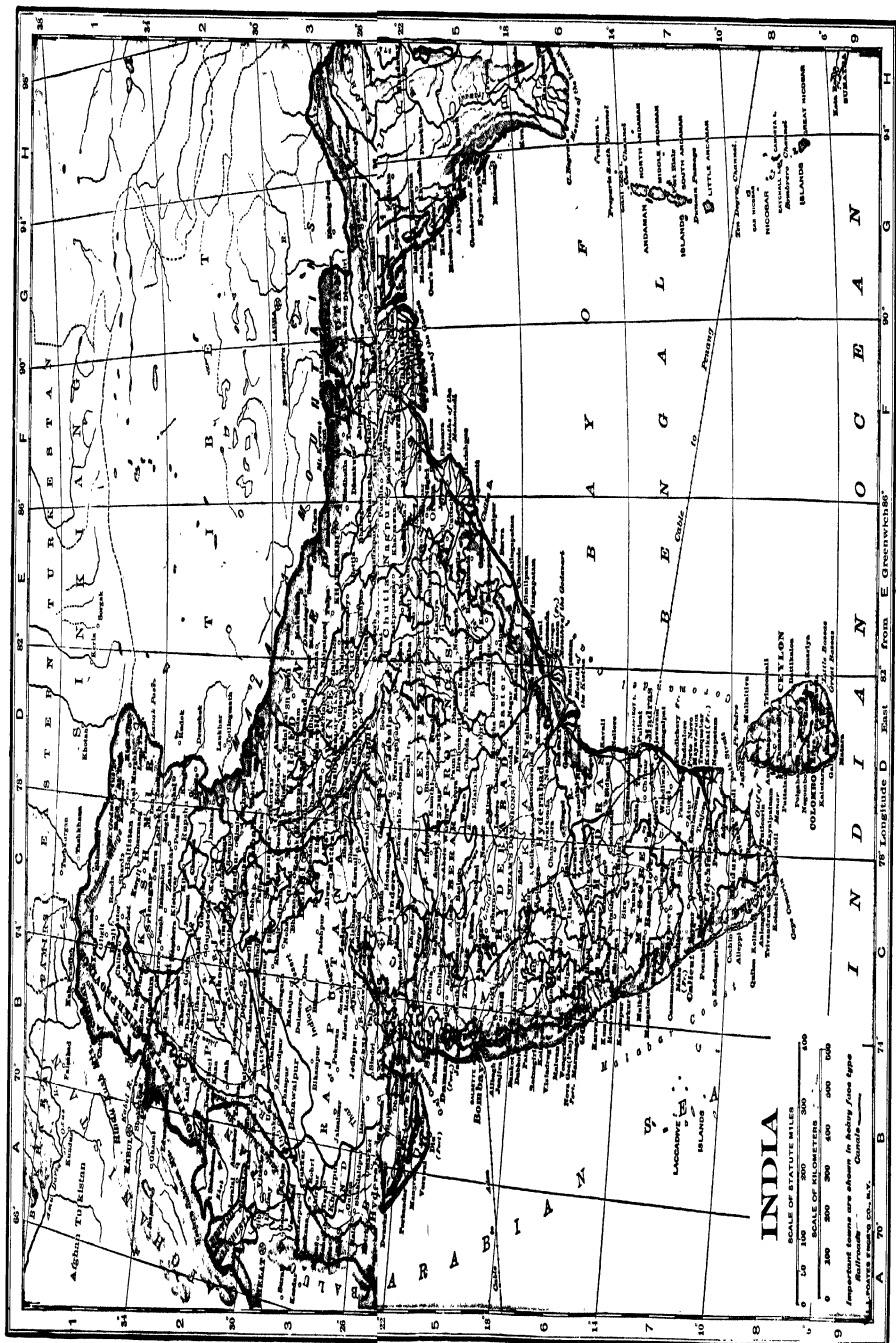
Provinces	Area in square miles in 1921	Population in 1921
Ajmer Merwara	2,711	495,271
Andamans and Nicobars	3,148	27,086
Assam	58,015	7,606,230
Baluchistan	54,228	420,648
Bengal	76,843	46,695,526
Bihar and Orissa	83,161	34,002,189
Bihar	42,286	23,380,288
Orissa	15,736	4,668,873
Chota Nagpur	27,065	5,668,028
Bombay (Presidency)	123,621	19,348,219
Bombay	77,035	16,012,342
Sind	46,506	3,279,377
Aden	80	56,500
Burma	283,707	13,212,192
Central Provinces and Berar	98,876	13,812,760
Central Provinces	82,109	10,375,444
Berar	17,767	3,075,316
Coorg	1,582	163,838
Delhi	593	488,188
Madras	142,260	42,818,985
Northwest Frontier Province	13,419	2,251,340
Punjab	96,848	20,685,024
United Provinces	106,295	15,375,787
Agra	82,187	33,209,145
Oudh	24,158	12,166,642
Total provinces	1,094,300	247,003,293

ing the Indian states and agencies which are in political relations with the Government, according to the census of 1921, was 1,805,332 square

RELIGION ETC. The enumeration of the population in 1921 was Hindus, 216,734,586; Moslems, 68,735,233; Buddhists, 11,571,268; Animistic, 9,774,611; Christians, 4,754,064; Sikhs, 3,238,803; Jains, 1,178,500; Parsis, 101,778; Jews, 21,778. The principal languages are Hindun, Bengali, and Urdu. There are over 250,000 with their populations in 1921 are Calcutta (with suburbs), 1,327,547; Bombay, 1,175,014; Madras, 526,977; Hyderabad, 404,187; Rangoon, 341,962; Delhi, 304,420; Lahore, 281,781; and Ahmedabad, 274,007.

From 1922 to 1928, the births in the British Provinces averaged 8,198,707 annually, deaths, 6,228,987, the annual excess of births being 1,969,739. In 1921, 72 per cent of the population was engaged in pastoral and agricultural pursuits. Emigrants from India in 1927-28 numbered 222,169. Under the Indian Emigration Act, the emigration of unskilled laborers is lawful to Ceylon and Malaya only.

EDUCATION. There are two kinds of schools in India, namely, those which meet certain requirements of the government, known as "recognized schools" and those which do not, known as "unrecognized schools." The recognized schools may



be under public or private management. They are divided into English and vernacular schools and consist of primary and secondary grades. There were in India in 1926-27, 211,048 recognized schools, with 10,520,350 pupils, and 35,216 unrecognized, with 628,146 pupils. Of the 11,157,496 students in educational institutions in British India in 1926-27, 8,256,760 were in primary schools, 1,854,067 were in secondary schools, and 81,919, in universities. In the same year, there was spent on education 245,847,572 rupees, a sum representing less than 10 cents per capita. Notwithstanding sincere effort, little real advancement has been made in the education of the masses. Of the country's vast population according to the census of 1921, more than 90 per cent was illiterate.

PRODUCTION. Agriculture is the main support of the population, more than 229,000,000 (out of the total population of 318,000,000) relying upon agriculture, forestry, and stock raising for their maintenance, at the census of 1921. In the British Provinces in 1926-27, there were of arable land, 304,170,000 acres (or 43 per cent of the total), of trees, shrubs, and bushes, 1,470,000, of forests, 87,026,000, of uncultivated productive lands, 152,526,000, and of unproductive land, 149,009,000. The Indian States in the previous year had of arable lands, 79,413,000 acres, of trees, shrubs, and bushes, 821,000, of woods and forests, 17,321,000, of unproductive land, 23,264,000, and of cultivable waste, 16,304,000. Of a total of about 350,000,000 cultivated acres in all India, approximately 290,000,000 of which are under crops in an average year, some 80,000,000 acres are devoted to rice, 30,000,000, to wheat, and 23,000,000, to cotton.

The area and yield of the principal crops in British India and the Indian states in the 1928-29 crop season are shown in the accompanying table.

INDIAN CROPS AREA AND YIELD, 1928-29

Crop	Area ^a	Production ^b
	1928-29	1928-29
Wheat	82,211	289,781
Barley	6,387 ^a	119,003 ^a
Rice, rough	79,258	2,428,785
Sugar	2,576	2,735 ^c
Tea	753 ^c	390,920 ^c
Rape and mustard	5,910 ^c	848 ^c
Sesamum	5,442	488 ^c
Linseed	3,852	351 ^c
Castor seed	1,418	111 ^c
Peanuts	6,079	8,025 ^c
Cotton	24,992	2,398,604 ^c
Jute	3,181	3,966,400 ^c
Indigo	67	1,411 ^c

^a Thousands of acres

^b Thousands of units—bushels, except as indicated

^c 1927-28 figures ^d Not including Indian states

^e Unit, long ton ^f Unit, pound

More than half of the Indian wheat crop is produced in the Punjab and the so-called United Provinces. Losses to the 1928-29 crop were not serious in these districts, although the production was reduced somewhat by cold and frost damage. The monsoon, which lasts from June to September, is the chief controlling factor in crop production. Rice, sugar cane, castor beans, and groundnut crops are harvested in February, wheat, rape, and mustard in the spring, and sesame in the autumn. The biannual cotton crops are harvested in April and in October. The uneven distribution of the monsoon and floods in the region between Madras and Calcutta, reduced the 1928 crops somewhat, but in general

the yields were satisfactory. The 1928-29 rice crop was 5 per cent larger in area and 12 per cent larger in yield than in 1927-28, likewise the 1928-29 peanut crop of 3,025,000 long tons was 11 per cent larger and the acreage increased to 6,079,000 acres from 5,426,000 acres in 1927-28. The jute crop, in which India maintains a practical world monopoly, was estimated about 3 per cent lower than in 1927-28, the cotton crop acreage was 8 per cent larger and the estimated production 9 per cent larger than in the previous year, but the raw-sugar crop was placed at 2,735,000 long tons, or 15 per cent less than the year before, and the unfavorable conditions in the tea industry caused a decline in both the quantity and value of exports for 1928-29. The 1929 monsoon was evenly distributed and the 1929-30 crops were estimated to be approximately the same as in the preceding year.

In accordance with the recommendations of the Royal Commission on Agriculture, the Council of Agricultural Research was established in 1929 for the purpose of "improving crop production methods. The Research Council was financed by an initial grant of £200,000 and an annual grant of £50,000 from the Indian government and was expected to coordinate the activities of all institutes and other bodies engaged in agricultural research work. See AGRICULTURAL EXTENSION WORK, COTTON.

In the British Provinces in 1927, there were 120,697,000 cattle, 30,591,000 buffaloes, 23,237,000 sheep, 39,288,000 goats, 1,691,000 horses, 1,478,000 mules and asses, and 506,000 camels. In the Indian states in 1926, there were 26,228,000 cattle, 7,048,000 buffaloes, 11,848,000 sheep, 9,715,000 goats, 444,000 horses, 312,600 mules and asses, and 170,900 camels. Mineral production in India in 1927 was valued at £22,920,000 (\$111,540,000), as compared with £25,819,000 (\$125,650,000) in 1926. The coal industry continued depressed and oil production in Burma declined. The production and value, in United States dollars, of the chief mineral products in 1927 were coal, 22,082,000 long tons, \$34,454,000, petroleum, 281,114,000 imperial gallons, \$21,517,000, manganese ore, 1,129,000 long tons, \$13,841,000, gold, 384,273 troy ounces, \$7,917,000, lead, 65,967 long tons, \$7,986,000. Silver, iron ore, tungsten, tin, chromite, salt, mica, jadeite, and rubies were other mineral products.

Industry is confined mainly to manufacturing coarser grades of cotton textiles, jute, iron and steel, and to cotton ginning, sugar and oil refining, paper making, and printing. Other industries are rice mills, tea factories, foundries, and railway shops. In 1926-27 there were 306 cotton mills, with 8,412,817 spindles, 158,124 looms, and 384,082 employees, 93 jute mills, with 51,616 looms, and 18 woolen mills, with 92,213 spindles and 2011 looms. Labor conditions, which were very unsettled in 1928, with numerous and long-drawn-out strikes, improved during 1929. In 1928 the working days lost reached 31,647,400, as compared with 2,019,970 in the preceding year. In general, industrial operations were more profitable in 1929 than in 1928, although economic conditions remained subnormal. At the end of the year, the uncertainty of the political situation was reflected in a somewhat depressed commercial situation.

COMMERCE. For the fiscal year ending Mar. 31, 1929, imports totaled \$912,900,000, as compared with \$909,000,000 in the previous year, while

domestic exports were valued at \$1,190,100,000, or 3 per cent more than the 1927-28 figure of \$1,161,100,000. The excess of exports over imports for 1928-29 was \$305,000,000 and for the preceding year, \$287,000,000. The foreign trade by principal groups of commodities in 1927-28 and 1928-29 is shown in the accompanying table

INDIAN TRADE BY COMMODITY GROUPS [Millions of dollars]

Group	1928-29	1927-28
GENERAL IMPORTS *		
Food, drink, tobacco	139 1	135 4
Raw materials, produce, articles		
mainly unmanufactured	74 3	93 1
Articles, manufactured	609 8	664 5
Live animals	15 0	16 0
Postal articles not specified		
Gold, silver, bullion, specie *	149 8	126 7
Total	987 9	1,036 0
DOMESTIC EXPORTS		
Food, drink, tobacco	270 8	305 0
Raw materials, produce, articles		
mainly unmanufactured	502 7	523 3
Articles, manufactured	309 2	318 6
Live animals	10 4	12 4
Postal articles not specified		
Gold, silver, bullion, specie *	7 3	9 6
Total	1,100 0	1,171 0

* Including currency notes since 1922-23

In the calendar year 1928, the United Kingdom supplied 46.2 per cent of the imports and purchased 22 per cent of the exports of India, the United States furnished 6.8 per cent of the imports, and took 11.7 per cent of the exports. Corresponding percentages for other countries participating in the foreign trade were Japan—imports, 6.6 and exports, 10.2; Germany—imports, 6.6 and exports, 10.1; France—imports, 5.5 and exports, 5.3; Italy—imports, 5.6 and exports, 4.5. The imports from the United Kingdom, which ordinarily furnished almost one-half of the total, declined slightly in the calendar year 1928, from the 1927 total, as did imports from Japan and the United States, while imports from Italy, France, Germany, and Belgium increased. Exports to Germany, Belgium, France, the Netherlands, and the United States were much larger, while those to the Straits Settlements, Japan, and Ceylon were smaller.

Foreign trade was well maintained in the calendar year 1929 and resulted in the usual favorable merchandise balance. In 1928 imports from the United States amounted to \$61,495,000 and exports to that country were valued at \$140,333,000. Imports from the United States in 1929 dropped to \$53,373,000. The foreign-trade figures relate only to the political territory of British India, as the ports of the native states are relatively unimportant.

FINANCE The budget of the central government of British India, excluding native states and provincial governments, for the fiscal year ending Mar. 31, 1930, estimated revenues at 1,331,600,000 rupees (one rupee exchanged at about \$30.499) and expenditures at 1,340,000,000, leaving a deficit of 9,000,000 to be covered by appropriating the surplus for 1928-29, estimated at 3,000,000, and by transferring from the Revenue Reserve Fund the remaining 6,000,000 rupees, leaving a balance of 1,400,000 rupees. Expenditures for 1929-30 were placed 300,000,000 rupees higher than the revised estimates for expenditures in the preceding year. In the preliminary

budget for 1928-29, receipts and expenditures balanced at 1,296,475,000 rupees. The year ended with an actual estimated surplus of 3,000,000 rupees, due to a surplus of 40,000,000 of land and customs revenue resulting from financial operations in 1927-28 and the collection of 65,000,000 of salt revenue more than the allotted share, at the expense of the 1929-30 fiscal year. Without these windfalls, the actual deficit for 1928-29 would have been about 75,000,000 rupees, according to the London *Times*. Capital expenditure on railways in 1929-30 was estimated at 265,000,000 rupees and the issue of a £5,250,000 loan for the purchase of the Southern Punjab Railway was provided for. The estimated deficit for 1929-30 was attributed to the fact that the gap between receipts and expenditures caused by the final remission of provincial contributions in 1928-29 had not been closed by new taxation.

The public debt of the central government on Mar. 31, 1928, amounted to 9,897,000,000 rupees (about \$3,612,306,000), including the debt incurred on behalf of the provincial governments. Of the total debt, 82 per cent was contracted for railways, irrigation projects, and similar productive purposes. Of the productive debt, 1,263,400,000 rupees was incurred on behalf of the provincial governments. The per capita debt stood at about 31 rupees, or \$11.30.

COMMUNICATIONS The total length of railway line on Mar. 31, 1928, was 39,712 miles, of which 28,426 miles were owned by the Government of British India and 11,286 miles belonged to the Indian states and private companies. The railroads were more than usually prosperous in 1928, showing increases in both freight and passenger traffic. Statistics for all Indian railways are shown in the accompanying table.

STATISTICS OF RAILWAYS, YEARS ENDED MARCH 31

Item	1927	1928
Length of line, total	39,049	39,712
Length of tracks	52,886	53,846
Locomotives	9,873	9,541
Passenger cars	26,469	26,961
Freight cars	230,726	228,271
Average capacity	18 0	18 2
Train miles, total	170,720	179,661
Freight train miles	57,328	59,874
Passengers carried	611,972	651,841
Passenger miles	20,366	21,704
Freight carried	112,966	118,257
Ton miles	20,376	21,902
Gross receipts	1,123,566	1,182,245
Passenger service	444,835	456,740
Freight service	678,563	695,832
Gross receipts, equivalent \$1000	407,293	430,097

For the year ending Mar. 31, 1929, the Indian railways reported gross revenues of \$433,869,000, operating expenses of \$272,360,000, and a net revenue from operations of \$161,508,000, according to a preliminary report of the Indian Government Railway Board.

The rapid extension of the Indian railway system during recent years is shown by the preliminary statistics for March, 1929, placing the length of the entire system at 41,000 miles, of which nearly 30,000 miles were owned by the central government and about 11,000 miles by the private companies or the governments of native states. Of the Imperial lines, about 18,000 miles were operated directly through the Railway Board, while 12,000 miles were operated by companies under long-term contracts with the government. Electrification of the Great Indian

Peninsula Railway main line from Bombay to Igatpuri and Poona was completed in November, 1929. New and improved equipment and rolling stock were placed in operation. Other improvements under way during 1929 were the electrification of the Madras suburban section of the South Indian Railway and the construction of the Vizagapatam Harbor, in which the Bengal-Nagpur Railway was directly interested. Progress in highway construction continued. The first inland Indian air-mail service connecting Delhi with Jodhpur, Hyderabad, and Karachi, terminus of the London line, was inaugurated in December, 1929.

The merchant marine on June 30, 1928, consisted of 184 vessels of 100 tons or over, with a total gross tonnage of 187,325. During 1927-28, 3918 vessels of 8,876,840 tons entered, and 3916 vessels of 8,701,752 tons cleared, the ports of British India.

GOVERNMENT Executive and legislative power rests with the Governor-General-in-Council. The Council consists of no fixed number of members, but at least three of them must have had 10 years' service in India and one must be a lawyer of at least 10 years' standing. The administration of India in England is under a Secretary of State for India, aided by a council appointed by him, of which at least half the members must have been residents of India for 10 years and must not have left India more than five years previous to their appointment. A high commissioner for India in England acts as agent for the Governor-General-in-Council and conducts business assigned by the Secretary of State. There is also in India the Legislature consisting of the Governor-General and two Chambers, namely the Council of State and the Legislative Assembly, both constituted under the Montagu-Chelmsford Act. See NEW INTERNATIONAL YEAR BOOK for 1919 et seq. The Viceroy and Governor-General during 1929 was Baron Irwin of Kirby Underdale (appointed April 4, 1926). The Secretary of State for India was Capt. Wedgwood Benn, appointed in June, 1929, to succeed Viscount Peel. The High Commissioner for India in the United Kingdom was Sir A. C. Chatterjee.

HISTORY

The agitation against British rule in India assumed an increasingly serious aspect during 1929, reaching a climax on December 31, when the All-India National Congress in session at Lahore adopted with only six dissenting votes Mahatma Gandhi's resolution favoring complete independence for India and rejecting the British offer of eventual dominion status. The Gandhi resolution authorized the executive committee of the All-India Congress, in connection with the independence campaign, "whenever it seems fit, to launch upon a programme of civil disobedience, including the nonpayment of taxes, whether in selected areas or otherwise and under such safeguards as it may consider necessary."

The Viceroy's proposal for a round-table conference to include the British authorities and representatives of the native states, the Nationalists decided to boycott the Legislative Assembly and councils, and adopted a resolution urging the native princes to grant constitutional government to their respective states. Another resolution adopted warned subscribers to Indian loans that debts incurred by the government for other than purely Indian national interests would

be repudiated by a national government if it came into power.

An active policy of civil disobedience and the refusal to pay taxes, it was predicted by observers in India, probably would result in wholesale arrests and consequent clashes. There was thus ground for serious concern as to the course of events during 1930. Other factors, however, tended to minimize the importance of the Nationalist programme. It was pointed out that the All-India Congress has little or no following among more than half of the total population, that is, the 70,000,000 Mohammedans, the 30,000,000 Sikhs, and some 3,000,000 Sikhs.

It was estimated that only 5 per cent of the remaining population was literate, which made about 7,000,000 from whom the Nationalist movement would be expected to recruit its principal following. The 7,000,000 literates, however, were by no means unanimous in favor of independence. The National Liberal Federation, which met at Madras December 30, adopted resolutions denouncing the policy of independence advocated at Lahore and accepting the Viceroy's proposals for a round-table conference. The Liberals favored dominion status, with a federal bond uniting British India with the native states.

Varadarajulu Naidu, one of the influential leaders of the All-India Congress, and other moderates, resigned following the adoption of the resolution favoring independence, on the ground that it was "suicidal." On the other hand, Mahatma Gandhi's programme was not considered drastic enough by a radical minority of the Nationalist Congress, and an extreme Left Wing party, headed by Srimivasa Iyengar, was formed following the Lahore Congress. Finally, the independence movement was opposed by the native princes, to whom the British government was bound by a series of treaties and engagements and who favored a federal government representative of the three parties involved—Great Britain, British India, and themselves. The native states, it should be noted, had sufficient military forces to conquer British India, once the British withdrew. As for the Sikhs, who were in attendance at the Lahore Congress, it was indicated that they would refuse to accept the Nationalist programme as adopted at the Congress, affirming that the independence of India was also their ultimate goal.

These significant developments in 1929 were forecast by the action of the All-Indian and Moslem League in adopting at Calcutta on Dec. 28, 1928, a resolution sponsored by Mahatma Gandhi which threatened the organization of a noncooperative movement and the nonpayment of taxes if the British government did not accept in its entirety before the end of 1929 the dominion status constitution for India drafted by the Nehru committee. The cleavage between Moslem and Hindu interests was demonstrated at a meeting in January of the All-India Moslem Conference. The resolutions adopted demanded a federal system for India, with complete autonomy and residuary powers vested in the component states, with the central government restricted to specific powers, and with other constitutional safeguards for Moslem rights.

The same fear that Moslem culture in India would be threatened by an independent government with the Hindus in control was demonstrated by representatives of the Central National

Moslem Association who appeared before the Simon Commission at Calcutta on January 15. They demanded separate representation for Moslems on all councils on a population basis, that the minority should have 40 per cent of the membership of such councils, and that no bill affecting religious, educational, or social interests could be passed if opposed by one-fourth of the community concerned.

On February 13, the Chamber of Princes, composed of the rulers of the native states, unanimously affirmed that they would assent to no proposals for an adjustment of the political situation in India which did not have as their basis the continuance of the British connection. Meanwhile, a committee headed by Sir Harcourt Butler was completing its study of the relations between the Indian states and Great Britain, and the states and British India. The committee's report, issued April 17, recommended the continuance of British supremacy over the states as the only means for their preservation and that assurance be given the native princes that Britain would not assign the paramount power to an Indian government in British India responsible solely to an Indian legislature.

The committee reported that it had found no practical method of federalization between the Indian states and British India, declared that the existence of two Indias must be recognized, and recommended that in the future the Viceroy should stand as the agent of the Crown in all dealings with the Indian states and not as the Governor-General-in-Council, in which capacity he represented the Government of British India. The Butler Committee commenced its study at the close of 1927. Another contribution to the discussion of the relation of the native states to a Nationalist government in India was made by the conference of subjects of the native states, held at Simla May 25. The princes were asked to demonstrate their sympathy with the Nationalist movement by converting themselves into constitutional rulers.

The Simon Commission continued its investigation into conditions in India during the year and was expected to present its report early in 1930. In the meantime, charges by Indian leaders that Great Britain was seeking to forget or deny the pledge of eventual dominion status made in 1917 led Lord Irwin, the Viceroy, to reaffirm the pledge on two occasions. The first was in opening the budget session of the Indian Legislature at Delhi on January 28. The second was made October 31, in connection with a declaration on the Labor government's Indian policy, when he said, "it is implicit in the declaration of 1917 that the natural issue of India's constitutional progress as there contemplated is the attainment of dominion status." Neither statement, however, had the desired effect of limiting the violence of the independence agitation. On April 8, two bombs were thrown into the government benches in the Indian Legislative Assembly at Delhi in the presence of Sir John Simon. Sir George Schuster, the finance member of the Viceroy's executive council, and four Indian members of the Assembly were injured.

The boycott of the Simon Commission in its investigations throughout India continued and Mahatma Gandhi led a vigorous campaign against the purchase or sale of British cloth. Riots and arrests resulted from the looting of British and native shops and the burning of cloth

looted from them, and violent strikes occurred in many of the cotton and steel mills. Alleged Communistic activities in connection with these events led the government to press for the passage of its bill providing for the banishment of alien Communists, which the Assembly had rejected in 1928.

It was during this discussion that the bombing of the Assembly took place. On April 12, Lord Irwin announced that he had passed the public safety bill by ordinance without waiting for legislative enactment. Shortly before, the government had struck at alleged Communist agitators under the sedition law, arresting about 100 men in half a dozen of the large cities. Attacks upon the government for this action by Indian radicals in the Assembly were cut short by the Viceroy, who "disallowed" the debate on the ground that it would be detrimental to public safety. In June, Lord Irwin announced the postponement of the Indian General Election, which was to have been held the coming winter. His grounds were that the situation was abnormal and that any election prior to the submission of the Simon report would only intensify the political passions of the country.

These conflicts between the British and the Indian Nationalists were accompanied by a long series of savage clashes between Moslems and Hindus in various parts of India. Apparently, the refusal of the Moslems to support the Nehru report and the immediate dominion status and other "disallowed" discussions had emphasized the religious and social gulf between the two sections of the population. Religious riots in Bombay in February resulted in the death of several hundred persons.

The advent of the Labor government to power in Great Britain in June increased the hope of the Indian leaders for an immediate loosening of the British hold. The Viceroy's declaration of October 31 proved a disappointment to the radical Nationalists and intensified the political ferment in India. The British government's proposal for a round-table conference, however, received the support of many leading Indians. It was indicated that the conference would probably be held after the publication of the Simon Commission's report and before the joint committee of the two Houses of the British Parliament suggested an Indian policy for the consideration of Parliament.

A temporary furore among the Conservatives and some Liberals in Great Britain caused by the Viceroy's reiteration of the pledge of dominion status was calmed by Premier MacDonald's assurance that the government had no intention of acting before the submission of the Simon report and that the statement was issued "in order that a better atmosphere and more confidence should be established pending the Simon Commission's report." A statement signed by about 30 progressive Indian leaders welcomed the proposed round-table conference provided the Nationalists were given predominant representation and a policy of general conciliation and amnesty to political prisoners was adopted. The "better atmosphere" hoped for by the Labor government as a result of the Viceroy's declaration failed to develop, however, and, on December 23, an attempt to assassinate Lord Irwin was made as his train approached Delhi; also, the All-India Congress rejected all British advances as inadequate. Gandhi, who had declared his willingness to wait for dominion status, was apparently forced by the

tide of public opinion to declare for immediate independence.

A Royal Commission to explore all aspects of the labor situation in India, headed by J. H. Whitley, former Speaker of the British House of Commons, was announced in January. On September 3, the Legislative Assembly at Simla passed the third reading of the child-marriage bill, which provided that the age of marriage should not be under 14 years and that the age of consent should not be under 16 years. In 1921, 40 per cent of the girls between the ages of 10 and 14 years were reported as being in the marriage state.

Preliminary steps toward the union of Protestant churches in southern India were taken during the year.

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See GREAT BRITAIN, under *History*.

INDIANA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,930,390. The estimated population on July 1, 1928, was 3,176,000. The capital is Indianapolis.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Corn	1929	4,124,000	131,968,000	\$ 97,656,000
	1928	4,483,000	157,802,000	108,883,000
Wheat	1929	1,631,000	27,723,000	31,048,000
	1928	910,000	10,040,000	12,429,000
Hay	1929	3,179,000	3,539,000 *	35,700,000
	1928	1,884,000	2,581,000 *	30,901,000
Oats	1929	1,895,000	54,008,000	21,603,000
	1928	2,430,000	89,910,000	33,267,000
Potatoes	1929	55,000	4,620,000	6,930,000
	1928	61,000	6,649,000	4,654,000
Tobacco	1929	20,600	15,965,000 *	1,033,000
	1928	13,700	11,234,000 *	2,696,000
Rye	1929	125,000	1,625,000	1,462,000
	1928	86,000	946,000	889,000

* Tons ♢ Pounds

MINERAL PRODUCTION. The situation of the coal industry, the main basis of the mineral industries of the State, did not immediately improve in 1928 because of the conclusion of labor troubles in the mines. Coal production fell to 16,378,580 short tons for 1928, from 17,935,758 tons for 1927. The value of the coal produced in 1928 was \$29,212,000, of that produced in 1927, \$36,381,000. The production of coke nevertheless was higher in 1928, attaining 6,094,201 short tons, as against 5,549,702 for 1927, the value of the 1928 product was \$38,237,790, of that of 1927, \$37,152,081. The pig-iron output of the State rose conformably to 3,842,762 long tons for 1928, from 3,447,764 for 1927, in value, to \$63,622,330, for 1928, from \$62,097,518 for 1927. The production of stone, largely of high grades, stood second to that of coal in 1927 among the primary mineral industries of the State. There were produced in that year 5,813,000 short tons, as against 4,699,230 in 1926, in value, \$22,634,350 for 1927 and for 1926, \$22,797,189. The clay products, third of the groups of the State's mineral industry, totaled \$17,855,971 for 1927; for 1926, \$18,747,835. Petroleum and natural-gas output remained secondary in value and little changed. The entire mineral product of the State reached the value of \$107,578,234 for 1927, as compared with a total of \$118,092,304 for 1926.

FINANCE. State expenditures in the year ended Sept. 30, 1928, as reported by the U. S. Department of Commerce, were for maintenance and operation of governmental departments, \$27,772,816 (of which \$5,325,081 was for local education); for interest on debt, \$92,096; for permanent improvements, \$16,422,693, total, \$44,287,595 (of which \$192,572 represented interdepartmental payments and \$10,300,765 was for highways, \$7,436,397 being for maintenance and \$11,870,368 for construction). Revenues were \$44,745,297. Of these, property and special taxes formed 30.2 per cent, departmental earnings and remuneration for officers' services, 10.4, license sales, 42.2 (including gasoline taxation of \$10,949,805). The unfunded debt on Sept. 30, 1928, total and net alike, was \$2,062,500. On a property valuation of \$5,117,890,125 were levied State taxes of \$11,771,147.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 7173 1/4. There were built, in 1929, 431 additional miles of first, 21 of second, 185 of third, and 1.92 of fourth or other track.

MANUFACTURES. According to the biennial Census of Manufactures published by the U. S. Department of Commerce in 1929, there were in the State, in 1927, 4726 manufacturing establishments. These employed 250,117 wage earners whose wages for 1927 totaled \$375,217,514. Materials and supplies used in manufacture cost \$1,227,168,557. The manufactured products attained the combined value of \$2,153,479,432.

EDUCATION. There was some effort to repeal or amend the law safeguarding teachers' tenure, but the law of 1927 was maintained unaltered. Two years of training were rendered requisite to qualification for an elementary teacher's license; for a high school teacher's license, four years. According to the annual review of the *Journal* of the National Education Association, a revision of the elementary-school curriculum was effected and steps were taken toward revising that for the high schools. For the academic year 1928-29, the school population of the State was estimated at 850,829. There were enrolled in the public schools, in that year, 641,149 pupils, not including those in kindergartens or ungraded, numbering 19,385. In the elementary grades were 503,875 pupils, in the high-school grades, 137,274. The gross total of expenditure for public-school education in the year was \$76,488,480. The median yearly salaries of teachers ranged from \$1470 for elementary and \$1947 for high-school teachers in cities to \$967 and \$1399, respectively, for the same classes in rural schools.

CHARITIES AND CORRECTIONS. The Board of State Charities as functioning in 1929 exercised supervision over institutions for the care or custody of persons, whether those of the State or of its subdivisions, but it did not directly administer such institutions. The Board consisted of six unpaid nonpartisan appointees, each serving for three years, and was created in 1889. Under its care were the institutions of 92 counties and some 20 State institutions. These were the Central State Hospital, Logansport State Hospital, Richmond State Hospital, Evansville State Hospital, and Madison State Hospital, the School for Feeble-minded Youth, the Farm colony for the Feeble-minded, and the Village for Epileptics, the Soldiers' Home, the Soldiers' and Sailors' Orphans' Home, the University Hospital, schools for the deaf and for the blind, the In-

diana State Prison, the Indiana Reformatory, the Indiana State Farm, the Indiana Women's Prison, the Indiana Boys' School and the Indiana Girls' School.

LEGISLATION The State Legislature met in regular biennial session and adjourned on March 11. Of the measures that it passed, that of chief political importance was the repeal of the institution of the primary election, in so far as it applied to State-wide candidacies. The candidates for representatives in Congress were excepted, thus remaining subject to selection by the primary. The law of 1921 enabling cities to adopt government by city manager was amended in important respects, but both the original law and its amendments of 1929 were later in the year declared unconstitutional by the State Supreme Court. It was prohibited by enactment to follow the daylight-saving system of summertime. A measure providing for the general permanent registration of voters was passed, but was vetoed by Governor Leslie. Enactments applying to the control of gas utilities in the city of Indianapolis enabled that city to acquire the property of the Citizens' Gas Company and created a city utilities district with bond issuing powers up to 1 per cent and a board of managers numbering five trustees. Provision was made for the increase of the gasoline tax to 4 cents a gallon, the increase in the proceeds to go to the State highway commission in order to defray the more rapid paving of State roads.

POLITICAL AND OTHER EVENTS Municipal elections were held in November, and the result of these, both in Indianapolis and in certain of the other cities of the State was the defeat of republican organizations that had worked in alliance with the Ku Klux Klan. On this account, the elections were interpreted as having a State-wide significance. Indianapolis in particular elected as Mayor Reginald H. Sullivan, its first Democratic Mayor since 1913, by the unprecedented majority of about 33,000. The election of Sullivan spelled the defeat of George V. Coffin, Republican County Chairman, for many years the dominant figure in the political situation in the city. Coffin had unsuccessfully opposed the law and the local referendum by which Indianapolis elected to adopt government by a city manager.

The city-manager plan for Indianapolis, however, was halted in another direction. Suit having been brought against the constitutionality of the enabling law, the State Supreme Court declared it unconstitutional by a decision rendered early in October, the Bench being divided 3 to 2. The majority opinion based its findings on the view that the law, in requiring the certification of the validity of some 19,000 petitioners' names in five days demanded the impossible.

Steps were taken in the course of the year to place the city of Indianapolis in possession of the property of the Citizens' Gas Company, under the terms of a contract of 1905. Confusion over daylight-saving time arose in Indianapolis, for the reason that the Legislature passed a law intended to nullify the city ordinance prescribing the change to daylight-saving in the summer months. The ordinance remained in force as far as the city officers were concerned, but elsewhere practice was divided, standard time prevailing. The disregard of the liquor laws in Lake County gave occasion to a campaign of Federal inquiries and prosecutions in the summer. At Vincennes,

the 150th anniversary of the taking of Fort Sackville by George Rogers Clark was celebrated on February 25 by the demolition of a grain elevator on the site of the fort, in preparation for the creation there of a national memorial.

OFFICERS Governor, Harry C. Leslie, Lieutenant-Governor, Edgar D. Bush, Secretary of State, Otto G. Ffield, Auditor, Archie N. Bobbitt; Treasurer, G. Banta Reynolds, Superintendent of Public Instruction, Roy P. Wisheart.

JUDICIARY Supreme Court Judges, Julius C. Travis, David A. Myers, Clarence R. Martin, Willard B. Gemmill, B. M. Willoughby.

INDIANAPOLIS See **MUNICIPAL GOVERNMENT**

INDIANA UNIVERSITY A coeducational State institution of higher learning in Bloomington, Ind., founded in 1820. For the first semester of the academic year 1929-30, the registration aggregated 4269 students, of whom 2597 were men and 1672 women. These were distributed as follows: Graduate school, 272, arts and sciences, 2552, law, 127, commerce and finance, 169, music, 85, education, 309, medicine, 428, dentistry, 136, nurses' training, 191, social service, 49. The faculty had 303 members. The endowment funds amounted to \$774,778, and the total income for the year, from State and private sources, was \$2,424,750. The library contained 216,400 volumes. In 1927 the Legislature appropriated a mill tax that was expected to yield at least \$350,000 a year, for ten years, to be used exclusively for the construction of new buildings and the purchase of land. President, William Lowe Bryan, Ph.D.

INDIANS The total Indian population of the United States, according to the report of the Secretary of the Interior for the fiscal year 1929, was 337,652, enumerated at 82 Federal agencies located in 25 States, or 345,575 including those not at agencies. In 1928 this number was 355,901. The greatest number were to be found in the State of Oklahoma, with Arizona second, and New Mexico third. The total budget appropriation for the Bureau of Indian Affairs for the fiscal year ending June 30, 1929, was \$36,144,509, of which \$21,860,000 was total permanent and indefinite appropriations, including trust funds.

The Commissioner of Indian Affairs, Charles H. Burke, resigned in June, 1929, after a period of service since 1921, or a longer time than that of any incumbent of the office. Under his successor, Charles J. Rhoads, and the new assistant commissioner, William J. Scattergood, the Bureau of Indian Affairs embarked on a new policy in solving this century-old problem, the aim of which was to make the Indian a self-supporting and self-respecting citizen as rapidly as it could be brought about. To accomplish these ends it would be necessary to revise the Indian educational programme along practical lines and to perfect plans for the absorption of these people into the industrial and agricultural life of the nation. The decentralization of the activities of the bureau was to be effected as rapidly as possible, problems of health and education becoming responsibilities of the various States. The Office of Education was to be asked to collaborate in supervision of Indian education, and the health problem was eventually to be lodged with the Public Health Service. The objective of the new policy was the placing of the Indian and his property upon a normal basis, regarding him as a potential citizen instead of the ward of the

Government, and the elimination of the Bureau of Indian Affairs within a period of 25 years

HEALTH The Association of State and Provincial Health Authorities of North America appointed during the year a committee on Indian health. Through this committee, information regarding Indian health matters was disseminated to State, county, and municipal health authorities, and the diagnostic, laboratory, and medical facilities of these organizations were made known and available to health agencies of the Indian Service. Trachoma, tuberculosis, and diseases of infancy and childhood, however, continued to constitute the outstanding health problems among the Indians. Increased facilities had been provided for the care of tuberculosis and for incipient cases in Indian children, but material progress in the eradication of this disease would not be brought about until a well-organized field nursing service had been instituted, together with an educational programme which would reach the Indian home. The extension of the programme would have its effect also in the reduction of mortality among infants and children. During the year, new hospitals or sanatoria were established or constructed in Tacoma and Tappanish, Wash., within the Western Navajo jurisdiction, Chin Lee, Havasupai Canyon, and Haventa, Ariz.; Keshena, Wis., and Taos and Taohatchi, N. Mex. Attention also was given to the collection of more accurate data relating to health and disease among Indians, and the statistical section of the Indian Office cooperated to the end that better health records and more complete reports of births, deaths, and population might be available.

EDUCATION In 1929 there were enrolled in the Federal Indian boarding schools and day schools 26,111 pupils, while 34,288 attended the State public schools and 7188 more attended the various mission or private schools.

One of the most important phases of the eventual solution of the Indian problem, however, was the further elimination from the Federal schools of those who might to advantage attend the State public schools and thus make room for more than 15,000 Indian children who were without educational opportunities. The States and the local public-school districts appeared generally to be in sympathy with the plan of education by the States, conditioned upon such financial assistance as they needed and as the Federal Government could offer. The average tuition rate for Indians enrolled in State public schools has been 35 cents per pupil per day. There also was repealed in 1929 legislation limiting the support of Indian boarding schools to certain fixed amounts. For many years the amount so prescribed was \$167 per pupil but was later raised somewhat, the highest allowance being \$285 for schools having an attendance of less than 200 students.

INDUSTRY Generally throughout the United States, the Indians continued to make encouraging progress along industrial lines, especially in farming and livestock activities. Cooperation in this work was given by the extension service of the U. S. Department of Agriculture and by many State colleges which placed their facilities at the disposal of the Indian Service. There were appointed during the year six directors of agriculture and three home demonstration agents, and this personnel should do much in the furtherance of agricultural pursuits. The largest and most

important single project initiated in 1929 was the subjugation of 50,000 acres of allotted lands within the Pima Reservation in Arizona, which would eventually be irrigated from the Coolidge Reservoir. This work would require several years for completion, after which it was believed the opportunity would be afforded the Pima Indians of agricultural rehabilitation.

ALLOTMENTS During the fiscal year, 253 allotments were made to individual Indians, embracing lands within various reservations aggregating 24,211 acres. In addition, 57 allotments were made to Indians residing on the public domain in various States, embracing 8371 acres. The period of trust was extended by order of the President on allotments made to the following tribes and bands: Prairie Band of Pottawatomie, Kansas; Iowa Tribe, Kansas and Nebraska; Winnebago, Nebraska; Pawnee, Oklahoma; Siletz, Oregon; Lower Brule and Rosebud, South Dakota; The purchase of 3071 acres of land in Polk County, Tex., for the Alabama and Coushatta Indians was consummated at a cost of \$29,000, and on the Crow Reservation, Montana, 160 acres of land on the site of the Reno battlefield were purchased at a cost of \$800 and set aside for the construction of a monument.

BOARD OF INDIAN COMMISSIONERS The Board of Indian Commissioners is an independent organization, dissociated from the Indian Service and acting in an advisory capacity to the President, Congress, the Department of the Interior, and the Bureau of Indian Affairs. In April, 1929, it observed its sixtieth year of active cooperation with these groups. During 1929 it officially visited and inspected 23 Indian Service agencies and nonreservation schools in California, Florida, Virginia, Minnesota, Montana, Nevada, New York, New York, North Dakota, Oregon, South Dakota, Washington and Wisconsin, offering as a result the following suggestions and recommendations:

Each reservation should have its particular program determined by qualified specialists sent there for that particular purpose and, where there are none, competent agricultural instructors should be detailed to reservations to lead the Indians toward a better appreciation of subsistence farming.

Any reservation economic program will fall short of its full purpose if it does not include provisions for ways and means to secure gainful labor for the Indians, especially at times when crop failure, or other causes, make it necessary for the Indians to leave their homes to find work. The Indian Service never has had a well planned organization to get jobs for Indians.

An Indian school which tends more and more to stress the academic at the expense of the practical, to lay emphasis on the completion of high-school courses and the attainment of college entrance credits, is losing sight of its real reason for existence, which is to prepare the Indian boys and girls eventually to take their places as self-reliant members of an American community. Indian Service schools should strive not so much for uniformity and standardization as for adaption to actual and varying needs; they should apply methods suited to the special problem of the Indian. Above all, they should emphasize vocational training and the teaching of applicable and useful trades.

The Indian Service should draft a bill which would properly and adequately provide for the placement of law and order on reservations, have the bill introduced at the coming session of Congress, and then do all things that are proper to get the bill enacted into law.

The great American public is lamentably ignorant about the American Indians. The Interior Department or the Bureau of Indian Affairs would be doing only a plain duty by disseminating sane and reliable information about the American tribes and their needs for their peculiar relations to the Nation, and about the various phases of the perplexing and complicated Indian problem.

It is to be hoped that the devoted labors of reservation missionaries may yet be appreciated by church members

and that the churches will encourage their home mission boards to continue and enlarge their mission activities in the American Indian country.

INDO-CHINA. also known as **FARTHER INDIA.** The southeastern peninsula of Asia including the following divisions: Burma, politically attached to British India, Siam, a self-governing monarchy; French Indo-China, comprising Cambodia, Annam, Cochinchina, Laos, and Tongking, the Federated Malay States, a British protectorate; the Straits Settlements, a British colony, and the Malay States of Johore, Kedah, Kelantan, Perlis, and Trengganu. See the articles on **BURMA**, **FRENCH INDO-CHINA**, **SIAM**, and the other principal states mentioned.

INDO-IRANIAN STUDIES. See **PHITOLGY**, **MODERN**

INDUSTRIAL COURTS. See **LABOR ARBITRATION AND CONCILIATION.**

INFANT FEEDING. See **FOOD AND NUTRITION**

INFANTILE PARALYSIS. Dr. A T Legg's analysis of the Massachusetts epidemic of 1927 appeared in the *Journal of the American Association* for January 5. The total number of cases was 1189, about half of which were treated at the Harvard Infantile Paralysis Clinic. The peak of the incidence was in the early autumn and the mortality 14.2 per cent. The chief foci of the disease as shown by a map were Boston and Haverhill, and in one small town in the latter region there were 26 victims. In about 4 per cent, there was more than one case in the family, and one family in Haverhill had four cases with two deaths. It was found that sensitiveness in the limbs, especially the legs, was present as an early symptom in about 80 per cent of all patients examined. The principal object of this analysis was to fix the total severity of the epidemic as shown by the muscles involved, the order of involvement, and the degree of paralysis. This brings out the great differences which subsist between individual epidemics in this respect. Numerous curious facts were brought out, such as the contrast between the frequency of incidence and the severity of paralysis of individual muscles; thus, the quadriceps muscles were involved with great frequency, but the paralysis was mild in degree. Each epidemic is more or less a law to itself.

INCIDENCE OF INFANTILE PARALYSIS AT LOWEST LEVEL. The fear that a new wave of infantile paralysis is due or due in the near future seems to have been dispelled by an announcement made by the U. S. Public Health Service. From Dec. 1, 1929, to June 1, 1930, the incidence should not exceed one case in 100,000 population. From June 1, 1930, to the following December, it is apt to increase to from 4 to 14 cases with the peak at the middle of September. The Public Health Service is accustomed to trace the incidence from the first of each June for a marked and steady increase may mean an epidemic similar to that of 1916. It therefore appears that parents should not fear the disease between December of this year and warm weather and only then when there is a marked increase of five or ten fold over the figure of June 1 during that month and afterward.

INFANT MORTALITY. See **CHILD WELFARE.**

INFANTRY. See **MILITARY PROGRESS**

INHERITANCE TAXES. See **TAXATION**

INLAND WATERWAYS. See **CANALS.**

INSANITY. Drs. Hoskins and Sleeper of the Worcester State Hospital have studied 80 patients with dementia præcox and have found defective action of the glands of internal secretion in about half. In 14 patients, the thyroid was chiefly involved, in 13 the pituitary, etc. Secretions were given to 53 of the 80 patients. Of the total number to show actual deficiency, one-half, or about 20, showed significant improvement as a result of the gland treatment. Five patients became well enough to be discharged and four others were so nearly well that they were expected to follow. The secretion which appears to be the most valuable is the thyroid, which suggests that each secretion be separately tested. This form of insanity alone costs the State of Massachusetts annually about \$4,000,000 and it is said that one hospital bed out of every six in the entire country is occupied by a dementia præcox patient. It is a living death for it begins usually in the young, lasts many years and is practically incurable. It sometimes undergoes remissions and this fact must be borne in mind when cures are claimed.

INSECTICIDES. See **ENTOMOLOGY**, **ECONOMIC**

INSECTS. See **ENTOMOLOGY**, **ECONOMIC**, **ZOOLOGY**

INSTITUTE OF AGRICULTURE, **INTERNATIONAL.** See **AGRICULTURE**

INSTITUTE OF POLITICS. See **POLITICS**, **INSTITUTE OF**

INSTITUTE OF PUBLIC AFFAIRS. See **PUBLIC AFFAIRS**, **INSTITUTE OF**

INSULIN. The use of insulin by the mouth is considered exhaustively by R. Stephan in the *Munchener medizinische Wochenschrift* for September 28. In theory, insulin should act in its physiological manner when swallowed, its subcutaneous injection in theory being unphysiological. Naturally, much might depend on the combination in which the insulin is swallowed. As a result of much experimentation, the author learned that a combination of insulin with biliary acids is not destroyed in the empty stomach and is readily absorbed. The author had not enough diabetic patients in his service for an extensive tryout, but in two cases the results were as follows. In the first, in a man of 61 with diabetes of one year's duration and a blood pressure of 230, with an elimination of about 40 gms. of sugar daily, insulin by the mouth for a period of six days caused the disappearance of all the sugar from the urine. In the second case, in a man of 64 with daily excretion of about 32 gms. of sugar, the same kind of result was obtained. The total number of patients thus far treated is 12, all with the same favorable result. In the same journal, Dr. M. Ottow relates two cases of the peroral administration of insulin in diabetic children. Sugar and acetone bodies disappeared from the urine. In all of the patients, the tolerance to sugar in the diet was augmented. See **DIABETES**

INSURANCE. The business of insurance had a most unusual year in 1929. To life insurance, it was a year of triumph, when much was accomplished and still greater things started, but in fire and casualty insurance it was one of annoying and perplexing problems, hot competition and some disappointments, which, however, seemed rather to strengthen than to demoralize. There developed among leading companies in both the fire and casualty-surety fields cooperation which

had been lacking and a strengthening of company organizations under more direct control of chief executives.

The public's desire to buy stocks of insurance companies was less marked in 1929 than in the year before. Approximately \$160,000,000 of new capital and surplus was paid into insurance companies, as compared with \$225,000,000 in 1928. About two-thirds of this amount went into fire and marine companies and most of the remainder into casualty-surety companies, as the amount of financing done by life companies was relatively small. The number of companies organized was smaller than in 1928. About 50 companies reduced the par value of their shares to make them more available to small investors. Comparatively few prominent companies' shares are now of a higher par value than \$25, most of them are \$10 and some are \$5.

Life insurance had the greatest year in its history. In July the volume of one hundred billion dollars of legal reserve life insurance in force was reached, and the fact was very widely commented upon. The best estimates place the amount of new insurance written and paid for during the year at \$19,800,000,000, an increase of \$1,100,000,000 over that of 1928. The amount of life insurance in force in legal reserve companies in the United States at the end of the year was nearly \$104,000,000,000, on the lives of 67,000,000 persons. The assets of the companies on Dec. 31, 1929, were estimated to be \$17,900,000,000, an increase of nearly \$1,640,000,000 during 1929. During the year the companies paid approximately \$850,000,000 to beneficiaries of deceased policyholders and \$1,150,000,000 to living policyholders as dividends, cash surrender values, disability benefits, and other payments. The mortality experience of the companies was favorable although possibly not quite so favorable as in 1928 because of the influenza epidemic early in 1929.

Group life insurance written amounted to approximately \$1,900,000,000, somewhat less than the extremely large production of 1928. The field of group insurance was broadened, as the law of New York State now permits it to be written on groups consisting of borrowers from banks and purchasers of various commodities on installments for the protection of creditors. Group annuity and pension systems are also being developed.

The collapse in the value of securities in October did not seriously affect the assets of life insurance companies, as their investments are largely in real-estate mortgages, bonds of the highest class, preferred and guaranteed stocks and loans upon their own policies. The stock-market crash, however, did create the greatest and most urgent demand for policy loans ever experienced in the history of the business. Loans were made just as rapidly as the companies' employees could handle them and in some instances were made at branch offices and agencies on telegraphic orders from home offices. While policy loans are always regretted by companies as they often lead to lapse of the policies and seldom are repaid until the policies become claims, nevertheless the way in which this emergency was met impressed upon the public the value of life insurance.

It was a question whether the losses sustained by the public would interfere with the sale of life insurance in November and December. Apparently it did not, so far as ordinary insurance was con-

cerned, as sales in each month exceeded those of the corresponding month in 1928. It is believed that many whose estates were depleted by shrinkage in stock values sought to restore them immediately by purchase of life insurance.

The work of educating life-insurance salesmen made gratifying progress during the year. The American College of Life Underwriters, chartered by act of Congress and empowered to grant the degree of Chartered Life Underwriter, has a standardized course of study necessary to prepare for the examinations which it conducts, and many colleges, Y M C A schools, and other institutions are now giving this work.

In fire insurance a fair underwriting profit was made by most companies and an excellent one by some. The premium income did not vary greatly from that of the two previous years. Losses and expenses were a little higher than in 1928. From the standpoint of profits from investments the year was extraordinary. Companies which were active in the stock market and those which held large amounts of common stocks purchased when prices were lower made large profits until the break occurred in October. Companies whose investments were chiefly in bonds possibly suffered a little depreciation. After the crash experiences differed. Some suffered depreciation on stocks. Some had taken their profits earlier and bought heavily when the prices broke, realizing an appreciation by the close of the year. A few companies whose December 31st statements have appeared reported losses from depreciation almost negligible. Others reported 1 or 2 per cent of the value of their securities and some made a much less favorable showing. On the whole, however, the investments of fire insurance companies appear to have been very sound.

The development of groups of companies under one management continued. A marked development was the acquisition of control of casualty-surety companies by fire companies, making it possible for more groups to write all classes of insurance except life. Acquisition of insurance companies by holding companies continued.

New fire insurance companies which were entering the various States and making inroads upon the business of the old companies created some confusion in the field, which was increased by the controversies among the old companies themselves. To meet the competition both of new stock companies and of mutuals, the old companies reduced rates on profitable classes in important sections of the country and also required their agents to represent only companies affiliated with organizations, on pain of losing their affiliated companies, which include the largest ones and are needed by agents to handle their large lines.

One effect of this stress was the bringing into one organization in the West of the companies which are affiliated with the organization in the East and on the Pacific coast. For nearly twenty years some of these companies had been connected with an organization in the West which was frequently at war with the larger one to which most of the affiliated companies owed allegiance. The new alignment improves the prospects of orderly conduct of the business in the field.

An important step was taken in May when the National Board of Fire Underwriters, whose membership comprises nearly all the important stock fire insurance companies, decided to take charge of the adjustment of fire losses in which several companies are involved. Heretofore losses

had been adjusted by various individuals and bureaus representing the companies which employed them, and settlements had been made at times with a view to influencing business to the companies which paid losses on the most liberal basis. While the National Board's plan had not been put into operation by the end of 1929, it contemplated one adjustment bureau representing all stock companies, employing only qualified adjusters, maintaining its own staff of attorneys, cooperating with the arson investigators of the National Board and eliminating the competitive element in the settlement of losses.

There was considerable litigation resulting from the attempts of States to force reductions in fire insurance rates or their refusal to permit increases and from interference by States with the commissions paid by companies to their agents. Decisions were adverse to the companies in several instances, but two of the most important of these cases were before the Supreme Court of the United States on appeal when the year closed.

The continual increase in commissions paid by fire insurance companies to their agents has been taken up by the National Convention of Insurance Commissioners, and a committee of that body is now studying the whole subject of acquisition cost of fire insurance, believing that this expense may have reached a point where it is throwing an unjust burden upon the premium-paying public.

The growth of casualty insurance was less rapid in 1929 than in previous years. In some classes the volume of premiums was little higher, or even less, than in 1928. The experience on the two major classes, workmen's compensation and automobile liability, was not satisfactory although the latter probably produced some profit. On some of the minor lines a fair profit was made. The surety business continued to grow, but several leading companies have reported abnormally high losses, especially toward the close of the year. Recently organized companies were numerous and aggressive and they made inroads on the business of the established institutions. Payment of excessive commissions in some instances, writing at reduced rates and giving broader coverage for the same premium, together with the rapid growth of reserves which always attends a large increase in business, had a serious effect upon the surplus of some of the younger companies and, as the end of the year approached, a few of them reduced capital in order to increase surplus and several sold out to parties who could refinance them or reinsurance their business and liquidate them, or possibly effect their merger into other companies.

The Association of Casualty and Surety Executives absorbed several organizations which were performing special functions—sometimes overlapping—and coordinated their activities. The National Bureau of Casualty and Surety Underwriters, the organization of leading companies which makes rates, policy forms, and rules for the conduct of several classes of casualty insurance, was reorganized and greatly strengthened. This organization also does valuable work in the field of accident prevention and safety education.

Workmen's compensation insurance made little or no profit for the companies on their underwriting. They were supposed to derive their profits in this class from investment of the reserves, but some years they make a small profit on underwriting also. The workmen's compensation laws,

however, were continually being amended to be of greater benefit to injured workmen and the increases in rates for insurance to take care of these additional benefits often lagged behind the expenditures they caused.

Automobile liability insurance, which produces a very large premium income for casualty companies, had an unusual year. The common method of doing business was first disturbed by introduction of installment plans of paying premiums, designed to induce more persons to carry insurance. This system did not become very popular. Then, merit rating of private pleasure cars was introduced with the idea of making drivers more careful and also of inducing the uninsured to insure. Under this plan owners who had not reported an accident for two years previously were granted 10 per cent reduction in rates upon renewal of their policies. As an extra premium could not be collected from owners with bad accident records, a material reduction in the average rate resulted.

Another factor tending to reduce profits was the writing of fleets of automobiles at inadequate rates brought about by the competition for the large premiums involved. The trouble was increased by permitting employers to include in their fleets the private cars of their employees, also at inadequate rates. The casualty companies recently have formed an organization to which the experience of companies on fleets is to be reported, so that reasonable rates on them can be made. Unfortunately for the stock companies much of the best automobile liability business was going to the mutuals and reciprocals.

The experience of Massachusetts with its compulsory automobile liability insurance law had not been such that any other State was inclined to enact such a law in 1929. Several important States did enact "financial responsibility" laws, similar to those of Connecticut and New Hampshire, which have been found satisfactory. Under these laws an automobile owner is not compelled to carry insurance but to do so is the easiest way for him to make sure that he will not lose his license because of injuring somebody and being unable to satisfy a judgment for damages.

The volume of burglary insurance increased very little, but a fair underwriting profit was made. Rates on open stock insurance for merchants were revised and some of them were materially reduced. The residence burglary policy was liberalized and made broader in its coverage. Bank burglary and robbery insurance is now unprofitable to the companies because of the large increase in losses from bank hold-ups. The burglary insurance companies last year began issuing "kidnaping coverage" as an addition to office- and store-robbery insurance. It identifies the owner where a custodian is captured by robbers outside of the premises and forced to return and admit them or to give information which will enable them to gain an entrance.

The previous unsatisfactory conditions in plate-glass insurance were somewhat improved. As there is little exposure to extremely heavy losses and usually a profit is made, the number of companies writing this class has increased to about a hundred, and those companies formerly controlling the major part of the business, seeing their volume decrease year by year, had been unable to agree upon methods to meet the conditions. Early in 1929, however, most of these companies came together. They appointed a committee to

study the whole subject and other committees to deal with several large cities having peculiar problems of their own. Rates were reduced a third on large-sized plates and in December some reductions were made on other classes of glass. At the close of the year the business was in a healthier condition, but the premium income was believed to have been reduced approximately 15 per cent from that of 1928.

The volume of steam boiler and machinery insurance did not materially change. Losses were a little higher than in 1928 but not enough to prevent the making of a profit. The companies last year adopted a standard policy, broader in coverage and more readily understood. Rates are now undergoing revision and some changes are to be looked for in 1930.

The fidelity and surety business with a premium income of over \$100,000,000 in 1928, continued to grow, although some of the leading companies made little or no gain in premium income because of the activities of new companies. The underwriting experience was unusual and, while companies probably made a profit, it was not as large as usual. Except for losses on depository bonds resulting from bank failures, especially in Florida and Nebraska, the year was not unusual until the stock market crashed. Then the companies were called upon to pay heavy losses under bankers' and brokers' blanket bonds and fidelity bonds, due to defalcations of employees who had been speculating. The companies were so certain that other losses would be disclosed by audits early in 1930 that many of them set up additional reserves for losses incurred but not reported prior to December 31. Fortunately, the surety companies are very strong financially, even though their conservative investments suffered some depreciation. A considerable increase in business is expected in 1930, as employers nearly always take more insurance after periods of heavy embezzlement losses. It is expected that a vast amount of construction work will be undertaken this year, and this will call for a large volume of contract bonds.

INSURANCE, AUTOMOBILE. See AUTOMOBILES, under *legislation*.

INTELLIGENCE TESTING. See PSYCHOLOGY.

INTERNAL COMBUSTION ENGINES

This classification includes gasoline engines of the automobile, aviation, marine, stationary, and semiportable types, gas engines, employing natural, manufactured, and blast furnace gas, and oil engines of the Diesel and semi-Diesel types. While many refinements in the design of gasoline engines were made during 1929, there was little that was radically new.

The gas engine field which had been more or less dormant for a few years, save an occasional large unit for steel mills, in 1929 showed considerable activity in that about 40 1000-hp engines of the double-acting tandem type were installed during the year. With the opening of extensive natural-gas fields in the Southwest and the construction of long pipe lines to many cities in the Middle West, a revival of the gas engine seemed probable.

Although the production of Diesel engines during 1929 was slightly under that of 1928, this fact can hardly be taken as an indication of falling off in the popularity of this type. Instead, it was due to conditions in certain fields that held promise for the Diesel. On the other hand, the Diesel

found application in fields that heretofore employed few, if any, engines of this type. For instance, a considerable number of engines of around 300 horse power each were built for switching locomotives. Such engines, while not adaptable to locomotives on main-line service in the United States (a few had been so employed in Europe), were widely used in Diesel-electric sets for railway cars on branch lines.

During the year a Diesel engine was installed in New York City's largest and newest hotel, The New Yorker, to supplement its steam plant and two such engines were ordered for the largest department store in that city. A considerable number of Diesel engines were being employed to furnish the power to contractor's equipment in connection with the flood-control work on the Mississippi River, and for semi-mobile contracting equipment in general the Diesel was finding favor.

In the field of aviation the Packard Motor Company attracted wide attention by its demonstration of a radial single-valve, solid-injection Diesel. See AERONAUTICS.

For marine service the Diesel continued to be popular among ships built in European yards but, with the exception of tugs, ferry boats, and a few tankers, it has made little headway among American built ships of the ocean-going class. This has been in spite of the financial support offered a few years back by the U. S. Shipping Board and has been due largely to the competition of foreign yards that could build such engines at greatly reduced cost.

Many Diesels have been installed in waterworks pumping stations, mines and quarries, and in some flour mills. They have also been installed in small and medium-sized municipal lighting plants and to a limited extent in private central power stations, principally in the West and Southwest. One American holding company placed a number in Central American power stations under its ownership. As applied to industrial power plants, the Diesel is often handicapped in competition with steam turbines and steam engines where there is a demand for steam for process or heating.

In sizes below 300 horse power, the mechanical oil-injection type of Diesel predominates and has been gaining favor in sizes up to 1000 horse power. Above this, the air-injection type is used almost exclusively.

During the year a start was made toward the standardization of Diesel fuel oil specifications through the formation of a committee representing engine manufacturers, users, and the American Society of Mechanical Engineers. Research work and tests were being conducted to this end. See ELECTRIC RAILWAYS.

INTERNATIONAL ARBITRATION. See ARBITRATION, INTERNATIONAL.

INTERNATIONAL ASSOCIATION FOR SOCIAL PROGRESS. See SOCIAL PROGRESS, INTERNATIONAL ASSOCIATION FOR.

INTERNATIONAL BANK. See REPARATIONS.

INTERNATIONAL INSTITUTE OF AGRICULTURE. See AGRICULTURE.

INTERNATIONALISM. Although no outstanding world gatherings like the Universal Christian Conference on Life and Work, or the World Conference on Faith and Order were held during 1929, five important international gatherings of an interim character were held. In various

ways, they revealed clear tendencies in the direction of a new sense of world friendship on the part of the Protestant churches. The coöperation of the Eastern Orthodox churches with Protestantism in these gatherings was a distinctive feature.

The Continuation Committee of the Life and Work Movement met for a week at Eisenach, Germany (September 2-9). Dr S. Parkes Cadman was the Chairman of this Committee, which was carrying forward the programme begun by the Universal Christian Conference on Life and Work, held at Stockholm in 1925. The Federal Council of the Churches of Christ in America had become the body through which American coöperation in this international programme was secured. Other sections were organized in Great Britain, on the Continent of Europe, in the Eastern Catholic churches, and a fifth section in the churches of other lands. Through the Continuation Committee on Life and Work, a programme of social service in matters of an international scope, parallel in many respects to the programme of the Federal Council in our own country, was being developed.

A conference of representatives of the churches of various lands interested in the research work of the churches was held during the summer, in Geneva, under the auspices of the Life and Work Movement. The American churches were represented by Dr. Worth M. Tippy and Dr. F. Ernest Johnson, of the Federal Council. Another such meeting was that of the Central Bureau for the Relief of the European Churches, held in Basle, Switzerland, August 23-24. This body came into being in 1922 as a result of the initiative taken by the American Federal Council and the Swiss Protestant Federation, in securing assistance for the churches which had been severely weakened by the economic aftermath of the World War. Through the coöperation of the Federal Council over \$625,000 had been raised since that time in America for the relief, and considerable amounts had also been provided by the churches of Switzerland, Sweden, and other countries in a position to help. The conference in 1929, marking the seventh anniversary of the gathering at Bethesda House, Copenhagen, which launched the Central Bureau for Relief, resurveyed the situation, determining how far the rehabilitation of the church life of Europe had progressed and what still remains to be done.

During the last week of August, the Continuation Committee of the World Conference on Faith and Order gathered at Engadine, Switzerland. This body is interested in the question of the organic union of Christendom rather than in present coöperative possibilities. From August 19 to 23, at Frankfurt, Germany, there was held a meeting of the committee which was preparing for the Congress of Religions on World Peace. On September 21, the Committee of the World Alliance for International Friendship through the Churches met at Montpellier, France, bringing together representatives of the various national councils which make up the World Alliance. The chief topic on the agenda was disarmament.

The Committee on World Friendship Among Young People, instituted by the Federal Council of Churches' Commission on International Justice and Good Will, announced its first project under the Zelah Van Loan World Friendship Award—a prize essay contest for the Americas, the theme being "Christ and World Friendship." The young

people of North, Central, and South America, and the Caribbean region were invited to participate in this competition. There were to be two sets of prizes, one for the best essays from the United States and Canada, the other for the best essays from the Latin American countries. The first prize in each area was to be \$300, the second \$100, and the third \$50. There were to be thirty prizes of \$10 each. There were to be two sets of judges—one to pass upon the essays from the United States and Canada, and another to pass upon the essays from Mexico, Central America, South America, and the Caribbean region. The judges for North America were to be named by the Committee on World Friendship Among Young People, upon nomination by various young people's organizations and mission boards. The judges for Mexico, Central America, South America, and the Caribbean region were to be named by the Committee on Coöperation in Latin America.

In March, 158 Australian boys, members of the Young Boys, of the Young Australian League, arrived in New York for a three months tour of the United States and Canada. They were preparatory school boys, and, while in Washington, marched in the inaugural parade.

The fifth session of the Institute of International Relations was held at Mission Inn, Riverside, Calif., December 8 to 13. Since 1921 an Institute of Politics (see *POLITICS, INSTITUTE OF*) has been held at Williamstown, Mass., under the auspices of Williams College, but few representatives from the Western States were able to attend. The Institute at Riverside was organized by the University of Southern California for the promotion of the serious study of the problems involved in international relations. It was believed by those in charge that an understanding of such problems would lead to universal good will and world peace. The committee having the sessions of the Institute in charge was headed by Dr. Rufus B. von Klein Smid, the president of the University.

In 1926 and 1927, 13,000 Doll Messengers of Friendship went to Japan, sent by the children and young people of the United States, and in response, late in 1928, came 58 Doll Ambassadors of Good Will to the United States, to which welcomes were given in more than a thousand receptions in all parts of our land. An illustrated volume was published in 1929 giving the first full account of that remarkable adventure in the field of dolls, as well as in international relations, unique in the annals of human history. In the closing chapter is a statement of the principles and objectives underlying these projects of the Committee on World Friendship Among Children.

In 1928 Mexico was selected as the country for this international exchange and in 1929 the country chosen for the third project was the Philippine Islands and the symbol chosen to bear the good-will greetings from the children of the United States to the Filipino children was the Friendship Treasure Chest. The project was to be consummated in the Philippines on Dec. 30, 1930, a national holiday commemorating the death of Dr. José Rizal, the great Filipino patriot. The Department of Education was to receive the Friendship Treasure Chests and distribute them and their contents to the children of the Philippines.

As in other years the children of the United States will be asked to send to the children of the Philippines a personal letter of friendly greeting.

with a good-will message, together with such articles as crayons, drawing sets, games, scrap-books, harmonicas, sewing kits, paper dolls, puzzles, handkerchiefs, and beads. In addition, it was hoped that every Friendship Treasure Chest would contain at least one book. Even though the Filipino children learn English in their schools there were very few public libraries. There was, therefore, a great need of good books. A bibliography of 400 books suitable for children from six to fifteen years of age had been prepared under the supervision of Miss Clara Whitehall Hunt of Brooklyn, a librarian widely known as an authority on children's books.

Announcement was made in London of the award of Commonwealth Fund Fellowships to 30 honor students of British and Colonial universities. These fellowships were established in 1925 by the Commonwealth Fund of New York, of which Edward S. Harkness was president, in the thought that additional facilities for British university graduates to study and travel in the United States would foster the development of understanding and good will between this country and Great Britain. In 1929 the number of Fellowship awards had been increased from twenty-three to thirty, including three for men in the British Colonial Service. This was the fifth annual award. Including the appointees referred to, 115 British students had received these fellowships. They had been graduated from the British universities of Aberdeen, Belfast, Bristol, Birmingham, Cambridge, Cork, Durham, Edinburgh, Glasgow, Leeds, Liverpool, London, Manchester, Oxford, Reading, St. Andrews, and Wales, and the Colonial universities of Adelaide, British Columbia, New Zealand, Queensland, and Tasmania. Their fields of study had been widely diversified, including such subjects as astronomy, architecture, archaeology, chemistry, classics, engineering, education, history, literature, physics, and medicine. The universities to which they were coming are California, California Institute of Technology, Chicago, Columbia, Cornell, Harvard, The Johns Hopkins, Massachusetts Institute of Technology, Michigan, Princeton, Stanford, Wisconsin and Yale.

These fellowships were awarded, not as a result of examination, but on the candidate's university and general record, and after a personal interview with the committee of award. The chairman of the committee was Sir Walter Buchanan-Riddell, Principal, Hertford College, Oxford. The other members are Sir James Colquhoun Irvine, Principal, University of St. Andrews, Sir Theodore Morrison, Principal, Armstrong College, Newcastle-on-Tyne, Lord Chelmsford, Viceroy of India from 1918 to 1921 and First Lord of the Admiralty, 1924, in Ramsay MacDonald's cabinet, Sir Edwin Cooper Perry, London School of Hygiene and Tropical Medicine, and Professor John Henry Clapham, King's College, Cambridge. Of this committee, Sir Walter Riddell and Sir James Irvine had traveled in the United States at the invitation of the Commonwealth Fund and had visited several American universities. It was expected that other members of the committee would visit the United States later. The Honorary Chairman of the Committee was H. R. H. The Prince of Wales.

The Norman Wait Harris Foundation for the Study of International Relations held its Sixth Institute June 17 to 28 at which there were present lecturers from Tokyo, Rome, Berlin, and

the United States. The lectures, which dealt largely with matters of population and sustenance, were published in book form by the University of Chicago. In addition, there was a series of round tables organized to discuss certain phases of the general problems of population and migration.

The convention for the amelioration of the condition of the wounded of armies in the field in time of war, a revision of the Red Cross Convention of 1906, was signed at Geneva, July 27, 1929, on behalf of the United States of America, Austria, Belgium, Brazil, Bulgaria, Chile, China, Cuba, Czechoslovakia, Denmark, Dominican Republic, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Mexico, Nicaragua, Norway, the Netherlands, Poland, Portugal, Rumania, Kingdom of the Serbs, Croats, and Slovenes, Siam, Spain, Switzerland, Turkey, and Uruguay. The convention relating to the treatment of prisoners of war was signed at Geneva, July 27, 1929, on behalf of the United States of America, Austria, Belgium, Brazil, Bulgaria, Chile, China, Cuba, Czechoslovakia, Denmark, Dominican Republic, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Mexico, Nicaragua, Norway, the Netherlands, Poland, Portugal, Rumania, Kingdom of the Serbs, Croats, and Slovenes, Switzerland, Turkey, and Uruguay.

INTERNATIONAL JUSTICE. See LEAGUE OF NATIONS, WORLD COURT

INTERNATIONAL LABOR OFFICE. See UNEMPLOYMENT

INTERNATIONAL LAW. The second session of the preparatory committee for the Conference on the Codification of International Law was held from January 28 to February 17, with M. Basdevant, Professor of Law at Paris University, in the chair. The committee considered replies from governments to the questionnaire sent out in February, 1928, after its first session, dealing with the three items figuring on the Conference agenda, namely, nationality, territorial waters, and the responsibility of states for damage caused on their territory to the person or property of foreigners. Replies were received from twenty-nine governments, some of which, however, did not deal with all three of the questions on the agenda. As a result of this examination, the committee laid down certain principles, accompanied by observations, as a basis of discussion for the Conference. These principles did not represent the personal opinion of the members of the committee, but were merely a statement of the provisions upon which agreement appears to exist among governments. They were of a provisional character, the committee reserving its right to amend them if necessary.

The regular session of the International Institute of Public Law was held at Paris, June 22-24, 1929. The subjects discussed by scholars from various European countries included the state of representative government, new tendencies in connection with declaration of rights, the popular initiative and referendum, and the rules of constitutional law in connection with the making and ratification of international treaties.

CONVENTION AND CODE OF INTERNATIONAL LAW. On August 3, the Brazilian Ambassador at Washington deposited with the Pan American Union the ratification of Brazil of the Convention and Code of International and Private Law signed at the Sixth International Conference of American

States at Havana, Feb. 20, 1928. On August 19, the *Chargé d'Affaires* of Peru likewise deposited the ratification of his government. The *Chargé d'Affaires* of Haiti notified the Pan American Union of Haiti's ratification on July 20. Moreover, the Dominican Republic, Nicaragua, and Panama were reported to have completed their ratification of the Convention and Code of International and Private Law and the Congress of Costa Rica* and Cuba were reported to have approved ratification. The delegation of the United States to the Sixth International Conference of American States did not sign these instruments.

CONFERENCE FOR THE CODIFICATION OF INTERNATIONAL LAW. By note of July 15, the Acting Secretary General of the League of Nations informed the Department of State at Washington that the date of the Conference for the Codification of International Law had been provisionally fixed for Mar. 13, 1930. The governments of the following states, in addition to the members of the League, were invited by the Council of the League to attend the conference: Brazil, Costa Rica, Free City of Danzig, Ecuador, Egypt, Iceland, Mexico, Monaco, San Marino, Turkey, Union of Soviet Socialist Republic, United States of America.

The following subjects were on the agenda of the Conference: 1. Nationality, 2. Territorial Waters, 3. Responsibility of states for damage done in their territory to the person or property of foreigners.

A committee of five jurists appointed by the Council of the League of Nations made a study of the above questions and, after consulting the governments of the states invited to participate in the conference, drew up a report which was to serve as a basis for the discussion at the March conference. The documentation prepared by the committee of jurists for the use of the conference was forwarded to the Government of the United States by the Secretariat of the League of Nations.

The Bureau of Research in International Law, of which Prof. Manley O. Hudson of the Harvard Law School was director, published a report, "Codification" as a supplement to the *American Journal of International Law* for April, 1929.

A palace for the American Institute of International Law was to be erected in Havana. The cornerstone was laid on May 19. It was proposed that the palace should provide quarters not only for the American Institute but for organizations affiliated with it. It would house an Inter-American Library and American Academy of International Law at The Hague. There would be a place for the Cuban Society of International Law and for the Latin Centre of the Carnegie Endowment for International Peace.

INSTITUTE OF INTERNATIONAL LAW. The thirty-seventh annual meeting of the Institute of International Law was held at Briarcliff Manor (New York) October 18, Elihu Root presiding. This was the first time that the Institute had held a meeting in America. Founded in Ghent in 1873, it had met 36 times on European soil. It is composed of 60 members and 60 associates, the majority of them Europeans. All are regarded as authorities on International Law. The address of welcome was delivered by Dr. Nicholas Murray Butler, President of the Carnegie Endowment for International Peace, under whose auspices the Institute met.

* Decree of approval vetoed by President.

One of the first items of business was the adoption of three declarations of the rights of individuals in all countries. According to these pronouncements it is the duty of every State to recognize for every individual, " . . . of his nationality, the equal right to . . . , and property, and to the exercise of the religious faith and the language of his choice. These declarations are intended to be a part of a comprehensive interpretation of International Law. While the statements will be put forth in the private capacity of the Institute, it is hoped that in time they will receive official cognizance. This is the first time in the history of the Institute, possibly of any similar organization, that an effort was made to formulate the general rights of man. Much of the formulated doctrine is already a part of the United States Constitution and all of it was generally accepted by the Institute as proper. The resolutions were approved by a Committee composed entirely of European lawyers under the chairmanship of Andre N. Mandelstam, formerly head of the legal department of the Foreign Affairs Ministry of Russia and now a resident of France. The formal declaration follows:

It is the duty of every State to recognize for every individual the equal right to life, liberty and property and to accord to every one on its territory the full and complete protection of the law without distinction as to nationality, sex, race, language, or religion.

It is the duty of every State to recognize for every individual the right to the free exercise both public and private of every faith, religion or belief of which the practice is not incompatible with public policy and good morals.

It is the duty of every State to recognize the right of every individual to the free use of the language of his choice and for instruction in this language."

Inserted in the minutes of the Institute was an interpretation tempering the third declaration so as to eliminate international interference with whatever curriculum a State may prescribe in its public schools. The declaration is to be construed only as denying to a State the authority to prevent private instruction in any language.

At a later session of the Institute the following declarations were adopted:

No motive whatsoever based directly or indirectly on differences of sex, race, language or religion can authorize a State to refuse to any of its nationals private and public rights and especially the admission to institutions of . . . action and the exercise of different economic . . . professions and industries.

The equality already provided is not to be nominal but really effective and excludes all discrimination, direct or indirect.

No State has the right to withdraw, except for reasons taken from its general legislation, its nationality from those who for reasons of sex, race, language or religion it might wish to deprive of the rights guaranteed by the preceding articles.

An official comment on the Institute declared that it is notable that the Institute stresses the fact previously not covered even in individual State constitutions that these fundamental rights are guaranteed without distinction of sex, which is a great triumph for the cause of the equal rights of women.

Resolutions also were adopted dealing with corporations and International Law. This subject was of special importance because of the increase of world trade with corporations formed in one country doing business in another. After the formal sessions at Briarcliff the Institute visited New York and Washington, stopping at Princeton and Philadelphia.

INTERNATIONAL RAILWAY. See GUATEMALA.

INTERPARLIAMENTARY UNION The executive committee found that, owing to difficulties of accommodation, it would not be possible to hold the meetings of the Interparliamentary Council and Permanent Study Committees at Arcachon as previously announced. The meetings were therefore held at Geneva from August 23 to 31. Five of the permanent study committees were in session. These were the committees on (1) Political and Organization Questions, (2) on Juridical Questions, (3) on Economic and Financial Questions, (4) on Ethnic and Colonial Questions, and (5) on Social and Humanitarian Questions. In addition, there was a sub-committee on Security and Meetings of the Inter-Parliamentary Council of the Executive Committee and a General Public Committee.

On August 23, the Union formally opened its sessions with the United States having one of the largest delegations present. The meetings were taken up mainly with a discussion of the Kellogg Peace Pact, and such questions as international trusts, ethnic minorities, narcotics, and social work. While the speakers emphasized the need of a strong peace pact and of detailing methods for settling international disputes, the Union in a resolution passed at the closing session limited itself to the adoption of a motion submitted by Count Apponyi of Hungary deploring the numerous loop-holes in the pact and urging the improvement and facilitating of the judicial, arbitrary and conciliatory machinery for the settlement of disputes. On August 29, the delegates of the special committee that had been working to formulate plans for a convention for the control of the manufacture of arms adjourned after deciding not to color their report to the Council by either a pessimistic or an optimistic tone, but to let the facts speak for themselves. The "facts" would seem to indicate that the delegates had not advanced any since their last session, and that the delayed issues regarding the manufacture of munitions were precisely where they stood at the last meeting.

The greatest of all the difficulties continued to be the application of the convention's publicity provisions to State munition factories as well as to private firms. Japan here was chiefly opposed. Five States, including France and Italy, announced that they could go no further with this convention until the convention for education on armaments had been drafted.

The twenty-sixth annual meeting of the American section was held in the room of the committee on naval affairs of the House of Representatives Feb. 25, 1929. Routine business was transacted and the officers, including the late Hon. Theodore E. Burton, as president, and Representative John J. McSwain of South Carolina, as secretary were reelected.

Baton Theodore Adelswaerd, of Sweden, who was head of the Interparliamentary Union for many years, died September 28.

INTERSTATE COMMERCE COMMISSION. See RAILWAYS, UNITED STATES.

INVESTMENTS. See FINANCIAL RENTW. **IONA SOCIETY,** AMERICAN An association chartered in 1925 by the Regents of the University of the State of New York "to preserve, encourage, and promote Celtic culture" and for the establishment in Scotland of a centre of Gaelic culture. Progress was made during 1929 in de-

veloping plans for the establishment of a university, offering courses in the Celtic language, literature, music, arts, and crafts, to be located in Scotland with its principal office in New York. The officers in 1929 were Richard M. Montgomery, president, John H. Finley, first vice president, James S. Cushman, second vice president, Alexander R. Fordyce, Jr., secretary, H. H. De Frise, treasurer. The headquarters of the society are at 300 Madison Avenue, New York City.

IOWA POPULATION According to the Fourteenth Census of the United States, the population of the State on Jan. 1, 1920, was 2,404,021. According to the State census taken in 1925, the population was 2,419,927. The estimated population on July 1, 1928, was 2,428,000. The capital is Des Moines.

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod. Bu.	Value
Corn	1929	10,944,000	437,760,000	\$306,432,000
	1928	11,202,000	464,883,000	311,472,000
Oats	1929	5,844,000	219,928,000	85,772,000
	1928	6,004,000	231,154,000	85,527,000
Hay	1929	3,560,000	6,720,000 *	73,051,000
	1928	3,144,000	4,582,000 *	58,648,000
Wheat	1929	454,000	8,794,000	9,314,000
	1928	452,000	8,723,000	8,730,000
Potatoes	1929	75,000	7,650,000	10,710,000
	1928	81,000	10,935,000	5,577,000
Barley	1929	642,000	19,181,000	10,182,000
	1928	802,000	26,466,000	14,292,000

* Tons.

MINERAL PRODUCTION Iowa was one of the coal-producing States in which the mining of coal recovered most rapidly after the check sustained from the labor troubles at the mines in 1927. Its production of coal for 1928 was 3,083,635 short tons, that of 1927 had been but 2,949,622 tons. In value, the product of 1928 was \$10,525,000, that of 1927, \$9,304,000. Cement production for 1928 attained the quantity, as measured by factory shipments of 6,880,731 barrels, and for 1927, of 5,661,231 barrels, in value, \$10,734,838 for 1928 and \$9,124,405 for 1927. The State held its place as second in production of gypsum in 1927, producing 792,159 short tons, in value \$6,713,497, the production of 1926 was 802,910 tons, in value \$6,588,203. Clay products of 1927 had a value of \$5,158,104, those of 1926, \$4,459,724. Stone, sand, and gravel added considerably to the total yearly value of the State's mineral products which was for 1927, \$33,426,375, for 1926 \$35,971,787.

FINANCE State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were for maintenance and operation of governmental departments, \$22,504,088 (of which \$796,987 was for local education), for interest on debt, \$888,502, for permanent improvements, \$17,255,799, total, \$10,648,389 (of which \$18,322,415 was for highways, \$3,908,499 being for maintenance and \$14,413,916 for construction). Revenues were \$41,183,371. Of these, property and special taxes formed 27.8 per cent, departmental earnings and remuneration for officers' services, 13.8, license sales, 44 per cent (including gasoline taxation of \$4,638,577). The State funded debt of June 30, 1928, \$20,411,000 outstanding, was \$18,847,990 net of sinking funds. On a property valuation of \$1,495,074,319 were levied State taxes of \$9,610,800.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 9751.27. According to the annual construction summary there were built, in 1929, 2.70 miles of first and 2.70 of second track.

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to the operations of 1927, there were in the State, in 1927, 3061 manufacturing establishments. These employed 73,692 persons, whose wages for the year totaled \$1,110,000. Materials and supplies used in manufacture cost \$496,939,635. Manufactured products attained the combined value of \$769,340,610.

EDUCATION The qualifications required of teachers in the public schools were increased by a statute of 1929, according to State Superintendent of Public Instruction Samuelson, in the *Journal* of the National Education Association. A census of handicapped children was taken, a new course of elementary education, uniform for the State, was established, and a commission to revise the course of secondary education was established. The number of persons of school age in the State in 1929 was given as 713,830. There were enrolled in the public schools, 548,852 pupils. Of these, 388,054 were in elementary, and 139,716 in high-school, grades. The expenditures of the year for public-school education totaled \$55,799,804. Salaries of teachers in the public schools, by the month, averaged \$200.39 for men and \$112.58 for women.

CHARITIES AND CORRECTIONS The Board of Control of State Institutions starting with 1898, exercised the full management of the State institutions. Its further duties included the inspection of county and private institutions to care for the insane, of detention homes and of organizations to aid neglected children. The 15 State institutions of care or custody were Soldiers' Home, Marshalltown, Soldiers' Orphans' Home, Davenport, Juvenile Home, Toledo, Institution for Feeble-minded Children, Glenwood, State Sanatorium for Treatment of Tuberculosis, Oakdale, Training School for Boys, Eldora, Training School for Girls, Mitchellville, Mount Pleasant State Hospital (insane), Mount Pleasant, Independence State Hospital (insane), Independence, Clarinda State Hospital (insane), Clarinda, Cherokee State Hospital (insane), Cherokee; Hospital for Epileptics and School for the Feeble-minded, Woodward; State Penitentiary, Fort Madison, Men's Reformatory, Anamosa, Women's Reformatory, Rockwell City.

LEGISLATION The Forty-third General Assembly of the State of Iowa held its regular session, adjourning April 13. Its chief business was to remedy the interruption in the highway building plans occasioned by the decision of the State Supreme Court declaring unconstitutional an issue of \$100,000,000 of road bonds that had been approved by referendum vote at the general election of November, 1928. The plan followed was to proceed by the issue of anticipatory warrants against roadbuilding costs for the time being, until a resolution, passed by the session, to amend the State Constitution in such manner as to render the desired bond act valid might have time to gain ratification by popular referendum in 1931. The passage of the Bergman Secondary Road Law greatly modified the power of counties to issue their bonds for secondary road improvement. A bill providing for the sterilization of

mental defectives and sufferers from certain inheritable diseases and creating a State board of eugenics was passed.

POLITICAL AND OTHER EVENTS. A suit of importance to the highway programme of the State was brought by State Attorney-General Fletcher against the constitutionality of the \$100,000,000 issue of road bonds that had been approved by popular referendum in November, 1928. It was maintained against the bond proposal that it would provide for service of the bonds by road funds accruing from indirect collections, whereas the State constitution required the imposition of a direct tax. The State Supreme Court declared in March that the law providing for the bond issue was unconstitutional and enjoined the State Executive Council from sale of the bonds. An effort was made at Des Moines in June to effect the seizure of non-alcoholic beer brought into the State from Wisconsin and used for the purpose of "spiking," i. e., of fortifying with the addition of alcohol. The municipal court decided that the statutes made no provision against the transportation or sale of non-alcoholic beverages and refused to sustain seizures. A conflict of students and trustees occurred at Des Moines University, a Baptist institution, when the trustees early in May dismissed the president and the teaching force of about 40, for Modernist theological beliefs. Students pelted a meeting of the trustees, who rejoined by closing the university. A group of students then brought suit to compel the institution to resume and obtained on May 13 a District Court order to that effect. Old Fort Atkinson, built about 1840 for the protection of the Winnebagoes against other Indians, was conveyed to the Federal Government to be made a national monument.

OFFICERS Governor, John Hammill, Lieutenant-Governor, Arch W. McFarlane, Secretary of State, Ed M. Smith, Treasurer, R. E. Johnson, Auditor, J. W. Long, Attorney-General, John Fletcher, Superintendent of Public Instruction, Agnes Samuelson, Secretary of Agriculture, Mark G. Thornburg.

JUDICIARY Supreme Court Justices Truman S. Stevens, Charles W. Vermillion, Frederick F. Faville, Lawrence DeGraff, William D. Evans, E. G. Albert, E. W. Morling.

IOWA, STATE UNIVERSITY A coeducational State institution of higher learning in Iowa City founded in 1847. The enrollment for 1928-29 was 9683, of whom 5028 were men and 4657 women. For the autumn of 1929 the enrollment was 6670, while the summer school registration totaled 4339. There were approximately 600 members on the faculty in the autumn of 1929. The income for 1928-29, including revolving funds, was \$5,904,234. Gifts to the university during the same period amounted to \$910,663. The general library contained 361,308 volumes and the law library, 50,700 volumes. A new stadium costing \$500,000 was erected during the year. President, Walter A. Jessup, Ph.D., LL.D.

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS. A State institution for the higher education of men and women in Ames, Iowa, founded in 1808. The enrollment for the autumn term of 1929 was 4188, distributed as follows: Agriculture, 826; agricultural engineering, 42; engineering, 1359; home economics, 1025; industrial science, 372; veterinary medicine, 184; and graduate college, 379. The registration for the first half of the

1929 summer session was 1392 and for the second half, 712. The faculty numbered 493 members. The endowment funds amounted to \$895,000, and the income for the year was \$3,450,000. The library contained 180,000 volumes. President, Raymond Molloyneaux Hughes

IRAQ, or MESOPOTAMIA A territory under British mandate in Asia. It comprises the region on the Tigris and Euphrates rivers between Persia and Northern Arabia; formerly consisting of the vilayets of Bagdad, Basra, and Mosul in the Turkish Empire, conquered by British and Indian troops during the World War and recognized afterward as an independent state to be placed under a mandatory power, in this case, Great Britain Capital, Bagdad

AREA AND POPULATION The area is given at 143,250 square miles, population, according to the census of 1920, 2,849,282, distributed as follows: Bagdad, 1,785,000, Mosul, 703,378. The inhabitants are mainly Mohammedan and are divided among the two Mohammedan sects as follows: Shites, 1,494,015; Sunnites, 1,146,685. The Jews in 1920 numbered 87,488 and the Christians, 78,792. The chief seaport is Basra on the Persian Gulf

EDUCATION In 1927 there were 24,170 pupils in 240 government primary and elementary schools, with 857 teachers, 847 pupils in two secondary schools at Bagdad and Mosul, and 211 pupils in seven intermediate schools. Al ul Bait University was opened in 1926. The educational budget in 1927-28 amounted to 2,786,053 rupees (the exchange rate of the Iraqi rupee averaged \$0.363 in 1928 and 1929).

PRODUCTION Vast areas of rich soil require irrigation to be placed under cultivation. In 1928 about 1,400 pumps were providing water for approximately 800,000 acres. As the economies of such irrigation works were closely linked with the problem of cheap oil, much interest was attached to tests for oil being carried on in six different structures. Oil was struck in three wells near Kirkuk. Cotton growing is encouraged by the government and by the British Cotton Growing Association, the crop for 1928 was 5400 bales. Wheat and barley are the chief winter crops, the date crop surplus for export in 1926 was 79,262 tons, valued at 16,791,887 rupees. Wool exports in 1926 totaled 6051 tons valued at 6,550,214 rupees. Other crops are oats, linseed, flax, sheep casings, licorice root, oranges and other citrus fruits, and melons.

COMMERCE During the fiscal year ending Mar 31, 1929, imports totaled 95,000,000 rupees (\$34,500,000), as compared with 105,557,000 rupees in 1927-28, and 98,651,000 in 1926-27. Exports totaled 55,741,000 rupees (\$20,300,000) in 1928-29, 61,541,000 in 1927-28, and 46,089,000 in 1926-27. The unfavorable balance of trade in 1928-29 was 39,265,000 rupees, as compared with 44,016,000 in the previous year. The annual large adverse balance is largely offset by such invisible items as cash expenditures by British Forces in Iraq, the cash subsidy given by the British government to the Iraqi Army, and expenditures by foreign business firms, pilgrims, and tourists. Iraq handles most of the transit trade to and from Persia, the total transit trade in 1927-28 amounting to 58,811,882 rupees. The United Kingdom, India, and Persia, in the order named, lead in both the import and export trades. Cotton piece goods, sugar, machinery, silk piece goods,

tea, and mineral oils were, respectively, the leading import items in 1928-29. Exports, in the order of their value, in the same year were dates, grains, pulse, and flour, raw wool, hides and skins; and cotton piece goods.

FINANCE A small surplus has resulted from budget operations in recent years. The surplus on Mar 31, 1928, was estimated at 21,081,400 rupees. The 1928-29 budget estimated revenues at 57,965,000, and expenditures at 57,529,720, rupees. Actual receipts for 1926-27 were 56,700,473 rupees and actual expenditures, 53,671,711. The British government's grant-in-aid toward the cost of the Iraqi Army was 1,800,000 rupees annually.

COMMUNICATIONS Railway, steamship, and airplane lines compete for the passenger and freight traffic between Bagdad and Basra. There are some 4800 miles of highways, of which about 2300 miles are clay-bound shingle roads and about 100 miles gravel and macadam. The desert motor route between Iraq and Syria was used by 3894 automobiles in 1927, or 802 more than in 1926. The total route mileage of the railways on Mar 31, 1928, was 752 miles.

GOVERNMENT The organic law passed by the constituent assembly in June, 1924, provided for a limited monarchy and a responsible government. The legislative body consists of the Senate of 20 nominated "Elder Statesmen" and the Lower House of 88 elected deputies. The reigning monarch, King Faisal, ascended the throne Aug 23, 1921, as a result of a plebiscite in which 96 per cent of the inhabitants voted in his favor. Premier and Minister of Foreign Affairs in 1929, Abdul Mohsen Es Saadun (appointed in January, 1928).

HISTORY

Announcement that Great Britain had officially recommended the termination of its mandate over Iraq "by 1932 at the latest" was made by the League of Nations Mandates Commission on November 5. The British note was addressed to the League Council and was scheduled for consideration by the Council in January, 1930. The recommendation was in accord with a promise made by the Labor government in September that it would support Iraq's application for admission to the League without conditions such as those proposed in the unratified treaty of 1927. It was indicated that the British would propose a new treaty covering their withdrawal as the mandatory power which would provide for British control of the air base at Basra, an important link in the London-Karachi air line, and also for some form of supervision of the Mesopotamian oil fields.

The Mandates Commission after a three-day examination of the British report on Iraq, arrived at the unofficial conclusion that Iraq would not be ready for membership in the League before 1932 at the earliest. The caution exhibited by the Mandates Commission was attributed to the fact that it was the first case of its kind to come before the League, the possible repercussions upon the Syrian and Palestine mandates, and the apparent desire of Italy and Germany to secure League mandates.

The agitation against British control by the Nationalist section of the Iraqi population was at least temporarily ended by this concession. Earlier in the year, the independence movement resulted in the resignation of Premier Abdul

Mohsen Es Saadun (January 21), as irreconcilable divisions had arisen in the cabinet over the acceptance or rejection of the proposed settlement with Great Britain contained in the unratified Treaty of 1927. A new cabinet was announced at the end of April, with Tanfiq Bey Suwaidi as Premier, Minister of Foreign Affairs, and Minister of Religious Foundations.

The new Premier, addressing Parliament on May 6, promised a speedy settlement of the difficulties with Great Britain, a census, reorganization of the army, and further government encouragement of both housing and education. He was unable to secure a working majority, however, due to Nationalist opposition and the resulting cabinet crisis was not resolved until the announcement at Bagdad (September 19) that the British government would recommend Iraq's admittance to the League. Abdul Mohsen Es Saadun again accepted the Premiership of a cabinet which included the strongly nationalistic Yashin Pasha Hashimi. Abdul Mohsen committed suicide (November 13), due to criticism of his policies with respect to the independence negotiations. He was succeeded by Nazi Bey Suwaidi, former Minister of the Interior.

Sir Gilbert Clayton, British High Commissioner for Iraq, who had succeeded Sir Henry Dobbs in March, died suddenly on March 11, 1928. Sir Francis

British Minister to Baghdad, was appointed his successor. The League of Nations on March 9 approved a proposal from the British government to establish a judicial system in Iraq which would place foreigners and natives on the same legal basis. This was followed by distinct improvement in relations between Iraq and Persia. See GREAT BRITAIN, under *History*, *Mandates*, *League of Nations*.

IRELAND The smaller of the two main British Isles, with an area of 32,586 square miles, politically divided into Northern and Southern Ireland, the former consisting of the parliamentary counties of Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone, and the parliamentary boroughs of Londonderry and Belfast, and the latter of the remaining 26 counties. Northern Ireland is under a separate Parliament and executive by the Government of Ireland Act of 1920 (see IRELAND, *NORTHERN*). The Southern counties constitute a self-governing dominion, known as the Irish Free State, under the Treaty of Dec 6, 1921 (See *IRISH FREE STATE*). The total population of the island June 13, 1921, was estimated at 4,485,000, as compared with 4,390,218 at the census of 1911. No census for all Ireland was taken in 1921. Statistics for Ireland as a whole are no longer available, but for the two divisions, they will be found under their respective titles, *IRELAND, NORTHERN*, and *IRISH FREE STATE*.

IRELAND, NORTHERN The northeastern part of Ireland, comprising six of the nine counties of Ulster (Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone), and the two parliamentary boroughs of Belfast and Londonderry. Capital, Belfast.

AREA, POPULATION, ETC. The area of Northern Ireland, exclusive of water, is 3,353,754 statute acres (also given as 5238 square miles). According to the census taken in 1926, the population was 1,256,561, as compared with 1,250,531 in 1911, the date of the previous census. The estimated population, as of June 30, 1928, was 1,248,-

000. The movement of population in 1927 was: Births, 26,676; deaths, 18,216; marriages, 7176. The population of Belfast was 415,007 in 1926. For the academic year 1927-28, there were 1948 public elementary schools with 201,688 pupils on roll, 71 secondary schools with 9013 pupils, 56 technical schools and 83 other centres with about 24,000 pupils, for higher education, Queen's University at Belfast, with 111 professors and lecturers and 1236 students in 1928.

PRODUCTION, ETC. Northern Ireland is distinctly an agricultural section. The pursuit of this occupation employs as many people as all others combined. The principal products are potatoes, cattle, bacon and hams, butter and eggs, the exportable surplus being shipped to Great Britain. The yield of the chief crops in 1927 was: Oats, 275,758 tons, potatoes, 1,057,010, turnips, 709,213, flax, 4988, hay, 945,236. Livestock in 1928 included 737,866 cattle, 624,503 sheep, 229,125 swine, 51,443 goats, 92,889 horses, and 8725 mules and asses. The two principal industrial enterprises are linen manufacturing and shipbuilding, both centred at Belfast. Other important manufactures are ropes and twines, tobacco, soaps, aerated waters, biscuits, spirits, hosiery, and underwear. No separate figures for commerce of Northern Ireland are available, as they are included in the general figures for the United Kingdom. From an industrial and commercial standpoint, 1929 was the leanest of a long succession of lean years. The continued depression in the linen industry, a six months' strike in the Belfast shipyards, and the decision of the White Star Line to postpone construction of a proposed 60,000-ton liner were important factors in the business situation.

FINANCE. The revenue received by the Northern Irish Exchequer in the fiscal year 1927-28 amounted to £11,024,000, while expenditures were £10,775,000. The budget for 1928-29 balanced at £10,842,000.

COMMUNICATIONS. In addition to 765 miles of railway, the country is served by various inland waterways, supplemented by 180 miles of canals. There were 12,971 miles of highway in 1928.

GOVERNMENT. Northern Ireland's local Parliament has restricted jurisdiction, the country forms an integral part of Great Britain and is represented in the House of Commons by 13 members. The district is subject to the same taxation as that of Great Britain. The Governor in 1929 was the Duke of Abercorn. The ministry was as follows: Prime Minister, Viscount Craigavon, Finance, H. M. Pollock, Home Affairs, Sir R. Dawson Bates, Labor, J. M. Andrews, Education, Viscount Charlemont, Agriculture, E. M. Aitchdale, Commerce, J. M. Barbour.

HISTORY. Nationalism was the primary issue in the general election held May 22 in which the Nationalist party under Joseph Devlin campaigned for a united Ireland. The Unionist (conservative) party, stood for a continuation of the British connection. The Unionists increased their majority in the Northern Ireland Parliament, winning 38 seats, as against 33 in the previous Parliament. The Nationalists elected all eleven candidates they put into the field, while the Labor and Liberal parties lost ground. In February, Eamonn de Valera was sentenced to a month in jail for a Northern Ireland court for entering Ulster in defiance of an exclusion order issued by the government. He refused a pardon offered him provided he promise not to repeat the offense.

IRISH FREE STATE. A self-governing dominion of the British Empire, constituted under the Irish Free State Government Act of Dec. 5, 1922, which embodied the terms of the Treaty of Dec. 6, 1921. Capital, Dublin.

AREA AND POPULATION. The Irish Free State comprises about five-sixths of the total area of all Ireland. According to the census of 1926, the total area was 17,019,155 statute acres, or 26,401 square miles. The population, according to this same census, was 2,971,922, as compared with 3,139,688 in 1911, estimated in 1927, 2,957,000. The loss in population is almost entirely due to emigration caused by unsatisfactory economic conditions in the dominion. The movement of population in 1927 was Births, 60,054, deaths, 43,677, marriages, 13,418, in 1904, emigrants, 27,148 (24,691 in 1925), Dublin had a population (within its registration area) in 1911 of 397,957. At the census of 1926, the population was 419,156. Other leading cities with their populations in 1926, were Cork, 78,490, Limerick, 39,448, and Waterford, 26,647.

At the time of the census of 1911, there were 2,812,509 Roman Catholics and 327,179 Protestants in what later became the Irish Free State. By the census of 1926, the Protestant population had decreased to about 100,000, a decline of 32.5 per cent. The decrease of the Protestant population was attributed mainly to opposition to the compulsory study of the Irish language.

EDUCATION. Free elementary education is provided in the national schools, which are under local managers subject to the Department of Education. The use of the Irish language as a medium of instruction has largely increased. In 1927-28 there were 516,666 pupils in the national elementary schools, 25,573 in secondary schools, and 3150 students in colleges and universities.

PRODUCTION. In 1927 there were 3,846,000 acres, or 22 per cent of the total land area of the Free State, under crops, 8,469,000 acres of grass and grazing mountain land, and 7800 acres under orchards and shrubs. An increase of 2 per cent in the cultivated area in 1928 was offset by excessively rainy weather, which reduced the yield of all important crops except turnips and sugar beets. The area and production of the principal crops in 1927 and 1928 are shown in the accompanying table. The smaller crops of wheat and potatoes in 1928 were partly due to the continued decrease in acreage. Livestock in the country on June 1, 1928, included 4,125,000 cattle, 1,183,000 swine, 3,264,000 sheep, 434,000 horses, 196,000 asses, and 19,000 mules. Hogs slaughtered in 1928 numbered 878,000, and the production of cured pork amounted to 133,291,000 pounds. Exports of livestock increased 16 per cent during the year. In 1928 the fish catch totaled 40,

641,000 pounds, valued at \$1,544,000, as compared with 60,566,000 pounds, valued at \$1,650,000 in the previous year.

The total net output of Irish mines and factories in 1928, according to the census of that year, was £24,190,000 (\$118,000,000), after subtracting the cost of materials, fuel and power from the gross value of the products. Salaries and wages totaling \$13,200,000 (\$64,200,000) were paid to 107,300 workers. Butter, cheese, margarine, milled grain, and liquors were the leading manufactured products, the output of each totaling about £7,000,000. Other manufactured products were cured bacon, tobacco, bread, confectionery, and biscuits. All manufacturing industries increased their output in 1928, except breweries and distilleries, the production of malt liquors falling from 2,130,000 barrels in 1927 to 1,956,000 barrels in 1928, and of whisky, from 883,000 gallons in 1927 to 560,000 gallons in 1928.

The industrial situation improved during 1928 and remained satisfactory in 1929. Distribution of electric current from the newly completed Shannon power plant to Dublin and other communities began in the autumn of the latter year and provision for the supply of current to the whole of the Free State during the winter was planned. Thousands of houses were wired on the hire-purchase system, the electricity used for lighting and domestic purposes being charged for at a fixed amount, dependent on the pool law valuation of the house. The cost of the Shannon project from its inception to Mar. 31, 1929, was placed at \$4,350,000. The number of insured workers at the beginning of 1929 totaled 280,905 and the number of insured workers unemployed in the preceding November was 27,724.

COMMERCE. Imports in 1928 were valued at \$291,270,000, as compared with \$295,665,000 in 1927, or a decrease of 1½ per cent, while domestic exports totaled \$221,868,000, as compared with \$214,701,000 in the previous year, an increase of 3 per cent. The unfavorable merchandise balance of \$70,402,000 in 1928 was \$11,500,000 lower than in the previous year. Imports of motor cars and oil products in both 1928 and 1929 showed considerable increases, reflecting the rising prosperity of the country. The exports in 1928 were chiefly live animals and animal products, while the principal import included foodstuffs, tobacco, leather products, horses, cotton piece goods, coal, oil products, iron and steel manufactures, and motor cars and parts. Great Britain and Northern Ireland furnished 68 and 10 per cent, respectively, of the imports and purchased 85 and 11 per cent, respectively, of the total exports. Exports to the United States, always relatively unimportant, declined by 28 per cent. Foreign trade conditions in 1929 continued favorable and the unfavorable trade balance was further reduced, according to preliminary estimates.

FINANCE. Actual revenues of the Free State Government during the fiscal year ending Mar. 31, 1929, totaled £24,221,000 and actual expenditures, £25,395,000. The budget for 1928-29 showed a slight increase, due to appropriations for a heavier debt service to meet capital expenditures of the preceding five years. Increased duties were imposed on sugar, rubber tires, commercial vehicles, and the rates of the excise and income-tax schedules revised to swell collections. Receipts for the year were slightly above the estimates, while expenditures were lower than in 1927-28. The

FREE STATE CROPS AREA AND PRODUCTION

Crop	Area ^a		Production ^b	
	1927	1928	1927	1928
Wheat	34	31	1,421	1,186
Rye	6	5	170	150
Barley	121	129	6,295	6,146
Oats	645	649	46,735	44,610
Potatoes	365	364	91,212	83,863
Turnips	183	189	3,478	3,534
Sugar beets	18	17	134	140
Mangels	40	85	1,618	1,600
Hay	2,183	2,155	4,892	4,719
Flax	6	8	2,218	2,637

^a Thousands of acres

^b Thousands of units—bushels, except as indicated

^c Unit, long ton ^d Unit, pound

chief items of revenue were The income and property tax, £4,307,000, customs, £7,159,000; excise, £6,794,000, stamp, estate, and other taxes, £2,620,000 Expenditures were apportioned as follows Debt service, £1,594,000, war pensions, £1,934,000; old-age pensions, £2,678,000; education, science, art, etc., £4,505,000, post office (gross), £2,232,000, local grants, £742,000, property-loss compensation, £438,000; all other, £11,466,000 The 1928-30 budget estimated expenditures at £25,441,000 and receipts at £23,964,000

The public debt as of Mar 31, 1928, amounted to £19,466,000 (\$94,731,000), excluding the liability of about £5,000,000 assumed under the treaty concluded with Great Britain in December, 1925, and the contribution to the deficit under the British land acts of about £2,500,000 Currency in circulation in December, 1928, amounted to £12,335,000 and the reserves deposited in the Bank of England to £6,688,000, as compared with a currency circulation of £15,045,000 and reserves of £9,229,000 in December, 1927 New bank notes in £1, £5, and £10 denominations were issued by the Free State Currency Commission on May 6, 1929, in accordance with the provisions of the Currency Act of 1927

COMMUNICATIONS The railways, for the most part controlled by private companies, had a total of 3028 miles of line in 1928 and during that year carried 22,633,000 passengers and 4,011,000 long tons of freight, the total gross receipts amounting to £5,778,000 Gross receipts in 1927 totaled £6,005,000, and in 1926, £7,379,000 The declining revenues were due to increasing motor transportations services, which practically doubled in 1928 A total of 13,500 vessels of 9,408,000 net registered tons entered Irish Free State ports in 1928, and 13,403 vessels of 9,447,000 net registered tons cleared Telegraph and telephone systems were government owned In 1927 there were 6877 miles of telegraph line and 74,981 miles of telephone wire

GOVERNMENT The Irish Free State has a written constitution which provides that her status shall be similar to that of the Dominion of Canada It has a coequal status with the other dominions of the United Kingdom, has complete control of its economic life, with a customs-boundary right against all nations, including Great Britain and Northern Ireland The Governor-General in 1929 was James MacNeill, appointed Dec 6, 1927 The Executive Council as organized in October, 1927, was as follows President, William T Cosgrave, Vice President, Finance, Posts and Telegraphs, Ernest Blythe, Defense, Desmond Fitzgerald, Industry and Commerce and External Affairs, Patrick McGilligan, Education, J. Marcus O'Sullivan, Agriculture, Patrick Hogan, Local Government and Public Health, Richard Mulcahy, Lands and Fisheries, Finian Lynch

HISTORY

The Free State experienced another comparatively peaceful year in 1929, the political struggle between the Government and Eamonn de Valera's Republican organization, Fianna Fail, continuing for the most part on a constitutional basis There was a temporary revival of political terrorism early in the year, however, jury members were threatened, injured, and murdered, and it was found necessary to assign armed guards to protect members of the government, which put

into effect drastic public-safety measures and appealed for popular support, but barely carried a by-election in North Dublin fought on this issue Outside the political sphere, the year was marked by the virtual completion of the Shannon River power project (see above) and by steady economic and industrial progress

Amicable relations with Great Britain were furthered during the year by the friendly attitude of the Labor government. An interesting constitutional question was reported to have been raised by the Irish government in connection with the composition of the Council of State formed to act for King George during his illness The Free State was said to hold that if the council was to include members not belonging to the royal family, the dominions should have been consulted as to its composition and represented upon it In this connection, it was recalled that when Professor Timothy Smiddy was recalled as the Free State Minister in Washington the papers were signed only by Queen Mary, the Prince of Wales, and the Duke of York.

Abolition of the jurisdiction exercised by the Judicial Committee of the Privy Council in the Free State under the terms of the Anglo-Irish Treaty was also demanded during the year by a section of Irish opinion headed by Ernest Blythe, Minister of Finance, and Patrick McGilligan, Minister for External Affairs The authority possessed by the Privy Council, it was felt, was inconsistent with Free State autonomy and would militate against the Free State in financial and other disputes with Great Britain and in its relations with Northern Ireland An important dispute with Northern Ireland arose over the control of fishery rights in Lough Foyle, which Free State authorities were evidently unwilling to submit to the decision of the Privy Council The action of the Free State Government in signing unconditionally in September the optional clause of the World Court statute, pledging itself to accept the compulsory jurisdiction of the Court in international disputes, was reported to be chiefly inspired by the hope that such a move would aid in abolishing the jurisdiction of the Privy Council

Foreign Minister M. Collins brought up the question at a special conference of dominion delegates held in London in December There, the British delegation under Lord Passfield, Secretary for Dominion Affairs and the Colonies, took the line that they were fully prepared to amend or modify any existing statutes that could be held to conflict with the doctrine of coequality of the various nations forming the British Commonwealth, as set forth at the imperial conference of 1926 There was criticism in the House of Lords on December 3 of Mr Blythe's assertion that the Free State was determined to abolish the right of appeal from the Free State Supreme Court to the Privy Council Lord Passfield assured the Lords that the whole question would be aired at the imperial conference in 1930 and that, if all the dominions concurred, the right of appeal could be ended

Another possible source of dispute with Great Britain arose through the Fianna Fail proposal that the government repudiate annuities on Irish Land Stock held in Great Britain President Cosgrave and his cabinet termed the proposal an attempt at "national embezzlement" and this stand was supported by the Roman Catholic clergy. The issue was fought out in a by-election

in T. J. S. S. during the summer in which the Fianna Fail candidate was decisively defeated by General Macceon, the government standard bearer.

The government's censorship bill, passed by the Dail Eireann during the last week of July, aroused widespread interest and considerable criticism. It provided that all books, newspapers, and periodicals entering or published in the Free State shall be censored by a board of five members appointed by the Minister of Justice. Publications advocating birth control are specifically prohibited and all others are liable to suppression if found to be "indecent, obscene, or likely to corrupt or deprave." The right of defense is given authors, editors, and publishers.

Other events of the year included the ratification of the Kellogg Briand Peace Pact by the Dail on February 22, with the Fianna Fail party voting in opposition, the exchange of diplomatic representatives between the Free State and Vatican City, and a declaration by President Cosgrave during a debate on unemployment (November 14) that, for the first time in many years, emigration from the Irish Free State was rapidly declining. On January 9, Michael MacWhite was named Minister to the United States. See GREAT BRITAIN, under *History*; IRELAND, *NORTHERN*, *WORD* (*OUT*).

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IRISH LANGUAGE AND LITERATURE

See *PHILOLOGY*, *MODERN*.

IRON AND STEEL.

The iron ore mined in the United States in 1929, exclusive of ore that contained 5 per cent or more of manganese in the natural state, was estimated by the U. S. Bureau of Mines, at 73,283,000 gross tons, an increase of 18 per cent, as compared with that mined in 1928. The ore shipped from the mines in 1929 was estimated at 75,589,000 gross tons, valued at \$197,007,000, an increase of 19 per cent in quantity and of 26 per cent in total value, as compared with the figures for 1928. The average value of the ore per gross ton at the mines in 1929 was estimated at \$2.61, in 1928 it was \$2.46. The stocks of iron ore at the mines, mainly in Michigan and Minnesota, apparently decreased from 9,190,061 gross tons in 1928 to 7,102,000 tons in 1929, or 23 per cent. The Bureau of Mines estimates were based on preliminary figures furnished by producers who in 1928 mined about 99 per cent of the total iron ore. They show the totals for the principal non-ore producing States, and, by grouping together certain States, the totals for the Lake Superior district and for groups of Southeastern, Northeastern, and Western States.

About 86 per cent of the iron ore shipped in 1929 came from the Lake Superior district, in which approximately 63,059,000 gross tons were mined and 65,129,000 tons were shipped, increases of 20 and 21 per cent, respectively, as compared with the quantities mined and shipped in 1928. The ore shipped in 1929 was valued at the mines at \$174,717,000, an increase of 29 per cent. These totals include the ore from mines in southern Wisconsin and ore shipped by rail, as well as by water, from all mines, but exclude manganese ores amounting to approximately 1,048,000 gross tons in 1929 and 1,077,705 tons in 1928 that contained 5 per cent or more of manganese in the natural state. The ore is chiefly hematite. The

stocks of iron ore in this district apparently decreased from 7,926,199 gross tons in 1928 to 6,101,000 tons in 1929, or 23 per cent. The stocks at the end of 1929 were about 3,000,000 tons less than the average for the preceding five years. The shipments of iron ore by water from the Lake Superior district in 1929 (including manganese iron ores), according to the Lake Superior Iron Ore Association, amounted to 65,204,600 gross tons, an increase of 21 per cent, as compared with these shipments in 1928. The average value of the ore at the mines in the Lake Superior district in 1929 was \$2.68 a ton, in 1928 it was \$2.51.

The Southeastern States, which constitute the second largest non-ore producing area, including the Birmingham and Chattanooga districts, mined approximately 6,794,000 gross tons of iron ore in 1929, an increase of 2 per cent, as compared with 1928. The shipments of iron ore from mines in these States in 1929 amounted to 6,975,000 gross tons, valued at \$13,790,000, increases of 8 and 10 per cent, respectively, in quantity and value, as compared with 1928. The ore is mainly hematite, brown ore and magnetite come next in order. The average value of the ore produced in these States in 1929 per gross ton was \$1.98, in 1928 it was \$1.94. The stocks of iron ore at the mines in this group of States, mainly in the Birmingham district, decreased from 1,019,667 gross tons in 1928 to 839,000 gross tons in 1929. These stocks are about 300,000 tons less than the average for the preceding five years.

The Northeastern States, which include the Adirondack district, New York and the Cornwall district, Pennsylvania, in 1929 mined 2,235,000 gross tons of iron ore and shipped 2,290,000 tons, valued at \$6,897,000, increases of 12 per cent in quantity mined, 7 per cent in quantity shipped, and 3 per cent in value of shipments, compared with 1928. The stocks of iron ore in this group of States decreased from 232,030 gross tons in 1928 to 150,000 tons in 1929. These stocks are considerably less than usually carried over at these mines, being about 229,000 tons below the average for the preceding five years. The average value of the ore in these States in 1929 per gross ton was \$3.01, in 1928 it was \$3.13. Most of this ore is magnetite.

The Western States that ordinarily produce iron ore named in the order of their importance are Wyoming, Utah, New Mexico, Colorado, Montana, and Washington. Occasionally, California, Idaho, and Nevada contribute small quantities. All the ore from Wyoming and Colorado and most of that from Utah and New Mexico are used for the manufacture of pig iron. Much of the remainder is used as a flux in smelting copper and the precious metals. It was estimated that the Western States mined and shipped in 1929 approximately 1,195,000 gross tons of iron ore, valued at \$1,603,000, an increase of 14 per cent in the quantities mined and shipped and of 3 per cent in value of shipments, as compared with 1928. The ore comprises hematite, magnetite, and brown ore.

IMPORTS AND EXPORTS OF IRON ORE. The imports of iron ore reported for the 11 months ended Nov. 30, 1929, amounted to 2,853,279 gross tons, valued at \$7,369,823, or \$2.58 a ton. The imports for the year 1928 were 2,452,646 gross tons, valued at \$5,428,019, or \$2.21 a ton. The reported exports of iron ore for the 11 months ended Nov. 30, 1929, amounted to 1,302,019 gross

chief items of revenue were: The income and property tax, £4,307,000; customs, £7,159,000; excise, £6,794,000, stamp, estate, and other taxes, £2,620,000. Expenditures were apportioned as follows: Debt service, £1,594,000, war pensions, £1,934,000, old-age pensions, £2,678,000; education, science, art, etc., £4,505,000; post office (gross), £2,232,000, local grants, £742,000, property-loss compensation, £438,000; all other, £11,406,000. The 1929-30 budget estimated expenditures at £25,441,000 and receipts at £23,964,000.

The public debt as of Mar. 31, 1928, amounted to £19,466,000 (\$94,731,000), excluding the liability of about £5,000,000 assumed under the treaty concluded with Great Britain in December, 1925, and the contribution to the deficit under the British land acts of about £2,500,000. Currency in circulation in December, 1928, amounted to £12,335,000 and the reserves deposited in the Bank of England to £6,888,000, as compared with a currency circulation of £15,045,000 and reserves of £9,229,000 in December, 1927. New bank notes in £1, £5, and £10 denominations were issued by the Free State Currency Commission on May 6, 1929, in accordance with the provisions of the Currency Act of 1927.

COMMUNICATIONS The railways, for the most part controlled by private companies, had a total of 3028 miles of line in 1928 and during that year carried 22,633,000 passengers and 4,011,000 long tons of freight, the total gross receipts amounting to £5,778,000. Gross receipts in 1927 totaled £6,005,000, and in 1926, £7,379,000. The declining revenues were due to increasing motor transportations services, which practically doubled in 1928. A total of 13,500 vessels of 9,408,000 net registered tons entered Irish Free State ports in 1928, and 13,463 vessels of 9,447,000 net registered tons cleared. Telegraph and telephone systems were government owned. In 1927 there were 6877 miles of telegraph line and 74,981 miles of telephone wire.

GOVERNMENT The Irish Free State has a written constitution which provides that her status shall be similar to that of the Dominion of Canada. It has a coequal status with the other dominions of the United Kingdom, has complete control of its economic life, with a customs-boundary right against all nations, including Great Britain and Northern Ireland. The Governor-General in 1929 was James MacNeill, appointed Dec. 6, 1927. The Executive Council as organized in October, 1927, was as follows: President, William T. Cosgrave, Vice President, Finance, Posts and Telegraphs, Ernest Blythe; Defense, Desmond Fitzgerald, Industry and Commerce and External Affairs, Patrick McGilligan, Education, J. Marcus O'Sullivan, Agriculture, Patrick Hogan, Local Government and Public Health, Richard Mulcahy; Lands and Fisheries, Finian Lynch.

HISTORY

The Free State experienced another comparatively peaceful year in 1929, the political struggle between the Government and Eamonn de Valera's Republican organization, Fianna Fail, continuing for the most part on a constitutional basis. There was a temporary revival of political terrorism early in the year, however; jury members were threatened, injured, and murdered, and it was found necessary to assign armed guards to protect members of the government, which put

into effect drastic public-safety measures and appealed for popular support, but barely carried a by-election in North Dublin fought on this issue. Outside the political sphere, the year was marked by the virtual completion of the Shannon River power project (see above) and by steady economic and industrial progress.

Amicable relations with Great Britain were furthered during the year by the friendly attitude of the Labor government. An interesting constitutional question was reported to have been raised by the Irish government in connection with the composition of the Council of State formed to act for King George during his illness. The Free State was said to hold that if the council was to include members not belonging to the royal family, the dominions should have been consulted as to its composition and represented upon it. In this connection, it was recalled that when Professor Timothy Smiddy was recalled as the Free State Minister in Washington, the papers were signed only by Queen Mary, the Prince of Wales, and the Duke of York.

Abolition of the jurisdiction exercised by the Judicial Committee of the Privy Council in the Free State under the terms of the Anglo-Irish Treaty was also demanded during the year by a section of Irish opinion headed by Ernest Blythe, Minister of Finance, and Patrick McGilligan, Minister for External Affairs. The authority possessed by the Privy Council, it was felt, was inconsistent with Free State autonomy and would militate against the Free State in financial and other disputes with Great Britain and in its relations with Northern Ireland. An important dispute with Northern Ireland arose over the control of fishery rights in Lough Foyle, which Free State authorities were evidently unwilling to submit to the decision of the Privy Council. The action of the Free State Government in signing unconditionally in September the optional clause of the World Court statute, pledging itself to accept the compulsory jurisdiction of the Court in international disputes, was reported to be chiefly inspired by the hope that such a move would aid in abolishing the jurisdiction of the Privy Council.

Foreign Minister McGilligan brought up the question at a special conference of dominion delegates held in London in December. There, the British delegation under Lord Passfield, Secretary for Dominion Affairs and the Colonies, took the line that they were fully prepared to amend or modify any existing statutes that could be held to conflict with the doctrine of coequality of the various nations forming the British Commonwealth, as set forth at the imperial conference of 1926. There was criticism in the House of Lords on December 3 of Mr. Blythe's assertion that the Free State was determined to abolish the right of appeal from the Free State Supreme Court to the Privy Council. Lord Passfield assured the Lords that the whole question would be aired at the imperial conference in 1930 and that, if all the dominions concurred, the right of appeal could be ended.

Another possible source of dispute with Great Britain arose through the Fianna Fail proposal that the government repudiate annuities on Irish Land Stock held in Great Britain. President Cosgrave and his cabinet termed the proposal an attempt at "national embezzlement" and this stand was supported by the Roman Catholic clergy. The issue was fought out in a by-election

in Leitrim-Sligo during the summer in which the Fianna Fail candidate was decisively defeated by General Maceoin, the government standard bearer.

The government's censorship bill, passed by the Dail Eireann during the last week of July, aroused widespread interest and considerable criticism. It provided that all books, newspapers, and periodicals entering or published in the Free State shall be censored by a board of five members appointed by the Minister of Justice Public.

Birth control are specifically ; others are liable to suppression it found to be "indecent, obscene, or likely to corrupt or deprave." The right of defense is given authors, editors, and publishers.

Other events of the year included the ratification of the Kellogg Briand Peace Pact by the Dail on February 22, with the Fianna Fail party voting in opposition, the exchange of diplomatic representatives between the Free State and Vatican City, and a declaration by President Cosgrave during a debate on unemployment (November 14) that, for the first time in many years, emigration from the Irish Free State was rapidly declining. On January 9, Michael MacWhite was named Minister to the United States. See GREAT BRITAIN, under *History*; IRELAND, NORTHERN, WORLD COURT.

BIBLIOGRAPHY. An interesting volume was Denis Gwynn, *The Irish Free State* (New York, 1928).

IRISH LANGUAGE AND LITERATURE

See PHILOLOGY, MODERN.

IRON AND STEEL.

The iron ore mined in the United States in 1929, exclusive of ore that contained 5 per cent or more of manganese in the natural state, was estimated by the U. S. Bureau of Mines, at 73,283,000 gross tons, an increase of 18 per cent, as compared with that mined in 1928. The ore shipped from the mines in 1929 was estimated at 75,589,000 gross tons, valued at \$197,007,000, an increase of 19 per cent in quantity and of 26 per cent in total value, as compared with the figures for 1928. The average value of the ore per gross ton at the mines in 1929 was estimated at \$2.61, in 1928 it was \$2.46. The stocks of iron ore at the mines, mainly in Michigan and Minnesota, apparently decreased from 9,190,061 gross tons in 1928 to 7,102,000 tons in 1929, or 23 per cent. The Bureau of Mines estimates were based on preliminary figures furnished by producers who in 1928 mined about 99 per cent of the total iron ore. They show the totals for the principal iron-ore producing States, and, by grouping together certain States, the totals for the Lake Superior district and for groups of Southeastern, Northeastern, and Western States.

About 86 per cent of the iron ore shipped in 1929 came from the Lake Superior district, in which approximately 63,059,000 gross tons were mined and 65,129,000 tons were shipped, increases of 20 and 21 per cent, respectively, as compared with the quantities mined and shipped in 1928. The ore shipped in 1929 was valued at the mines at \$174,717,000, an increase of 29 per cent. These totals include the ore from mines in southern Wisconsin and ore shipped by rail, as well as by water, from all mines, but exclude manganese ores amounting to approximately 1,048,000 gross tons in 1929 and 1,077,705 tons in 1928 that contained 5 per cent or more of manganese in the natural state. The ore is chiefly hematite. The

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IMPORTS AND EXPORTS OF IRON ORE. The imports of iron ore reported for the 11 months ended Nov. 30, 1929, amounted to 2,853,279 gross tons, valued at \$7,369,823, or \$2.58 a ton. The imports for the year 1928 were 2,452,646 gross tons, valued at \$5,428,019, or \$2.21 a ton. The reported exports of iron ore for the 11 months ended Nov. 30, 1929, amounted to 1,302,019 gross

tons, valued at \$4,762,475, or \$3 86 a ton, as compared with exports for the entire year 1928 of 1,282,306 tons, valued at \$4,797,881, or \$3 74 a ton.

The following table shows the value of the iron ore mined and the United States by the principal producing States. The figures for 1928 are final, but those for 1929 are subject to revision.

ESTIMATES OF IRON ORE MINED AND SHIPPED IN THE UNITED STATES IN 1929 AND ACTUAL OUTPUT IN 1928

District	Ore mined		Ore shipped		1929	
	1928 Gross tons	1929 Gross tons	1928 Gross tons	Value	1929 Gross tons	Value
Lake Superior						
Michigan	13,676,984	15,560,000	14,241,102	\$37,039,844	16,841,000	\$47,679,000
Minnesota	37,564,005	45,878,000	38,129,018	91,258,899	46,496,000	122,188,000
Wisconsin	1,284,592	1,621,000	1,391,371	1,700,797	1,790,000	4,850,000
Total	52,525,581	61,059,000	53,764,491	114,999,340	65,129,000	174,717,000
Southeastern States						
Alabama	6,307,844	6,435,000	6,159,863	11,599,176	6,616,000	12,646,000
Georgia	78,052	63,000	73,052	209,877	63,000	192,000
Missouri	94,899	164,000	94,899	177,847	164,000	647,000
North Carolina		34,000			34,000	94,000
Tennessee	128,928	98,000	128,478	286,521	98,000	211,000
Virginia	27,902		27,970	83,114	(*)	(*)
Total	6,632,623	6,794,000	6,484,262	12,556,538	6,975,000	13,790,000
Northeastern States						
New Jersey	250,332	278,000	350,616	1,357,877	281,000	1,170,000
New York	712,757	830,000	767,743	2,906,055	861,000	2,857,000
Pennsylvania	1,023,870	1,127,000	1,013,791	2,411,114	1,148,000	2,870,000
Total	1,986,959	2,235,000	2,132,150	6,675,046	2,290,000	6,897,000
Western States	1,051,923	1,195,000	1,051,923	1,557,733	1,195,000	1,601,000
Grand total	62,197,088	73,283,000	63,432,826	155,788,657	75,589,000	197,007,000

* Virginia reported shipments of 232 gross tons, valued at \$671

UNITED STATES STEEL PRODUCTION All previous records for steel ingot production in the United States were exceeded in 1929 when the annual output of all companies was estimated at 54,164,348 tons, by the American Iron and Steel Institute. This compared with the previous peak of 49,865,185 tons, established in 1928. The capacity of all mills in the country was estimated at about 64,000,000 tons, so that the 1929 total was within about 14,000,000 tons of the plant limit. The approximate daily output of all companies in 1929 was 174,162 tons and the percentage of operation throughout the full year was 88.81. The daily output in 1928 was 160,338 tons and the percentage of operation, 85.05. The number of working days in 1929 was 311, the same as in 1928. The accompanying table gives the monthly comparison of ingot production in tons for three years.

U S STEEL INgot PRODUCTION

	1929	1928	1927
January	4,490,154	3,990,902	3,789,874
February	4,326,000	4,043,457	3,812,046
March	5,058,258	4,507,217	4,468,617
April	4,938,025	4,305,182	4,106,799
May	5,274,167	4,207,212	4,047,951
June	4,881,370	3,743,903	3,495,609
July	4,838,093	3,805,598	3,204,135
August	4,927,258	4,178,610	3,498,549
September	4,510,879	4,147,893	3,268,881
October	4,511,650	4,649,908	3,316,292
November	3,513,025	4,266,815	3,127,015
December	2,896,269	4,016,208	3,175,484

The average daily outputs in tons for three years are compared in the accompanying table.

Open-hearth steel-ingot production in 1929 totaled 44,103,406 tons and Bessemer, 7,087,261, while open-hearth production in 1928 was 40,538,657 tons and Bessemer, 6,591,217. See METALLURGY.

UNITED STATES PIG IRON PRODUCTION American pig iron production in 1929 reached a peak total of 42,285,769 tons, or nearly 5 8 per cent higher than the previous record of 40,361,146 tons.

in 1923. The daily average production of pig iron for the first half of the year was 119,564 tons and for the entire year 115,851 tons. A large use of scrap iron was indicated by the fact that the out-

AVERAGE DAILY OUTPUT STEEL INGOTS

	1929	1928	1927
January	166,309	153,496	145,613
February	180,250	161,738	158,785
March	194,548	166,934	167,960
April	189,824	172,215	158,744
May	195,302	175,821	155,663
June	195,255	143,966	134,446
July	186,080	152,224	128,165
August	182,491	151,761	129,576
September	180,475	165,916	125,726
October	167,098	172,221	127,550
November	115,116	164,109	120,270
December	115,851	160,728	122,134

put of steel ingots was nearly 12,000,000 tons larger than the output of pig iron. Pig iron prices started to climb in the autumn of 1928 and remained fairly uniform during 1929. The Iron Age composite price in March, 1929, was \$18 29 a gross ton, in May \$18 71, and in December, after irregular reductions, \$18 21. As compared with 1928, the total pig iron production increased by 12 per cent.

IRON AND STEEL EXPORTS Exports of iron and steel from the United States in 1929 totaled 3,032,352 gross tons, valued at \$200,428,051, as compared with 2,865,103 tons valued at \$179,880,182 in 1928. The average values per ton of exports were \$66 10 in 1929 and \$62 78 in the previous year. The gain of \$20,547,872 in the value of exports in 1929 represented an increase of 11 4 per cent. Canada, as usual, was the largest

buyer of American iron and steel products, taking about 41 per cent of the total exports Japan, Italy, Mexico, the Philippines, Argentina, Poland, and China ranked next in order.

Imports of iron and steel into the United States in 1929 totaled 739,004 gross tons, or 43,668 tons less than in 1928.

WORLD PRODUCTION World production of both pig iron and steel rose to record levels in 1929, the steel output for 21 countries totaling about 117,850,000 gross tons, or 9 per cent more than in 1928, while the pig iron output of 96,180,000 tons was 10.6 per cent higher. As compared with the prewar year of 1913, steel production in 1929 represented a 60 per cent increase and pig iron production and 24 per cent increase. Comparative figures for the iron and steel production of the respective countries in 1929 and in preceding years and also for steel exports and imports of the leading producers are given in the tables compiled by the *Iron Age*.

TABLE OF WORLD PRODUCTION OF PIG IRON
(In millions of gross tons)

Country	1913	1927	1928	1929*
United Kingdom	10.26	7.29	6.61	7.58
Germany	16.50	12.90	11.62	13.40
France	5.13	9.15	9.82	10.30
Belgium	2.45	3.69	3.84	4.00
Luxembourg	2.51	2.69	2.73	2.83
Near		1.74	1.91	2.10
Russia	4.49	2.92	3.22	4.09
Poland		0.61	0.67	0.70
Norway		0.08	0.08	0.10
Sweden		0.71	0.41	0.43
Italy		0.43	0.53	0.56
Austria			0.41	0.45
Hungary		2.34	0.29	0.30
Czechoslovakia			1.24	1.54
Spain		0.42	0.60	0.58
United States	30.97	36.57	38.16	42.70
Canada		1.01	0.77	1.08
Australia		0.04	0.55	0.49
India		0.20	1.15	1.05
Japan		0.24	1.26	1.50
China			0.40	0.40
Total	77.72	85.27	86.96	96.48

* Partly estimated. Lorraine's output is included in Germany's in 1913, but in that of France since 1918.

* Includes other countries.

TABLE OF WORLD PRODUCTION OF STEEL IN
GOTS AND CASTINGS
(In millions of gross tons)

Country	1913	1927	1928	1929*
United Kingdom	7.66	9.10	8.52	9.65
Germany	17.33	16.06	14.29	16.25
France	4.61	8.14	9.35	9.53
Belgium	2.43	3.66	3.87	4.05
Luxembourg	1.31	2.43	2.53	2.65
Near		1.26	2.04	2.15
Russia	4.76	3.53	4.18	4.65
Poland		1.23	1.41	1.45
Sweden	0.58	0.49	0.57	0.62
Spain	0.30	0.65	0.78	0.80
Austria		0.55	0.63	0.65
Hungary		0.46	0.48	0.48
Czechoslovakia		2.59	1.60	1.95
Italy		0.92	1.57	1.93
United States	81.30	44.94	51.54	56.15
Canada		1.04	0.92	1.24
Australia		0.52	0.46	0.42
India		0.57	0.41	0.50
Japan		1.70	1.84	2.00
China		0.20	0.20	0.28
Total	74.88	100.18	108.22	117.81

* Partly estimated. Lorraine's output is included in Germany's in 1913, but in that of France since 1918.

* Includes other countries.

European producing nations accounted for 48,630,000 gross tons, or 50.5 per cent of the total world pig iron output in 1929, and 57,050,000

TABLE OF STEEL EXPORTS AND IMPORTS OF
LEADING COUNTRIES
(In millions of gross tons)

Exports	1913	1927	1928	1929*
United States	2.89	1.94	2.35	2.54
Great Britain	4.97	4.20	4.26	4.40
Germany	6.20	4.23	4.61	5.40
France	0.58	0.60	0.49	0.45
Belgium	1.55	4.61	4.48	4.40
Total	16.19	20.58	20.70	20.99
Imports	1913	1927	1928	1929*
United States	0.25	0.69	0.69	0.68
Great Britain	2.23	4.41	2.89	2.76
Germany	0.30	2.23	2.02	1.47
France	0.17	0.13	0.14	0.23
Belgium	0.87	0.64	0.87	1.00
Total	3.82	8.10	6.61	6.14
Export excess	12.37	12.48	14.09	14.85

* Partly estimated. Luxembourg included in Belgian total. Scrap not included in these data.

tons, or 48.5 per cent, of the total steel production. Of the five leading iron and steel producing nations of the world, the United States, Germany, and Great Britain increased their exports in 1929, as compared with 1928, while exports from France and Belgium (including Luxembourg) declined slightly. Conversely, the United States, Germany and Great Britain all showed decreases in iron and steel imports, while France and Belgium increased their imports.

German production of pig iron totaled 13,397,000 tons (11,620,000 in 1928) and of steel 16,234,000 tons (16,000,000 in 1928). Exports of iron and steel from Germany increased nearly 1,000,000 tons, totaling 5,120,043 tons in 1929 and 4,309,716 in 1928. Imports declined to 1,441,054 tons from the 1928 figure of 2,035,712 tons. The exports were the highest since 1913 and the imports the lowest since 1926. The output of the British steel mills in 1929 was 9,654,700 tons, as against 8,519,300 in 1928, while pig iron production increased to 7,579,500 tons from 6,610,100 tons in 1928. British steel production in 1929 was exceeded only in one year—1917, when the total output reached 9,716,544 tons. Steel exports totaled about 4,400,000 tons, as against 4,260,000 tons in 1928. Steel imports declined to approximately 2,760,000 tons from 2,890,000 tons in 1928.

The French iron and steel industry was unsettled during the last quarter of 1929 due to efforts of the Continental Steel Entente to maintain prices by a reduction in tonnage allotments. Nevertheless, the total production of pig iron increased to about 10,296,000 tons, or 5 per cent more than in 1928, while the steel output of 9,530,000 tons was 6 per cent above the 1928 figure. French exports of steel were estimated at 4,250,000 tons (4,990,000 in 1928) and imports at 230,000 tons (140,000 in 1928).

The Belgium-Luxembourg industry was likewise affected by the policies of the Continental Steel Entente and its condition became somewhat depressed toward the end of the year as export sales failed to keep pace with the high levels established during the first six months of the year.

Canadian pig iron production established a record for postwar years, amounting to 1,090,244 tons, or 5 per cent more than in 1928. The output of steel ingots and direct steel castings during 1929 amounted to 1,379,688 tons and constituted a record, being 11 per cent above the 1928 production.

STEEL AND IRON CARTELS World consumption of steel slackened somewhat in the closing months of 1929 and export prices showed a resultant depression. To maintain prices the Continental Steel Entente reduced its tonnage production programme by 10 per cent, effective November 1, with salutary effects upon the market. The International Steel Cartel agreement, which was to have expired Oct. 1, 1929, was provisionally extended to the end of March, 1930, the indications being that it would then be renewed for a definite term of years under an agreement for stricter and more direct production control as a substitute for the ineffective overproduction fines France and Belgium, as well as Germany, consistently produced more than their allotted quotas in 1929 and as a result increases in quotas were put into effect for the second and third quarters. In March the total annual quota was raised by 2,000,000 tons to 31,295,000 tons and the German monthly export quota was raised from 300,000 to 330,000 tons, in June the annual quota was again raised to 32,295,000 tons. Despite these increases Germany's overproduction amounted to 895,000 tons in the first quarter and 890,000 tons in the second quarter of the year. The September meeting of the cartel, while leaving the total annual quota at 32,295,000 tons, reduced the fines for overproduction by 25 per cent, and in October the 10 per cent reduction in production (not in quota) was agreed upon. On December 14 the cartel took the first step toward the formation of a joint sales organization, thereby removing one of the principal obstacles to Germany's agreement to the renewal of the cartel. It was planned to establish four identical sales cartels composed respectively of the industries of Germany and the Saar, Belgium and Luxemburg, France and the central European industries of Czechoslovakia, Austria, and Hungary, which would direct export sales of all plants in their respective areas, apportion orders on the basis of the 1929 export activity, and strive to maintain export prices.

Other developments in the field of iron and steel cartels were the renewal of the International Rail Cartel for six years and of the domestic German iron and steel cartels for about 10 years. A definite agreement was reached on April 11, 1929, subject to the renewal of the continental and domestic German tube cartels, under which the International Tube Cartel was to remain in effect until Mar. 31, 1935. Late in 1929 the International Wire Rod Cartel agreed to continue in existence until the end of 1931.

IRRADIATION TREATMENT. See **CANCER**.

IRRIGATION. See **RECLAMATION**.
ISOBROPYL. See **CHEMISTRY, INDUSTRIAL**.
ISOTOPES. See **CHEMISTRY, PHYSICS**.
ISTANBUL. The name for Constantinople formally adopted in 1929. See **TURKEY**.

ITALIAN LITERATURE. The 1929 season in Italy continued the discussions on the theatrical crisis, and the discussions on the technique of prose creations burst out into renewed vigor with Giovanni Papini's article, "Di questa letteratura" ("This Literature of Ours"), which appeared in the first issue of the new literary magazine, *Pègaso*. The season has witnessed the passing of two notable men of letters, Luciano Zdecoi and Marco Praga.

The theatrical crisis centring on the cinema versus legitimate drama and foreign drama versus native drama was fruitful of many sug-

gestions by dramatists, actors, and critics as to the *modus operandi* in the future of the Italian theatre. The *Giornale dell'arte* took up in detail the pros and cons as to the difficulties of the stock companies to interest the public with exclusive repertoires of native dramas. Apparently, the actors and dramatists are not viewing the situation in despair in view of the fact that, if the crisis existed in Italy, it existed also to a marked degree in countries throughout the world. The discussions, if nothing else, brought the Italian dramatists *vis à vis* with the fact that the "psychology of the theatre crowd" had to be taken more and more into consideration. The result has been that many of the authors have noticeably digressed from their usual theme and technique. See below, discussions on *Lasarus* of Pirandello and Chiarelli's *K 41*.

The literary weekly, *Picra letteraria* (now *Italia letteraria*) discussed fully the current polemic on prose creation as to whether narrative art of the future was to base its creations on foundations of literary tradition and history, or was to find its medium in introspection and "highly individual" "cerebration" with the view of "stilted" and "abortive" methods of past schools. The discussions started in 1928 and otherwise exhausted, found new impetus with Papini's article, "This Literature of Ours" mentioned above, in which he views the future of the Italian novel and drama pessimistically, drawing this subtle deduction with regard to the man of letters: "One of the deepest characteristics of our race, especially in the more representative types, is a highly developed sense of individuality. Italy is a country of lonely souls and dictators and not of men who are standardized. Personalist as he is, as a rule, the Italian can do many things he can express his own sentiments, dreams, and yearnings for the past, but looks rather to his political causes and external features than at the psychology of their protagonists. Or, finally, he can ridicule people and correct them, or define himself (satire, controversy), but he can never, or at least he can but badly, produce creatures of the imagination who talk and act like living people. In short, he will never succeed with the theatre and the novel, in the sense of *Shakespeare*, a *Molière*, a *Calderon*, or an *Ibsen*."

Papini goes on to say that the French influence on Italian literature has been especially harmful in that the two literatures are diametrically opposed to each other: the Italian will never attain French wit and lightness of touch. The Italian is a serious, heavy literature. It will always be more educative than amusing (see this discussion in *Herald-Tribune*, "Books," January 20). With this crushing accusation, Papini has far from convinced Italian intellectuals even though he has put them to think. All summed up, it seems that Papini is too hard on his Italian colleagues and their literature, he has had to sustain, in return for his statements, many an invective and many a tirade (see *Picra letteraria*, issues of January and February).

In this connection, we may say that another important event on the literary horizon in Italy last season was the publication of a new magazine devoted to arts and letters, *Pègaso* (Florence), edited by Ugo Ojetti. It appears that *Pègaso* started with material of polemical nature, launching an attack against the spirit or domination of criticism on literary production

(spirit of Croce). *Pegaso* should prove to be a magazine for the intellectuals. It will, let us hope, reflect much of the eclectic personality of its founder, Ugo Ojetta, preëminent as a writer and as a critic of arts and letters. Fortunately, too, it appears that it will draw its contributions from Italy's greatest. Let us hope that *Pegaso* will continue in its healthiness and vitality and give to Italy a magazine most representative of its geniuses and men of letters.

With regret must we note that with the passing of Luciano Zúccoli (pseudonym of Count d'Inglheim) and Marco Praga, Italy lost in the former a favorite novelist and in the latter a dramatist and critic of the first order. Zúccoli, who enjoyed in his lifetime universal renown, was especially familiar to the English public through his novel, *Things Greater Than He*. Zúccoli attained fame and success in Italian letters for having created a genre suited to his own northern Italian aristocracy, namely, the urban novel with its love theme and its psychological studies of women and children. Marco Praga died in January, 1929. Though not of universal fame, he was considered by many the dean of Italian dramatic critics (he wrote on the drama for *L'illustrazione*), and famous for his theatrical year book, *Cronache Teatrali* (Milan), much consulted by professionals and nonprofessionals.

Another notable event of 1929 was the official inauguration of the Royal Italian Academy, a national institution to function as arbiter in literary matters and in general to enhance the arts and sciences. Pirandello, Panzini, and Marinetti, the Futurist, were among the notables inducted into the Academy.

FICTION. The public favored the younger writers during 1929, notwithstanding the usual amount of interest shown the older and more renowned. Comisso, Cinelli, Moravia, Campanile, all in their twenties, or at most slightly over their thirties, contributed novels and prize novels of varied and sweeping subjects. First in order, we have *Gli indifferenti* (*The Indifferent*, Milan), the most successful and most commented-upon novel of the year of the 22-year-old Alberto Moravia. In a plot covering a period of three days, the author has contributed four masterful characterizations in a group that makes up a family of the upper Roman bourgeoisie: a mother conscious of nothing except the gratification of her middle-aged sensuality; a daughter who merely for a change of life hurls herself into deliberate relations with her mother's lover, without ability or inclination to analyze her act; a son, desiring aimlessly to be strong, superior, and motivated by what conventionality would require of persons under difficult circumstances, collapses miserably for all the idealism and morality he affects; then, the lover, representative of a class of "methodic libertines," contributes to the general delinquency and weakness of the family.

All four characters are *indifferent* to any sense of goodness or justice, and the novel, though appearing to be strictly amoral, suggests a strong necessity for morality if the status of our modern social system is not to suffer impairment or decomposition. Though most critics were favorable to the novel, opinions differed as to the ultimate evaluation of the work. Several scathing accusations were launched against the young writer for the use of an "old technique" to arouse interest when portraying several lewd scenes

with shocking realism. The book has withstood its adverse criticism. Adriano Tilgher, one of the ablest and keenest of Italian critics, proclaimed the youthful Moravia as the "new novelist" and his creation the "new novel" on the Italian literary horizon.

The Mondadori Academy Prize went to Delino Cinelli for his *Castiglion che Dio sol sa* (Milan), a novel bringing to mind Edna Ferber's charming *So Big*. This last creation of Cinelli has a bucolic background in which mother earth plays the principal part. Here is the gist of a critical judgment passed on the book (see *Italia che nasce*, April, 1929): "There is in this novel a sentiment for the soil altogether primitive, a soil against which men seem to be helpless creatures destined to play secondary rôles—slaves all attached to it by a chain of hatred and love, of work and of hope." In short, the novel portrays man in his attempt to master the soil, but for all he can do, he emerges from the unequal struggle crushed by his insignificance. This novel, with exception made to several lengthy and tiring episodes, rises to beauty by virtue of its note of sincerity and simplicity.

Giovanni Comisso received the Bagutta Prize for his novel, *Gente di mare* (*Seafaring People*, Milan, Treves), containing no specific plot other than a sequel of sketches of sea voyages of two brothers along the Adriatic shores. As a rest from the intellectual or novel à thèse, this book should meet much favor, especially for its colorful picturizations: strong hearts battling heavy seas, quaint Dalmatian ports, exotic Croatsians, contraband, and dashing episodes.

Giovannotti non esageriamo! c'è via detto anche alle ragazze (*Young Men, No Exaggeration!* And *This Goes for the Ladies Too!*, Milan), by Achille Campanile, was selected as one of the best novels of 1929 in competition for the Thirty Publishers' Prize. Not coming under any category or technique of novel writing, the book is essentially one of humor, containing a series of topsyturvy adventures of two friends who fall frequently into amazingly funny situations. Barring several coarse and objectionable episodes, the book is refreshing for its genuine fun mixed with subtle satire on some stupid conventionalities of the Italian social order.

It is a pleasure to note that Bianca de Mai, who won a prize in 1928 for her novel, *Pay the Penalty in Silence*, had a worthy successor in the authoress Gabriella Neri, whose novel, *Diana e il Fauno* (Florence), though not receiving a prize, was up for consideration and adjudged one of the best of the year 1929. It deals with the difficulties facing the woman of today who aspires for intellectual freedom. The author has succeeded, in spite of a slightly overworked sex theme, in contributing lucid pages on the psychology of the young woman of today.

In contrast with the above-mentioned youthful authors, we have Massimo Bontempelli of the older generation, who gained the 1929 Thirty Publishers' Prize for his *Il figlio di due madri* (*A Son of Two Mothers*, Rome), pronounced by the committee as the best novel of the year. Bontempelli abandoned his technique of satire and fantasy and contributed in this novel a serious study on maternal love, which his art has set up for universal admiration. The plot revolves about two mothers claiming the same son. The prose is couched in the usual bizarre style characteristic of Bontempelli.

Looking obliquely over the field of novel production, we have, first of all, Luciano Zeccoli's ante-mortem novel, *Lo scandolo delle Baccante* (Milan), dealing with a plot laid in ancient Rome. His description of the Dionysian Festivals in the Forest Stimula are of particular interest by way of historical information. Riccardo Bacchelli contributed a strange novel in *La città degli amanti* (*The Lovers' City*, Milan). This novel, too, was put up for consideration of the Publishers' Prize. Briefly, it is a story about a fabulously rich American who founds in Texas a colony on ultra-liberal principles. At bottom, it is a satire on the morals of the Latins in contrast with that of the Puritans.

For those who like reading about élite life and fashionable people, there is Carlo Linati's *La principessa delle stelle* (Milan), written in brilliant style in contrast to a trivial plot. Margherita Sarfatti, known throughout the world for her biography of Benito Mussolini, *Duà*, published *Il Palazzo* (Milan) describing the activities of a noble Italian family in the last 15 years. The plot, spun on love, tragedy, and war, contains a historical survey of pre- and post-Fascist Italy. Speaking of historical novels, one cannot omit the two volumes of *La terza Roma* of the historian Guglielmo Ferrero, to which he is to add a third volume. This novel is available in an English translation *The Seven Vices* (New York). The famous historian has used the medium of the novel to express his historico-political ideas. Lastly, we have two war novels, *La guerra è bella ma scomoda* (*War is Beautiful but Uncomfortable*) and *Le scarpe al sole* (Milan). Both are humorous, detached from the element of tragedy, and profusely illustrated in pen-and-ink sketches. For studies on the foregoing authors, see Camillo Pellizzi's *Le lettere italiane del nostro secolo*, discussed below under *Critica*.

The output of short stories outweighed that of the novel in quantity and perhaps in quality. Chiesa, Deledda, Borgese, Peiri, Milanese, Brocchi, and Negri are among the names that head the list. Chiesa who, let us recall, won the 1928 Mondadori Academy Prize for his novel *Villadorna*, presented in 1929 a volume, *Storie from My Garden* (*Racconti del mio orto*, Milan), 27 sketches in which there is a reflection of much of the author's good nature portrayed in the protagonist, a 50-year-old retired clerk who cultivates his garden and bears with stoicism the domineering attitude of his daughter. Grazia Deledda published a collection of stories for children, *Nel tazzurro* (Milan). They are stories written in Deledda's youth, though meant for children, they found many a reader among the grown-ups. Francesco Peiri, aside from his collection of *Calabrese Sketches*, contributed *Una notte d'amore* (Milan), 26 short stories written in the regional vein—romantic tales with a thin spread of sentimentality and realism. With the exception of a few stories on hackneyed themes, the book, as a whole, offers characterizations of excellent type.

Guido Milanese, whose prose is, as a rule, so delicately worked out that it reads like poetry, gave two volumes, *Asteris* (revised and augmented from a previous edition) and *Fiamme di Ara* (Milan), stories of war, of marine officers, and patriotic episodes extolling Italy and Fascism. Virgilio Brocchi digressed from the novel of the "eternal triangle" and wrote *La giostra delle illusioni* (*Trickery of Illusions*, Milan),

seven stories of which four are devoted to optimism (*Le Serene*) and three to pessimism bordering on tragedy (*Le Torbide*). *Le Torbide* deals with the story of a disconsolate man who is betrayed by his wife and best friend. Ada Negri's contribution *Sorelle* (*Sisters*, Milan), might be called episodes of her own life, reflective of the personality of the author, who, through patience and suffering, rose to dignity. The paradoxical *Rosso di San Secondo* contributed some enigmatic and diabolical tales with a setting in Berlin, *C'era il diavolo, o non c'era?* (*Was the Devil There or Not?*, Milan). Giuseppe Borgese added to the richness of the short story output with his *Il sole non è tramontato* (*The Sun Has Not Yet Set*, Milan), a series of impressionistic sketches couched in a laconic style and intense colors.

THEATRE The difficulties in theatrical production continued through 1929 in Italy, and the season saw several famous stock companies (Niccodemì, etc.) dissolve. One redeeming feature, however, came about with an organization sponsored by Fascismo and directed by Gioacchino Forzano, of the "Carro di Tespi," composed of an auto-bus for the "strolling players" and a trailer for equipment and scenery. This "Theatrical Car" is destined to travel throughout Italy, with the especial purpose of presenting good plays in the rural towns. It may be said that no outstanding play arose on the theatrical horizon. At best, the season was enlivened by plays of authors of distinction, such as Pirandello, Corradini, Bontempelli, Benelli, etc. Pirandello's *Loiù* (Florence) was revived and met success, together with *Lazarus*, a new play by the author, first played in Berlin and London. *Lazarus* is a slight deviation from his "real and unreal" type of play—it is the story of a man who comes back to life to tell us that there is no after life.

Luigi Chiarelli, too, has in *K 41* a somewhat different sort of play from his usual "grotesques." It is a submarine drama dedicated to Italian sailors. Luigi Antonelli met success with his caricature *Darsi la mia vita* (*I'd Give My Life*; see *Commedia*, December, 1929, for the first printing of the play). Sabastino Lopez's *La signora Rosa* continued to be a "hit" in all the towns played in Italy. It is a play spun on the frailties of reality, heart-beats, and intricate emotions. Enrico Corradini, playwright and ultra-nationalist, saw two successful revivals in his *L'apologo delle due sorelle*, a drama suggesting a fairy atmosphere in a sketch on the morality of two sisters, in his *Carlotta Corday*, we have, as the title suggests, a play revolving about Maiat and the French Revolution.

Delfino Cinelli dramatized successfully his novel, *La trappola* (*The Trap*), a drama with a rustic background in which the principals are two provincials and a city girl. Massimo Bontempelli apparently is making a specialty these days of the mother-love-and-child theme, he contributed as his 1929 play, *La guardia alla luna*. The distinguished actor, Ruggiero Ruggeri, played in a number of stock dramas, among which was the *drame à thèse*, *La nouvelle idole*, by Currel. Plays by Dario Niccodemi, Luigi Antonelli, and Guglielmo Zorzi were especially successful in Paris in 1929, and among leading foreign dramatists whose plays were then represented in Italy, we have Sarment, Boudet, Valentine, Birabeau, Ibsen, and Chekov. For studies on the drama, see below, *Critica*.

POETRY. Though the season was fruitful of several volumes of beautiful poetry, we note that it has not flourished in particular. Summed up, 1929 was a slack year. Ettore Cozzani's *Il poema del mare* (Milan), poetry on the *mare-nostrum* theme, shows total lack of introspective or personal matter; it is purely descriptive. *Poesie*, by Sibilla Aleramo (Milan), in contrast to the above-mentioned poem, is altogether personal; it is, in fact, the reflections of a woman susceptible to love, to beauty, to varied emotions. Umberto Saba, a Triestian, contributed refreshing and sonorous poems in *Preludio e Fughe* (Trieste). Titta Rosa's *Le feste delle stagioni* (Milan), impressions of the seasons, is also readable poetry. In *Il piccolo Orfeo*, Angelo Silvio Novaro has detached his poetry from any element of complexity and succeeded in imparting to it a note of serenity. For humorous poetry, we have Trilussa's *Libro No 9* (Milan), poems in Roman dialect; his realistic patter is especially provocative of laughter. For a study on the poets, see books by Pellizzi and Mignosi mentioned below.

CRITICA—VARIA. Because of the enormity of material in criticism published in 1929, we give but a brief survey, with mention only of the most significant studies. First of all, we have Camillo Pellizza's *Le lettere italiane del nostro secolo* (Milan), a survey of contemporary Italian literature commendable for many pages of lucid evaluations and especially helpful for its exhaustive bibliographical notes on the various authors. The usefulness of the text outweighs by far its objectionable bulkiness and some loose arrangement of subject matter. Giovanni Papini contributed two books in religious motif, *Gli operai della lingua* (Florence), with chapters on Petrarch, Michelangelo, St. Francis of Assisi, Jacopone da Todi, etc., and *St. Augustine*, a timely commemoration for the fifteenth centenary of the great African. In this beautiful study of the life of the saint, Papini gives out his views, and for those who might believe his conversion insincere, he unleashes some biting remarks in self-justification. Among the 1929 studies made on Dante, we had Francesco Ercole's two volumes on Dante's political ideas, *Il pensiero politico di Dante* (Milan). Karl Vossler's study on Dante was translated into English by W. C. Lawton, with the title of *Dante as a Contemporary* (New York). Professor Melville Best Anderson spent 23 years in Italy in translating Dante's *Divine Comedy* in English terza rima. It has been prepared in a special edition of four volumes (the first an essay on Dante) in white vellum (San Francisco). Humanism and the Cinquecento were studied in two separate volumes by Giuseppe Toffanin, *Il Cinquecento* (Milan) and *Che cosa fu l'Umanesimo?* (Florence). Of the illustrated biographies of the great personalities of Italy, which had been arranged in the series *Italia gente delle molte vite* (Milan), more than a half-dozen were completed during 1929. Biographies of Dante, Leopardi, Mazzini, Savanorola, Columbus, Monti, Alfieri, and Parini are now available in the series.

In *Il tramonto del grande attore*, Silvio D'Amico, dramatic critic, made a study of all the rapidly disappearing great actors of the last generation, and deplored the fact that the great European actors of yesterday have apparently no worthy successors. Anton Guglio Bragaglia speaks on the problems of the theatre, past and present, in *Del teatro teatrale ossia del teatro*

(illus. ed., Tib., Rome). Pietro Mignosi compiled a book on *La poesia di questo secolo* (Palermo), a rather complete list of poets, together with press criticisms and complete bibliographies. Lucio D'Ambra published the third volume of his *Il ritorno a fil d'acqua* (*Thirty Years of Literary Life*; Milan), a series of intimate sketches on the literary men of Italy and of Europe. Withal, it contains much entertaining information and many ideas. Adriano Tilgher made a historical study of Work from the ancient to the present time, and defined it as to the attitudes of Greeks, Hebrews, Romans, Christians, Fascists, Soviets, etc. For a sweeping survey of Italian culture in the past quarter-century, Giuseppe Prezzolini's *La cultura italiana* (Milan) is especially commendable for its vast information on literary, social, religious, and other topics in general in a revised and augmented edition.

Two volumes of history appeared last season and are now available in English translation—Croce's *A History of Italy, 1871-1915* (New York), which gives liberal treatment as regards the political views, and Luigi Villari's *Italy* (New York), which takes up where Croce left off and interprets Fascism favorably in terms of nationalism. There is available in English also *Italian Painting* (Toronto), interpreting the big movements in art. The authors, P. G. Konody and R. H. Wilenski, in addition to colored illustrations, have added black-and-white reproductions. The *Enciclopedia Italiana*, published under the auspices of the Istituto Treccani, appeared in quarterly volumes in 1929. The work is admirably gotten up with 10,000 and colored plates (see frontispiece, Vol. 1). The editorship is under the direction of Giovanni Gentile and Tuminelli. This encyclopedia, by virtue of its organization, the standing of its contributors, and the quality of its contributions, promises to be one of the best. It will be completed by 1937, appearing at the rate of one volume quarterly. It is bound in handsome morocco.

See also PHILIOLOGY, MODERN

ITALIAN SOMALILAND, so-mu'le'länd. An Italian colony extending along the east coast of Africa from British Somaliland on the northeast to Kenya on the southwest, and bounded on the north by Abyssinia Area, approximately 190,000 square miles, population, about 1,200,000, including approximately 1000 Italians. Mogadiscio, with a population of about 25,000, is the capital.

The colony is divided into Southern Somalia, formerly called Benadir, and Northern Somalia, which latter in turn is divided into (1) the territory of the Mijajins, extending from Bender Ziade on the Gulf of Aden to Cape Gabà on the Indian Ocean, (2) the territory of the Nogal, from Cape Gabà to Cape Garad, (3) the territory of Obbia, from Cape Garad to the northern boundary of Southern Somalia. Cattle raising and agriculture are the principal occupations of the inhabitants. In Southern Somalia, there are Italian plantations with a cultivated area of about 70,000 acres. Exports in 1927 amounted to 25,300,950 and imports to 156,246,673, lire. The chief exports are gum, oil, sesame, hides, butter, cotton and cottonseed oil, resin, kapok, and ivory, the chief imports, sugar, cotton textiles, rice, tea, coffee, iron, machinery, and timber. Revenues for 1928-29 were estimated at a total of 70,255,250 lire, including 21,240,000 of revenue proper from the colony and a state contribution of 55,015,250.

Expenditures for the year totaled 76,255,250 lire, including civil expenditure, 42,077,150, military, 30,579,100; and extraordinary expenditure, 3,599,000 Governor in 1929, De Guido Corni, appointed in 1928

ITALY. A constitutional monarchy of southern Europe, comprising, besides Italy proper, the islands of Sardinia, Sicily, Elba, and some 70 other small islands, together with the territory on the eastern shore of the Adriatic acquired as a result of the Treaty of St. Germain, and arrangement with Yugoslavia in 1920. Capital, Rome. Reigning King in 1929, Victor Emanuel III.

AREA AND POPULATION The area of Italy before the War was 110,832 square miles, with a total population on Jan. 1, 1915, of 36,120,118. The area as a result of the survey made at the time of the census of 1921 is 119,710 square miles and the population according to that census, 38,750,433, estimated in 1928 at 40,796,000. During the period 1924 to 1928, births averaged 1,105,628 annually, or 27.4 per 1000 inhabitants, and deaths averaged 657,526, or 16.3 per 1000. In 1927 numbered 228,052, of whom 11,000 were born in European and Mediterranean countries and 130,094 to transoceanic countries. Of 140,025 Italians returning to Italy (1927), 73,424 came from transoceanic countries. Cities with an estimated population of more than 175,000 on June 30, 1928, included Bologna, 240,020, Catania, 289,644, Florence, 277,688, Genoa, 624,659, Messina, 203,609, Milan, 941,070, Naples, 966,423, Palermo, 444,861; Rome, 877,289, Turin, 570,173, Trieste, 252,517, Venice, 253,608.

EDUCATION In 1926-27 there were 3,890,698 pupils enrolled in 32,954 public elementary schools, 140,841 pupils in 2466 private elementary schools, and 607,891 in 7076 infant schools. The secondary schools, including technical, scientific, and normal schools, totaled 1024 government schools with 181,060 students, and 611 private schools with 40,497 students. In the same year there were 25 universities with a total of 37,175 students. There were, in addition, several institutions of university rank, namely, the Institute of Higher Education at Florence, the Royal Scientific and Literary Academy at Milan, and the Higher Technical Institute of Milan. There are higher institutions for commercial education in Rome and other cities, also higher schools for agriculture and engineering.

PRODUCTION More than 50 per cent of the population of Italy derived its livelihood directly or indirectly from agriculture in 1929, despite rapid gains made by Italian industry, and the economic conditions of the country was closely linked with the success or failure of the crops. The Government in 1925 initiated a far-reaching programme for the improvement of agriculture, and particularly to increase the cereal production of the country, which included the reclamation of vast areas of waste, marsh, and malarial lands. In 1928 the Government made particular efforts to restrict the movement of the rural population to the cities. Mussolini's so-called "battle of grain," intended to reduce annual wheat imports amounting to one-third the total consumption, resulted in an increase in production from an average of 50,000,000 quintals to 70,000,000 quintals in 1929. About 42 per cent of the total area of Italy, or 32,148,000 acres, were under crops in 1927; 17,232,000 acres were permanent

meadow and pasture; 5,541,000 acres in orchards and vineyards; 12,279,000 acres in woods and forests, 3,091,000 acres were uncultivated productive land; and the remainder was unproductive land. Adverse weather conditions resulted in only fairly successful crops in 1928, but the cereal crops exceeded the 1927 production. In 1929 the crops were generally more than usually successful. The largest wheat crop yet recorded caused imports to be cut to a new low level.

Silk cocoon production increased from 108,951,000 pounds in 1924 to 115,718,000 pounds in 1928. Livestock in the country in 1926 included 7,400,000 cattle, 12,350,000 sheep, 3,082,000 goats, 1,050,000 horses, 1,500,000 mules and asses, and 2,339,000 swine (1923).

ITALIAN CROPS AREA AND PRODUCTION

Crop	Area ^a		Production ^b	
	1927	1928	1927	1928
Wheat	12,296	12,264	195,808	228,596
Rye	707	711	5,937	6,535
Barley	583	560	9,443	11,024
Oats	1,203	1,287	30,720	48,411
Corn	3,755	3,711	87,378	64,996
Rice	351	373	34,102	30,940
Potatoes	874	875	71,476	54,742
Sugar beets	219	285	2,016 ^c	5,861 ^c
Beet sugar			290 ^c	410 ^c
Olive orchards	5,668	5,633	41,774 ^d	62,578 ^d
Grapevines	10,574	10,615	941,769 ^e	1,216,916 ^e

^a Thousands of acres

^b Thousands of units—bushels, except as indicated

^c Unit, metric ton

^d Unit, gallon of oil

^e Unit, gallon of wine

Hemp production in 1929 was estimated at 176,368,000 pounds, or a decrease of about 7 per cent from the 189,022,000 pounds produced in 1928.

The unfavorable conditions confronting most Italian industries early in 1928 improved during the year, the process of amalgamation and concentration of industry continued under government encouragement and there was a wide introduction of improved technical facilities and new methods of production and distribution. Improved conditions in practically all branches of industry continued during the first half of 1929, after which a general slackness became evident. Preliminary indications were, however, that production in most lines would exceed the 1928 totals. Scarcity of liquid funds and the high point at which the lira was stabilized were believed primarily responsible for the slump toward the end of 1929. Conditions in mining industry were unsatisfactory during 1928, there being a decrease of 12 per cent in the output of iron pyrites, and declines in the production of zinc ore and aluminium. Mineral and metal production in metric tons in 1928, with the figures for 1927 in parentheses, was as follows: Iron ore, 609,325 (503,290), lead ore, 55,828 (55,445), zinc ore, 181,309 (222,085), iron pyrites, 552,430 (625,338), lignite, 712,920 (912,458), sulphur, crude and ground, 327,500 (329,580), asphalt, rock and crude bitumen, 320,000 (356,154), salt, marine, 490,299 (685,970), aluminium, 2350 (2544), lead, 21,200 (23,744); pig iron, 489,000 (489,161), steel ingots and castings, 1,009,800 (1,595,770). Total value of mineral production in 1927, 607,894,000 lire (\$31,372,000). The output of the textile mills was generally higher in 1928, the output of raw silk amounting to 11,554,000 pounds (11,045,000 in 1927), of rayon, 55,015,000 pounds (48,000,000 pounds in 1927),

of cotton yarn, 444,917,000 pounds, (404,844,000 pounds in 1927). The number of persons unemployed at the end of 1928 totaled 363,551, as compared with 414,283 at the end of 1927. Unemployment conditions at the close of 1929 were practically the same as at the end of 1928. The Government's great public-works programme undoubtedly prevented much unemployment which would otherwise have resulted from the slackening of industry. At the industrial census of 1927, there were 731,885 industrial establishments employing 4,002,931 employees.

COMMERCIAL Italy's imports in 1928 totaled \$1,159,000,000, as compared with \$1,051,000,000 in 1927, or an increase of 10 per cent, while exports declined 5 per cent from \$807,000,000 in 1927 to \$764,000,000. The stabilization of the lira and currency revaluation reacted unfavorably on Italian trade, favoring imports at the expense of domestic products and impairing the price position of Italian merchandise on world markets. Italian manufacturers were obliged to reduce their export prices as a result of the higher exchange value of the lira. The situation improved toward the end of the year and in 1929 Italy's foreign-trade position became noticeably better, with imports declining and exports expanding. The bulk of the imports in 1928 consisted of raw materials, the leading commodities being wheat, cotton, coal, lumber, wool, petroleum products, metals, and machinery. There were decreases in imports of coal, oats, meats, tin, and linseed. Cotton fabrics, cheese, silk and rayon fabrics, wool fabrics, raw silk, and felt hats were exported in increased quantities but other stable exports, such as olive oil, oranges, hemp, rice, lemons, wine, and automobiles, registered decreases.

As in former years, the United States was the chief source of imports, furnishing 18.2 per cent of the total, as compared to 10 per cent by Germany, 9.3 per cent by France, and 8.1 per cent by the United Kingdom. In the same year, Germany took 29.8 per cent of the domestic exports (14.3 per cent in 1927), while the United States took 10.5 per cent, France 9.4 per cent, and the United Kingdom, 1.2 per cent. Exports to the United States in 1929 totaled \$118,147,000, or 15 per cent more than in 1928.

In 1928 expenditures by tourists in Italy were estimated at about 36 per cent of the total unfavorable visible trade balance of 7,513,000,000 lire. According to Professor Angelo Maiorini, director of the National Institute of Tourist Industry, tourist expenditures in 1928 amounted to 2,700,000,000 lire, as compared with 2,500,000,000 in 1927, 3,100,000,000 in 1926, and 3,600,000 in 1925.

FINANCE Budget estimates for the fiscal year ending June 30, 1929, placed receipts at 17,043,000,000 lire and expenditures at 17,474,000,000 lire. The actual result of the year's operations was a surplus of 555,000,000 lire and with a still larger surplus in prospect for 1929-30, the Cabinet on July 25, 1929, approved a comprehensive programme for the reduction of indirect taxes, including a 50 per cent reduction in the sales tax and the abolition of numerous minor taxes. The reductions were expected to diminish revenues by 500,000,000 lire annually. It was announced that the Cabinet measures obliged the local governments to reduce their tax totals from 5 to 10 per cent by the end of the calendar year 1930. For 1929-30 the receipts were esti-

mated by the Minister of Finance at 18,500,000,000 lire and the expenditures, at 18,280,000,000 lire. During the first half of the year, receipts fell below the budget estimates, due primarily to decreased customs receipts from duties on wheat.

The Council of Ministers on Dec. 19, 1929, approved the budget for 1930-31 amounting to 19,348,846,399 lire, an increase of 777,923,000 lire over the final expenditure budget for 1929-30. The increases were chiefly due to higher salaries for government employees and for construction projects of the Ministry of Marine. The Government in 1929 reiterated its policies of no loans, no increase in taxation, and no change in the stabilization point. The only private loan during the year was a \$5,000,000 loan contracted in January for industrial purposes. During the years 1925 to 1928, Italian borrowings abroad amounted to 7,117,800,000 lire, of which 3,040,000,000 lire was contracted by the State and municipal governments and 754,300,000 lire, by public-utility companies, the remainder being obtained for private enterprises. Foreign loans in 1928 totaled 812,200,000 lire, as compared with 2,932,700,000 lire in 1927. In November, 1929, Minister of Finance Mosconi announced that 7,640,000,000 lire (about \$402,864,000) in treasury bonds would fall due between November, 1931, and November, 1934, and that the Treasury was making provision for giving the bond holders the choice of repayment in cash or conversion into other redeemable bonds. The transaction would be handled without a foreign loan, it was indicated.

Besides the war debts to the United States (calculated at \$2,042,000,000 in 1925) and Great Britain (calculated at £600,000,000 in 1925) and a loan of \$100,000,000 contracted in 1925, the public debt on Dec. 31, 1928, consisted of 84,719,000,000 lire of internal interest-bearing debt and 2,287,000,000 lire of noninterest-bearing debt (paper money). The total internal debt amounted to 87,006,000,000 lire on Dec. 31, 1928, and to 83,675,000,000 on the same date in 1927. The lira was stabilized in 1927 at \$0.0526. Note circulation at the end of 1928 consisted of 17,295,400,000 lire of notes issued by the Bank of Italy and 101,000,000 lire of State notes.

COMMUNICATIONS Of the 13,072 miles of railway line in Italy in 1928, 10,358 miles were owned and operated by the government and 3314 miles, mostly relatively unimportant local lines,

ITALIAN STATE RAILWAY STATISTICS

Item		1927	1928
Length of line	miles	10,303	10,358
Locomotives	number	6,872	6,812
Passenger cars	do	9,033	8,842
Freight cars	do	157,647	153,871
Passenger train	miles	50,876	51,721
Freight train	miles	38,839	34,392
Passengers carried	do	115,526	112,238
Freight carried	1000 metric tons	56,174	63,111
"Ton miles"	millions	7,696	7,277
Gross receipts	1,000,000 lire	4,914	4,601
Passenger service	do	1,580	1,622
Freight service	do	2,958	2,977
Gross receipts,* equivalent	\$1,000,000	254	242

* Included 10 per cent except 1928

* Not . . .

* Years ended June 30

* Includes in 1927 miscellaneous receipts not shown. Conversion at average exchange rates in 1927, at par in 1928.

were owned and operated by private companies. Statistics for the government-owned lines in 1927 and 1928 are shown on page 415.

Plans for the electrification of 4000 miles of the state lines were adopted by the government. In 1929 announcement was made that the government would construct a railway tunnel under the Stelvio Pass at the junction of the Swiss, Italian, and Austrian frontiers. The Stelvio tunnel, was to be more than 11 miles long and was expected to be completed in 1931. As the new route would bring Munich 125 miles nearer to the port of Genoa than to Hamburg and would be shorter by 75 miles than the St. Gothard tunnel route between Milan and Munich, the announcement caused considerable concern in Swiss Federal and commercial circles. The report covering the operation of the state railways in 1928-29 showed a net profit of 97,000,000 lire (\$5,100,000), and a capital expenditure of 470,000,000 lire (\$24,730,000). The length of electrified lines was placed at 1073 miles.

In 1928 the length of first-class national highways in Italy was estimated to be 12,420 miles, that of provincial roads, 24,840 miles, and that of the secondary and communal roads, 55,890 miles, in addition to 2173 miles of roads formerly used for military purposes. In the same year, 4036 miles of new roads were under construction, of which 3105 miles were situated in Southern Italy. Planes of the Italian commercial air lines flew 1,237,650 miles during the year and carried 15,629 passengers, 46,044 pounds of mail, and 502,762 pounds of baggage and goods.

On June 30, 1928, the merchant marine consisted of 1429 vessels of 100 tons and over with a gross tonnage of 2,428,817, of which all but 80,085 tons were power driven. Vessels entering Italian ports in 1928 numbered 14,233 of 21,142,000 net registered tons, while those clearing numbered 13,697, of 20,637,000 net registered tons. The telegraph system and part of the telephone line are government owned. On June 30, 1927, there were 125,362 miles of telegraph wire and 715,000 miles of telephone wire (both State and privately owned).

ARMY AND NAVY Liability to military service beginning at the age of twenty and lasting for 19 years is compulsory and universal. The strength of the active army in 1927 was 17,684 officers and 283,200 men. See **MILITARY PROGRESS**.

The Italian Royal Air Force, constituted in 1925 as a separate force under the Ministry of Aviation, had 1800 aeroplanes and a personnel of 25,000 in all ranks in 1928. The expenditure for the fiscal year 1928-29 was estimated at 700,000,000 lire.

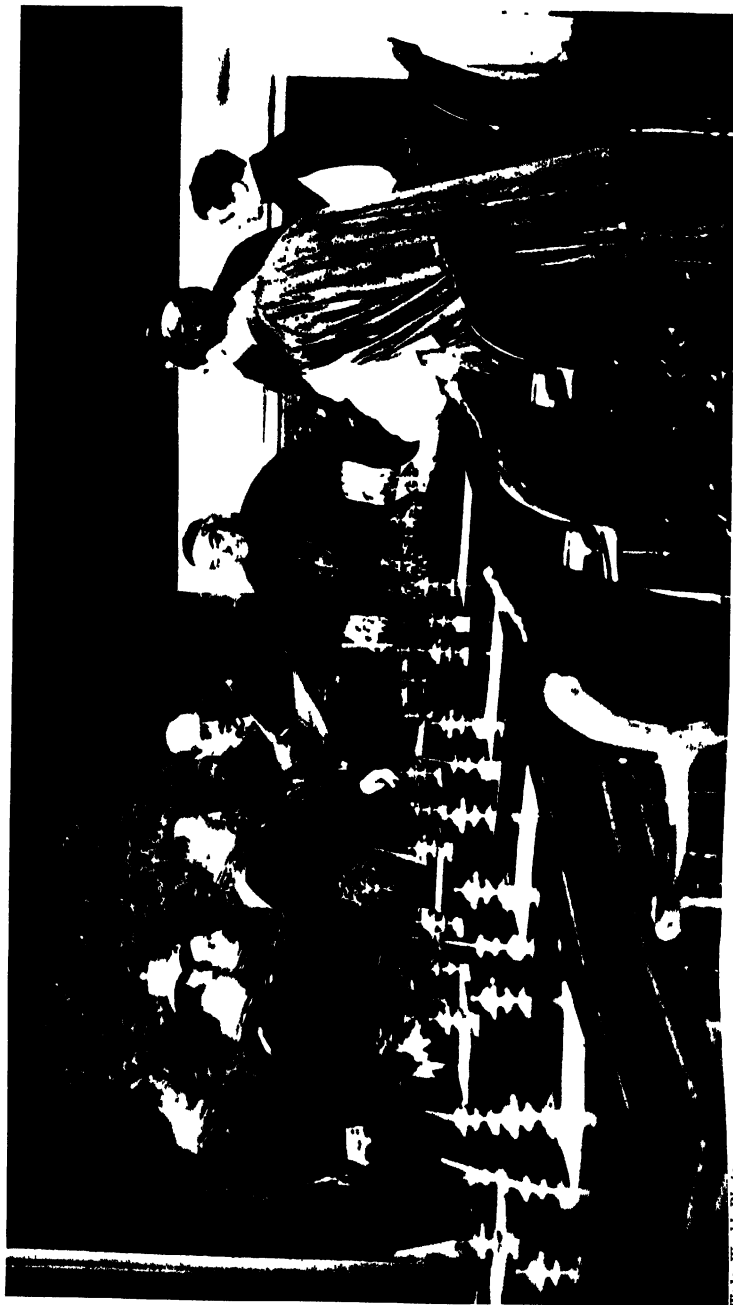
The accompanying table from the *Statesman's Year Book* for 1929 shows the classification of the navy in 1927 and 1928.

	Completed at end of	
	1927	1928
Battleships	5	5
Armored cruisers	3	3
Light cruisers	9	9
Fleet leaders and destroyers	73	75
Torpedo boats	55	52
Submarines	45	45

GOVERNMENT The Italian constitution, still nominally in force, provided that the King shall exercise the executive power through a responsible ministry and that legislative power shall

rest conjointly in the King and a Parliament of two chambers. The Grand Council of Fascism is the supreme body which "controls all the activities of the régime," under a law promulgated in December, 1928. It "designates" the deputies for the lower chamber and "must give its opinion on all bills dealing with constitutional issues." Its members fall into three categories: (1) Life members, including the head of the Government (Mussolini); the "Quadrumvirate" who led the Fascist march on Rome, ex-ministers who have held office in the Fascist cabinet for at least five years, and those who have acted as secretaries-general of the Fascist party since the march on Rome. (2) *Ex-officio* members. The President of the Senate, the Speaker of the Corporative Chamber, the Cabinet Ministers, the Prime Minister's Under-Secretary, the Under-Secretaries of the Foreign Office, the Home Office, and the Ministry of Labor, the members of the Central Executive of the Fascist party, the two presidents of the National Organizations for Industry and Agriculture and the president of the Trade Unions, and five other high officials. (3) Extraordinary members, i.e., "men who have deserved well of the national cause and the Fascist Revolution, or are experts on the questions under discussion in the Grand Council." There are 35 persons in the first two categories and an unlimited number in the third. All members of the third category and all of the second, except the president of the Senate and the Speaker of the Corporative Chamber, are designated by the head of the Government. By the law of May 17, 1928, the electoral system was radically altered. The franchise was granted to men 21 years and over and also to men aged 18 years and over, if married or widowers with sons, who pay a syndicate rate, or taxes to the amount of 100 lire, or who receive a salary or pension from any public institution. Candidates for the Chamber of Deputies, which has a membership of 400, must be at least 25 years of age and must meet certain other requirements. Candidates are proposed by the National Syndicate Confederation, by certain juridical persons, and by associations of a national character. From these lists of candidates the Grand Fascist Council selects 400 names to be included in the roll proposed to the electors. If the proposed roll is not approved by the electors, new elections must be held at least one month later, this time by the majority system and in accordance with the principle of proportional representation, formerly in use. The King has power to dissolve the lower house at any time.

The Senate on Jan. 1, 1928, was composed of 374 senators and 11 members of the royal family. Under the Constitution the senators are appointed for life by the King on the proposal of the cabinet. Their number is not limited. The King in 1929 was Victor Emmanuel III, born Nov. 11, 1869, who succeeded his father, Humbert I, July 29, 1900. The cabinet, at the beginning of 1929, was composed as follows: Head of the Government, Prime Minister, Secretary of State, and Minister of Foreign Affairs, Interior, War, Marine, Aeronautics, Colonies, and Corporations, Benito Mussolini; Minister of Justice, Alfredo Rocco; Finance, Antonio Mosconi; Public Instruction, Giuseppe Belluzzo; Public Works, Giovanni Giuniati; National Economy, Alessandro Martelli; Communications, Conte di Cortellazzo.



Wide World Photo

EXCHANGING RATIFICATIONS OF THE TREATY BETWEEN ITALY AND THE VATICAN

LEFT TO RIGHT IN CENTRE: PRINCE MUSCINI, FRANCESCO PAVINI, GENERAL COUNSELLOR OF THE VATICAN, AND CARDINAL GASPARRI

HISTORY

Settlement of the historic dispute between the Italian state and the Vatican was the outstanding event in Italian history during 1929. Other significant developments of the year included the further organization of the Government along Fascist lines, the official action taken to modify Fascist activities in the United States following widespread protests in that country, the continuation and extension of the Fascist programme of internal development, and, in foreign affairs, the Italian demand for naval equality with France, or for a naval pact guaranteeing the security of the Mediterranean, in advance of the London Naval Conference.

CHURCH AND STATE. The treaty settling the sixty-year-old "Roman Question" was signed in the Lateran Palace on February 11 by Cardinal Gasparri, the Papal Secretary of State, and Premier Mussolini. The settlement consisted of three documents: (1) a treaty disposing of the "Roman Question" through the creation of a sovereign papal state known as Vatican City, (2) a concordat regulating the conditions of religion and the church in Italy, and (3) a convention systematizing the financial relations between the Vatican and Italy arising out of the split between Church and State in 1870. For details of the new papal state, see VATICAN CITY. The treaty reaffirmed that Roman Catholicism was the only state religion in Italy, and stipulated that the Vatican was to remain extraneous to temporal competitions with other states unless the conflicting parties appealed to it for the settlement of disputes. Vatican City territory was to be considered neutral and inviolable, the Vatican recognized the Italian Kingdom under the dynasty of the House of Savoy, and Italy in turn recognized the state of Vatican City under the sovereignty of the Pope. Italy recognized marriage as a sacrament regulated by canon law in its relation to civil law. Causes concerning nullity and dissolution of marriages celebrated but not consummated were reserved to ecclesiastical courts. The Vatican agreed to the judgment of civil authorities on separations. Religious instruction in elementary and secondary schools was made compulsory.

Under the financial convention, the state agreed to pay the Vatican a cash sum of 750,000,000 lire and 1,000,000,000 lire in Italian state bonds bearing 5 per cent interest, as indemnity for the loss of temporal power in 1870. The Italian Council of Ministers approved a bill for the fulfillment of the treaty on March 13, the bill was ratified by Parliament in May, and was signed by King Victor Emmanuel on May 27. Vatican City came into existence June 10 with the exchange of ratifications.

The settlement was followed on July 25 by Pius XI's dramatic emergence from the Vatican, symbolizing the changed status of the Papacy. It was the first time a Pope had left the Vatican grounds in 59 years. See ROMAN CATHOLIC CHURCH. On December 5 the King and Queen of Italy paid an official visit to the Pope in Vatican City, thus recognizing the absolute sovereignty of the head of the Church within the Vatican domains. The settlement was greeted with manifestations of joy by the Italian populace and by the Roman Catholic press everywhere. It was generally believed to have added immeasurably to the strength of Fascism through enlisting the cooperation of the Church in Italy. This co-

operation was evidenced in the election of March, 1929, when the clergy advocated the acceptance of the list of candidates for the Chamber of Deputies presented by the Fascist Grand Council, and set an example for the population by going to the polls in large numbers.

The Fascists and the Vatican were not long in complete accord, however. In reviewing the settlement before the Chamber of Deputies in May, Premier Mussolini made a number of remarks which drew forth a spirited reply from the Pope. The formula of "a free church in a free state" did not accurately describe the new relationship, the Premier said.

"In this state the church is neither sovereign nor free," he declared. "Its sovereignty here would be a contradiction in terms, and it is not free because it is bound under the terms of the Concordat. The situation may be defined as a sovereign state within the Kingdom of Italy. The Catholic Church, with certain privileges is loyally and freely recognized and other cults are freely admitted."

The Pope took particular exception to Mussolini's remarks upon the subject of education.

"In this field, I am intractable," the Premier said. "Education must be ours. Our children must be educated in our religious faith, but we must round out this education and we need to give our youths a sense of virility and the power of conquest."

Speaking shortly afterward before the pupils of a Jesuit school, the Pope replied: "We never can agree to anything that compresses, decreases or denies the rights which nature and God gave the family and the Church in the field of education. On this point we will not say we are intractable, for intractability is not a virtue, but we are 'intransigent,' just as we could not help being intransigent. It asked how much two and two make two and two make four. It is not our fault if they do not add to five or six or 40."

In an open letter addressed to Cardinal Gasparri and published in the official Vatican organ, *Osservatore Romano*, on June 5, the Pope took Mussolini further to task for his remarks upon the origin of the Church made before the Chamber of Deputies. He objected to the Premier's statement that the Catholic Church in Italy was in a sense subject to the State, criticized Mussolini's frequent references to the fact that the state had retained all its means of watching over the Church and its clergy, and disapproved of the Duce's contention that Italy must enjoy full liberty of conscience and full liberty of discussion. Referring to the Premier's statement that it was juridically impossible to oblige a Catholic to marry in the Church in preference to only a civil marriage ceremony, the Pope said: "The Church can and must do this with the means at its disposal."

On July 8, the day on which diplomatic relations between the Vatican and the Quirinal were fully established, the Government sequestered the Catholic publication *Monthly Life* on the ground that it "tended to draw Italian Catholic youth away from the legitimate authority of the Italian State and Italian institutions." This was followed by another spirited protest in *Osservatore Romano*. An announcement by Mussolini to the effect that 9000 watchers were maintaining surveillance over the activities of the clergy throughout Italy caused the Pope to assure Italian Catholics that he was also watching and that

they were to have "serene confidence and no alarm." On December 2, in a speech before the parish priests of Rome, Pius XI complained that Catholic newspapers were finding it increasingly difficult to discuss Catholic interests without being curbed by Fascist authorities. At the same time, he severely arraigned the Fascist press for the manner in which it discussed subjects relating to the Church. Despite these evidences of friction, the King of Italy on November 11 for the first time since 1870 The new marriage regulations legalizing church marriages went into effect throughout the Kingdom on August 8. Later in the year, a law was passed legalizing marriages by non-Catholic religious authorities.

GOVERNMENTAL REORGANIZATION The measures adopted in 1928 for the organization of the Government along Fascist lines (see above, under *Government*) were put into effect early in 1929. January 28 to February 17 was fixed by decree as the time within which the national confederations were to propose their candidates. The first election under the new system was held March 24, when 8,650,000 voted "yes" and 136,000 "no" to the question "Do you approve the candidates designated by the National Grand Council of Fascism?" The 400 candidates were chosen from about 1000 names submitted by 32 Fascist organizations representing various branches of capital, labor, the universities, war veterans, government employees, etc. The new Fascist parliament was opened by the King on April 20. Among the principal duties of the legislature, the King said, were the strengthening of the authority of the state, the reform of local finances and of the civil and criminal codes, and the promotion of public works. On the eve of the inauguration of the new parliament, the *Official Gazette* printed a decree modifying the official Italian coat of arms, which henceforth was to bear the Fascist lictors and fasces side by side with the royal coat of arms of the House of Savoy. The smooth working of the Fascist machine was shown when Minister of Public Works Giurati was elected president of the Chamber by 348 votes out of 350 and Signor Federzoni, former Minister of Colonies, was elected president of the Senate by 166 votes against 33 blanks and 5 null or scattered votes.

Premier Mussolini, on September 12, relinquished seven of the nine Cabinet portfolios he had formerly held. Of nine new ministers appointed, seven were chosen from among his under-secretaries. Alessandro Martelli, Minister of National Economy, and Giuseppe Belluzzo, Minister of Public Instruction, were retired, and their respective posts were renamed the Ministry of Agriculture and Forests and the Ministry of Public Education. The new Cabinet was as follows: Premier and Minister of Interior, Benito Mussolini; Foreign Minister, Dino Grandi; Colonies, General De Bono; War, General Pietro Gozzera; Marine, Rear Admiral Giuseppe Sibiani; Aviation, General Italo Balbo; Public Works, Michele Bianchi; Corporations, Giuseppe Bottai; Agriculture and Forests, Giacomo Acerbo; Public Education, Balbino Giuliano; Justice and Cults, Alfredo Rocco; Finance, Antonio Mosconi; Communications, Conte di Cortellazzo.

On September 14, the Premier announced further changes in the organization of the Fascist party which made it more than ever an organ

of the state. The secretary-general was to be appointed by royal decree on the nomination of the head of the government, and the federal secretaries by the head of the government on nomination of the secretary-general. The membership of the Fascist Grand Council was reduced from 56 to about 20 for the purpose of promoting efficiency and secrecy. The Grand Council remained divided into the three main categories described above, under *Government*. Under the bill providing for the change, Senator De Vecchi, Italian Ambassador to the Holy See, General Italo Balbo, Minister of Aeronautics, General De Bono, Minister of Colonies, and Michele Bianchi, Minister of Public Works, became members of the Grand Council for life. Reviewing the accomplishments of the Fascist party, the Premier said its relations with the Church were based on the Fascist principle of "all in the state, nothing outside of the state and nothing against the state." Admitting that Fascism was based on dictatorship, he said that its watch-words "authority, order, and justice" were fast replacing the democratic slogan of "liberty, equality, and fraternity."

ITALO-AMERICAN RELATIONS The long-standing issue of dual nationality again came to the fore as a source of friction between Italy and the United States in 1929, after Fascist activities in the United States had aroused public resentment and focused American attention upon Italy's refusal to recognize the American citizenship of naturalized Italians or of persons born in the United States of naturalized Italian parents. A number of such persons who visited Italy were at various times forced to undergo military training. On November 3, the Italian Embassy in Washington issued a statement to the effect that henceforth American-born children of Italian parents, American citizens of Italian birth, and even citizens of Italy residing in the United States, might return to Italy without fear of compulsory conscription in time of peace. Nothing was said as to their liability for military service in time of war. About the same time, the Fascist League of North America, announced its disbandment. It was charged, however, that Fascist opposition to the naturalization of Italian immigrants continued, and that the suppression of anti-Fascist criticism in the United States was systematically attempted by "business boycott, social pressure, personal violence," and terrorization.

OTHER EVENTS Italy's demand for naval equality with France as a preliminary to any agreement at the London Naval Conference in January, 1930, caused widespread fears for the success of the conference. The Italian policy with regard to the limitation of armaments, as announced by Mussolini, was that Italy would accept any reduction, however sweeping, providing equality with France was guaranteed and other countries reduced their armaments proportionately. In September, Italy signed the optional clause of the World Court statute (see *WORLD COURT*).

Antagonism between Italy and Yugoslavia again approached the danger point in October during the trial in Pola, Italy, of five Italian subjects of Slav birth who were accused of having shot at a line of voters in Pisino about to cast their ballots in favor of the Fascist government. A number of persons were wounded, one mortally. The leader of the defendants was sentenced to death and each of the other four to 30 years' imprisonment. While there was no accusation

against the Yugoslav Government, the defendants were accused of being members of a Yugoslav terrorist organization.

Alleged Italian propaganda in Malta led to friction with the British authorities there, who imposed new press restrictions and penalties ranging up to three years' imprisonment upon those "who help the enemies of his Majesty in whatever way or against the Maltese government." See VATICAN CITY for the religious aspect of this dispute. The policy of forcible Italianization of the former Southern Tirol continued and on October 1 bilingualism was reported to have been officially terminated in that territory. The protests formerly directed against Italian policies in the Tirol from Austrian sources were stilled by the necessity of securing Italy's consent to an Austrian international loan. See AUSTRIA, under *History*.

Reports of the repression of anti-Fascists in Italy and of retaliations by Italian expatriates continued to receive an airing in the foreign press. Early in the summer, the slaying of the counselor of the Italian Legation in Luxemburg and the explosion of a bomb sent to the Italian Consulate caused a clamor in the Fascist press for drastic measures against the anti-Fascists by foreign governments and the League of Nations. Professor Umberto Cosmo of the University of Turin was reported to have been sent to an Italian penal colony for writing a letter thanking Senator Benedetto Croce for the latter's opposition to the Lateran Treaty and Concordat in the Senate. The imprisonment and deportation of Freemasons, in particular, seemed to have increased during the year. The Italian official news agency admitted on August 8 that three prominent anti-Fascists—former Deputy Emilio Lussu, Prof. Carlo Rosselli, and Francesco F. Nitti—had escaped after two years' political imprisonment on Lipari Island. In Paris, where they had given out harrowing accounts of their sufferings, the three men received word that members of their families in Italy had been imprisoned by way of retaliation. The Special Military Tribunal for the Defense of the State on September 29 condemned Cesare Rossi, former head of the Fascist Press Bureau, to 30 years' imprisonment for alleged incitement to armed revolution. Rossi, one of those charged with complicity in the death of Matteotti (see 1924 YEAR BOOK), was not convicted. He escaped abroad, where he wrote articles accusing Mussolini of responsibility for the death of the Socialist deputy. He was arrested when he returned secretly to Italy. In October, the loss from the Italian Embassy in Berlin of the secret code by which the Italian Government communicated with its Ambassador to Germany was reported to have resulted in the exile to one of the political penal colonies of the secretary held responsible for the loss and the summary removal of other officials of the embassy.

Italy pursued with success its policy of "integral and effective occupation of the Libyan territories," receiving on June 13 the submission of important insurgent chiefs of the Senussi Society in Cyrenaica. Early in December, Italian Sahara troops under the Duke of Apulia captured Brach in the heart of the Senati region of Libya. Further progress in stamping out the Mafia in Sicily was reported. For Italian policies in the Balkans and central Europe, see AUSTRIA, HUNGARY, RUMANIA, YUGOSLAVIA, BULGARIA, GREECE, and TURKEY, under *History*.

ITURBI, José. See MUSIC, under *Artists*.

IVORY COAST. A French colony, forming a constituent part of the government-general of French West Africa, situated between Liberia and the British Gold Coast Area, about 121,590 square miles, population, estimated in 1926 at 1,724,545, of whom 1614 were Europeans. Bingerville is the capital and has a European population of about 98. The principal commercial products are cacao, mahogany, palm oil and kernels, dried and smoked fish, cotton, and rubber. The production of cacao is rapidly increasing and in 1928 it constituted 42 per cent of the total value of the colony's exports. Some gold has been found. Imports in 1928, according to provisional figures, amounted to 235,089,000 francs (exchanging at \$0.0392), as compared with 193,305,000 francs in 1927, and exports were valued at 253,052,000 francs, as compared with 235,467,000 francs in the previous year. The budget of the colony in 1928 was fixed at 55,525,000 francs. In 1927 1087 vessels of 3,060,600 tons entered and 1084 vessels of 3,057,538 tons cleared the ports. Lieutenant-Governor in 1929, M. Lapalud.

IZETT. See CHEMISTRY, INDUSTRIAL, under *New Alloys*.

JAIL OUTBREAKS. See CRIME.

JAMAICA. A colony of Great Britain, consisting of the island of Jamaica, which is the largest in the British West Indies, and the following dependencies: Turks and Caicos Islands, Cayman Islands, Morant Cays, and Pedro Cays. Area of Jamaica, 4450 square miles, of the dependencies, 224 square miles. Population of Jamaica, according to the census of 1921, 858,118, including 660,420 blacks, 157,223 colored; 14,476 whites, 18,610 East Indians, and 3696 Chinese, estimated population at the end of 1927, 953,768. The movement of population in 1927 was: Births, 32,910, deaths, 20,015, marriages, 4412. Kingston, the capital, had a population of 62,707 at the census of 1921. In 1927 there were 670 public elementary schools, with 125,739 pupils enrolled and an average attendance of 76,990. In 1927-28 the area under cultivation was 1,157,586 acres, apportioned as follows under tillage, 277,240 acres, sugar-cane, 43,605 acres, coffee, 19,195, bananas, 88,974, coconuts, 39,070, cacao, 4782; ground provisions, 50,238, mixed cultivation, 20,767, guinea grass, 106,202; commons, 774,144. The livestock included 115,753 cattle, 5064 sheep, and 36,084 horses and mules. In 1927 the imports were valued at £6,001,768 and the exports at £4,257,750. The principal exports were coconuts, logwood, logwood extract, sugar, coffee, rum, cacao, ginger, cigars, pimentos, oranges, and copra, the chief imports, boots and shoes, motor cars, cotton goods, fish, rice, flour, and hardware. The only rail transportation on the island is the Jamaica Government Railway, with a length of 210 miles. Government revenue in 1927-28, £2,275,094, expenditure, £1,980,888, public debt, £4,922,330. Governor in 1929, Sir R. E. Stubbs (appointed in 1925).

JAN MAYEN. An island in the Arctic Ocean annexed by Norway by an act of Parliament on May 8, 1929. Lying between Svalbard (Spitzbergen) and Greenland, it was discovered by the Dutch in 1611 and for many years has been used as a base by Norwegian whalers. See NORWAY.

JAPAN. A Far Eastern empire, consisting of the five main islands of Honshu (mainland), Hokkaido, Kyushu, Shikoku, and Taiwan (Formosa), together with some 600 smaller islands.

and island groups, the peninsula of Korea, or Chosen, and Karafuto (the southern half of the island of Sakhalin) Capital, Tokyo; reigning sovereign in 1929, Emperor Hirohito.

AREA AND POPULATION. The area of the Japanese Empire and the population at the censuses of 1920 and 1925 are shown in the accompanying table.

JAPANESE EMPIRE—AREA AND POPULATION

	Area, square miles	Population, 1920 census	Population, 1925 census
Japan proper	147,327	55,963,058	59,736,823
Chosen (Korea)	85,228	17,264,119	19,522,945
Taiwan (Formosa)	13,840	3,655,308	3,983,408
Karafuto	13,934	105,899	203,754
Total	260,379	76,988,379	83,456,929

* Including Pescadores

The figures show a population increase of 6,468,550 during the five-year period, 1920-25. In addition, Japan had a 99-year lease of Kwantung (including Port Arthur and Darien in Southern Manchuria) with a population in 1928 of 837,219, and mandate territory in the South Seas with a population of 56,294 in 1925. The population of Japan proper at the census of Oct. 1, 1929, was 62,938,200. During the five years, 1923-27 inclusive, the average annual number of births in Japan proper was 2,058,610 and of deaths, 1,234,639, or an excess of births of 823,971 each year. In 1925 55.8 per cent of the total population resided in cities of over 5000 inhabitants. Japanese residents abroad in 1927 numbered 673,941. In 1926 there were 31,474 foreigners residing in Japan. The populations of the leading cities at the census of 1929 (figures for the 1925 census in parentheses) were: Osaka, 2,408,800 (2,104,804); Tokyo, 2,294,600 (1,995,567); Nagoya, 904,700 (768,558); Kyoto, 755,200 (679,963); Kobe, 755,200 (644,212); Yokohama, 543,500 (405,888). The density of population per square mile for the entire Empire in 1925 was 320 and for Japan proper, 405.

EDUCATION. Attendance at the elementary school course is compulsory for all between the ages of 6 and 14 years. In the school year 1925-26, there were 9,188,560 in the elementary schools, 598,258 in the secondary schools, 1,051,437 in preparatory technical schools, 58,696 in special schools, 49,634 in normal schools, 231,693 in technical schools, and 64,606 in the six imperial universities and the 26 other institutions of university rank.

PRODUCTION. Despite the strides made by Japanese industry, the country was still primarily dependent upon agriculture in 1929. Of the total area of 94,289,000 acres in Japan proper, only about one-sixth was cultivable, there being (in 1928) 7,286,000 acres of rice fields, 8,833,000 acres of upland farms, 4,315,000 acres of moors and pastures, and 21,053,000 acres of taxable forests. The fertile area is divided into small farms averaging about $2\frac{1}{2}$ acres each and is intensively tilled but with largely primitive methods. About 54 per cent of the cultivated land is owned by large landowners and leased to tenants, who ordinarily secure only a bare subsistence. Rice is the largest agricultural crop of the empire and the principal diet of the people. Rough rice production in 1928 amounted to 534,246,000 bushels in Japan proper, a decrease of 3 per cent from the large yield of 1927, but 4 per

cent above the average for 1922-26. The domestic rice supply is insufficient for the demands of the population and an increasing amount is imported annually. The area and production of the chief crops in Japan proper in 1927 and 1928 is shown in the accompanying table.

CROP AREAS AND PRODUCTION, JAPAN PROPER

Crop	Area ^a		Production ^b	
	1927	1928	1927	1928
Wheat	1,161	1,198	29,321	31,186
Barley	2,343	2,240	82,485	83,505
Oats	302	285	12,372	11,618
Rice	7,777	7,822	550,179	534,246
Tea	106	106	81,497	86,171
Tobacco	91	92	147,985	147,159
Cocoons	.	.	753,316	775,889

^a Thousands of acres

^b Thousands of units—bushels except as indicated

^c Unit, pound

Crops were fairly satisfactory in 1928, but the price of agricultural products declined. There was an increase of 7 per cent in the wheat production, and a gain of 3 per cent in quantity and 11 per cent in value in the cocoon crop (775,000,000 pounds, valued at \$256,500,000). Sugar production in Taiwan was 565,200 metric tons in 1928-29 and 527,500 in 1927-28. Millet, rice, buckwheat, soy beans, potatoes, sweet potatoes, sugar cane, fruits, rapeseed, indigo, and hemp, are other crops. While the cultivation of leaf tobacco is growing rapidly, tea culture both in Japan proper and Taiwan shows no progress either in output or exports, due to the severe competition of India and Ceylon. Livestock in Japan proper on Jan. 1, 1928, included 1,474,000 cattle, 677,000 swine, 19,000 sheep, 195,000 goats, and 1,495,000 horses.

The extensive coastline of Japan and the prominence of fish in the national diet make the fishing industry a highly important one, from which over 2,000,000 persons derived a living in 1928. The fish catch in 1927 was valued at 207,239,000 yen (1 yen equaled approximately \$0.50) and prepared fishery products totaled 183,084,000 yen. About half the area of Japan proper is covered with forests, from which large quantities of timber are taken annually. The production of timber and bamboo in 1927 was valued at 198,730,000 yen. Camphor production is largely a Japanese monopoly, the annual yield averaging about 10,000,000 pounds, or 60 per cent of the world supply. The Taiwan forests furnish the bulk of the Japanese camphor output.

Copper is the only mineral found in Japan in sufficient quantities to more than supply the domestic requirements. The output of coal, iron, petroleum, and some other minerals is hardly sufficient for the needs of Japanese industry. The value of the mineral products of Japan proper in 1927 totaled \$225,737,000, divided as

JAPAN'S MINERAL AND METAL PRODUCTIONS

Product	1927	1928
Coal	1000 metric tons	33,531 33,860,181
Iron pyrites	metric tons	508,089 593,972
Crude petroleum	1000 bbls	1,845 1,781
Sulphur	metric tons	61,340 70,063
Gold	troy oz.	308,864 310,515
Silver	1000 troy oz.	4,531 4,802
Copper	metric tons	66,571 66,641
Pig iron	1000 metric tons	884 1,077
Steel ingots	do	1,400 1,704

follows. Coal, \$121,977,000; copper, \$22,704,000; gold, \$6,244,000; petroleum, \$5,910,000, and silver, \$2,585,000. The mineral and metal pro-

ductions of Japan proper in 1927 and 1928 are shown in the accompanying table

MANUFACTURING The continuation during the period 1920-26 of Japan's unprecedented industrial expansion is indicated by the fact that the number of factories worked by power increased from 30,128 in 1920 to 41,514 in 1926, while the number of factories worked by hand labor declined from 16,022 in 1920 to 10,392 in 1926. The textile industries, centred in Osaka, Nagayo, and Tokyo, are of primary importance, employing 998,447 persons in 1926. The manufacture of metals and metal products, machinery and vehicles, foodstuffs, clay products, paper, chemicals, lumber, and wood products, are other leading industries. In 1926 the main manufacturing industries and the central electric plants employed 1,875,195 persons and used 2,857,829 horse power in prime movers and 1,794,644 horse power in electric motors. Fifty-one per cent of all factory workers were women. Japanese industry and commerce is largely in the hands of a few large family groups. In 1929 nine of these families controlled and operated 144 companies with an aggregate paid-up capital of about 2,360,000,000 yen (approximately \$1,180,000,000). The readjustment of industry continued during 1928 through the restriction of manufacturing production by group agreements, joint-sales agreements, the reduction of capitalization, and numerous mergers. In 1929 business and industry were depressed, particularly during the last half of the year. The output of the principal manufactured products of Japan proper in 1927 was as follows: Cotton yarn, 953,277,000 pounds; spun silk, 13,851,000 pounds; wheat flour, 726,901 metric tons; cigarettes, 28,629,000,000; cut tobacco, 51,424,000 pounds; sake (rice wine), 259,217,000 gallons; printing paper, 765,654,000 pounds; cotton fabrics, \$313,907,000; woollen fabrics, \$113,171,000; porcelain earthenware, \$35,255,000; vegetable oil, \$18,929,000; mats and matting, \$10,653,000; lacquered wares, \$16,367,000.

COMMERCE The decline evidenced in the foreign trade in 1927 was continued in 1928, domestic exports of Japan proper totaling \$887,000,000, a decrease of 2 per cent from the 1927 figure, while imports totaled \$1,019,000,000, a decrease of 1 per cent. Imports into Chosen increased about 6 per cent and the exports declined slightly, while both imports and exports of Taiwan declined. The adverse balance of trade, which had been continuous since 1919, amounted to \$132,059,000 (224,000,000 yen) in 1928. In 1929 the unfavorable trade balance, estimated at about 68,000,000 yen, was less than for several years, as the lower exchange rate prevailing for some months during the year stimulated exports of raw silk and silk textiles to the United States and of cotton textiles to the Asiatic markets. Provisional figures placed the 1929 exports at 2,148,000,000 yen and imports at 2,216,000,000 yen. This represented an increase of about 20,000,000 yen in imports and of 177,000,000 yen in exports, the export increase being the largest in 10 years. The excess of imports for the empire amounted to approximately 170,000,000 yen, as compared with 335,000,000 yen in 1928. As the invisible favorable balance for 1929 was also estimated at 170,000,000 yen, Japan's net trade position was favorable for the first time in 10 years. Japan's invisible favorable balance of trade averaged over 100,000,000 yen annually. The values of the

principal import and export commodities of Japan proper in 1927 and 1928 are given in the accompanying table

JAPAN'S TRADE IN PRINCIPAL COMMODITIES,
1927 AND 1928
[In thousands of dollars—000 omitted]

	1927	1928
<i>Domestic exports</i>		
Raw silk	\$351,415	\$340,045
Cotton textiles	180,993	167,464
Silk textiles	66,192	62,217
Clothing and accessories	32,617	38,906
Sugar, refined	13,710	17,828
Drugs and chemicals	17,960	17,779
Pottery	14,456	16,078
Paper and paper manufactures	12,549	14,668
Wheat flour	6,760	11,472
Coal	12,094	11,377
Canned food	9,203	10,689
Metal manufactures	9,197	10,223
All other	173,388	163,592
Total	\$907,492	\$887,251
<i>Imports</i>		
Raw cotton	\$395,800	\$255,075
Iron and steel	64,071	69,829
Wool, raw and tops	48,206	51,912
Cedar wood	45,474	47,376
Machinery and parts	37,270	42,793
Mineral oils	31,410	41,715
Oil cake, bean	41,944	34,048
Wheat	25,568	31,460
Sugar	15,930	20,147
Soy beans	19,532	23,057
Coal	16,825	17,161
Ammonium sulphate	15,527	16,849
Rice and paddy	37,410	15,627
Automobiles and parts	8,667	14,965
Wool textiles	16,471	14,486
All other	298,058	323,790
Total	\$1,038,137	\$1,019,810

A feature of the import trade in 1928 was the large drop in imports of raw cotton, due to heavy stocks and restricted production of yarn. The United States continued to lead all other countries in Japan's foreign trade, furnishing 28.5 per cent of the total imports and taking 41.9 per cent of the total exports of Japan proper. The value of both imports from and exports to the United States, however, declined. In the same year, China supplied 9.7 per cent of the general imports and took 18.9 per cent of the exports, British India supplied 13 per cent of the imports and purchased 7.4 per cent of the exports, Great Britain furnished 7.5 per cent of the imports and took 3 per cent of the exports, and Germany furnished 6.1 per cent of the imports and took 0.6 per cent of the exports. Of the total imports in 1928, 13.6 per cent consisted of food, drink, and tobacco, 53 per cent of raw materials; 17.4 per cent of semimanufactures, and 15.1 per cent of manufactured articles. The corresponding percentages for exports were: Food, drink, and tobacco, 7.9; raw materials, 4.5; semimanufactures (principally raw silk), 41.7; and manufactured articles, 41.2.

FINANCE For the fiscal year ending Mar. 31, 1929, actual ordinary and extraordinary revenue totaled 2,005,691,105 yen, or 281,733,589 yen more than the budget estimate, while ordinary and extraordinary expenditures amounted to 1,814,855,012 yen, or 145,848,245 yen less than the budget estimate. The excess of revenue totaled 190,836,093 yen. Allowances for appropriations carried forward to 1929-30 reduced this surplus to 134,280,257 yen, of which 42,665,325 yen represented the surplus actually created during 1928-29. In 1927-28 the total revenues amounted to 2,062,755,337 yen, total expenditures to 1,765,713,120 yen, and the surplus, after deducting al-

lowances for estimates carried forward to 1928-29, to 256,218,444 yen.

The decrease of 57,000,000 yen in revenue, in 1928-29, as compared with the previous year, was due chiefly to a decline in extraordinary revenue of 77,000,000 yen, which was partly offset by an increase in ordinary revenue of 20,000,000 yen. The total of ordinary and extraordinary expenditures in 1928-29 was 49,000,000 yen greater than in 1927-28, due to an increase in the appropriations carried forward from the previous year, and expenditures for reconstruction works, and for the dispatch of troops to China which were not included in the budget estimates.

The ordinary and extraordinary budget for 1929-30, as originally approved, estimated expenditures at 1,773,000,000 yen (about \$870,543,000). With the coming into power of the Hamaguchi Ministry in July, 1929, however, the new government immediately reduced the budget by 92,000,000 yen (about \$45,172,000). For 1930-31 the new government's budget provided for appropriations of only 1,608,000,000 yen (about \$789,524,000), or a retrenchment of 165,000,000 yen, as compared with expenditures in 1929-30. Revenues for 1930-31 were estimated at 1,576,000,000 yen. Chief items in the 1927-28 and 1928-29 ordinary budgets are shown in the accompanying table. The 1928-29 budget figures do not include the sum of 11,929,355 yen added to the budget early in 1929.

GOVERNMENT RECEIPTS AND EXPENDITURES [Thousands of yen]

Item	1927-28 actual*	1928-29 budget estimates
ORDINARY RECEIPTS		
Income tax	215,070	211,376
Land and business tax	116,026	129,848
Customs	140,601	141,069
Liquors, sugar, and textiles	359,814	351,716
All other taxes	68,162	67,468
Stamp receipts	81,434	79,157
Posts, telegraphs, and telephones (gross)	216,628	240,673
Monopolies (net)	173,258	168,430
Other public enterprises	61,606	64,241
All other	33,181	30,868
Total	1,484,780	1,484,366
Extraordinary receipts	577,976	224,760
ORDINARY EXPENDITURES		
Debt service	282,134	289,662
National defense	110,734	319,554
Public instruction	118,785	118,648
Communications (gross)	280,407	286,153
All other	179,717	185,970
Total	1,171,777	1,199,987
Extraordinary expenditures	593,936	509,140

* Subject to revision

As a result of the Hamaguchi Government's retrenchment policy, commodity prices were lowered, foreign trade improved, and the government was able to announce on Nov. 21, 1929, that the gold embargo, which had been in effect since 1917, would be lifted early in January, 1930. In anticipation of this event the government amassed specie reserves abroad to the amount of 320,000,000 yen, and arranged for a credit of 100,000,000 yen through banks in America and Great Britain. Yen exchange rose from a low of \$0.43 in June to \$0.489 in November, 1929.

The national debt on Oct. 31, 1929, stood at 5,900,000,000 yen, of which 4,455,000,000 yen

represented domestic loans and 1,451,000,000 foreign loans. The total debt on Jan. 1, 1929, amounted to 5,800,000,000 yen. The government's specie reserve continued to decrease during 1928, amounting to 1,205,000,000 yen on November 30.

COMMUNICATIONS. During the year ending Mar. 31, 1928, 219 private companies operated 3413 miles of railway line with operating expenses of \$20,968,270 and a net revenue of \$16,230,576, while the Government Railways operated 8154 miles of line with operating expenses of \$140,430,000 and a net revenue of \$111,779,440. Interest charges and other deductions brought the net revenue for the government lines down to \$68,807,474. During the year new government lines and extensions under construction totaled 329 miles and projected extensions, 3430 miles. An electrification programme costing nearly 20,000,000 yen was carried out. Of the private lines, 83 received government subsidies.

Commercial aviation was advanced by the organization in 1928 of the Japan Air Transport Company, subsidized by the government to the amount of 20,000,000 yen. In 1927, 86 airplanes in the service of commercial airlines made 17,087 flights for a total distance of 878,230 miles.

The Japanese merchant marine on June 30, 1928, consisted of 2048 vessels of 4,139,815 gross tons. In 1928, 17,347 vessels of 52,272,000 net registered tons entered and 17,415 vessels of 52,395,000 net registered tons cleared the ports of Japan proper. The telegraph and telephone systems are government owned. In 1927 there were 31,897 miles of telegraph line and 2,167,027 miles of telephone wire.

ARMY AND NAVY. Military service is universal and compulsory. Liability commences at 17, but actual service begins at 20 years and lasts for 20 more. The peace strength of the active army in 1928 was 214,340 of all ranks. The military budget for 1928-29 amounted to 176,082,000 yen. See **MILITARY PROGRESS**.

The accompanying table from the *Statesman's Year Book* for 1929 shows the classification of the Japanese fleet for the three years ending with 1928.

JAPANESE FLEET

	Completed at end of		
	1926	1927	1928
Battleships and battle cruisers	10	10	10
Armored cruisers	7	7	7
Aircraft carriers	1	2	1
Cruisers	23	25	27
First class gunboats	4	4	3
Destroyers	93	97	106*
Submarines	58	65	71*

* Including 56 first-class and 50 second class

* Including 17 first class, 44 second class, 10 third class

See NAVAL PROGRESS

GOVERNMENT. Executive power is in the Emperor who acts with the advice and aid of a ministry appointed by, and responsible to, himself, legislative power is in the Emperor and the Imperial Diet of two chambers, namely, the Upper House or House of Peers, composed of membership based on rank, wealth, and other qualifications, and numbering 407 members at the beginning of the year, and the Lower House or House of Representatives, elected for four years, unless sooner dissolved, and numbering 466 members after the election of February, 1928. Emperor in 1929, Hirohito, born April 29, 1901, succeeded his father, Yoshihito, Dec. 25, 1926. The cabinet

at the beginning of the year was composed as follows: Prime Minister and Foreign Affairs, Baron Tanaka; Home Affairs, Keisuke Mochizuki; Finance, Chuzo Mitsuuchi; War, General Shirakawa; Marine, Admiral Okada; Justice, Yoshimichi Hara; Education, Kazuo Shoda; Agriculture and Forestry, Teijuro Yamamoto; Commerce and Industry, Tokugoro Nakahashi; Communications, Fusanosuke Kuhara; Railways, Heikichi Ogawa.

HISTORY

While internal politics in Japan pursued an unusually stormy course during 1929, resulting in the fall of the Tanaka Cabinet on July 2, the year was comparatively uneventful in the field of foreign affairs. Relations with China improved after the recognition of the Nationalist régime as *de jure* on May 30 and with the advent of the new cabinet. The Emperor ratified the Kellogg-Briand Peace Pact on June 27, and the nation showed a sympathetic interest in the success of the London Naval Conference, the invitation to attend which was accepted by the government on June 23.

DOMESTIC POLITICS. The session of the Diet, which ended March 25 with Baron Guchi Tanaka still in power despite numerous demands for his resignation, was marked throughout by bitter political controversy. M. Motoda, Speaker of the House of Representatives, resigned during the session because of the alleged unparliamentary tactics of both the Government and the Opposition. A number of important bills governing domestic government in the House of Representatives, among them being a tax-transfer bill, a peasant proprietorship bill, and bills for the control of religious organizations and for the establishment of smaller electoral constituencies.

The foreign policy of the Tanaka Cabinet was severely censured by the Privy Council, particularly the signing of the Kellogg-Briand Treaty without qualification of the preamble which declared that recourse to war was condemned by the contracting parties "in the name of their respective peoples." This was declared contrary to the Japanese Constitution, under which the Emperor "declares war, makes peace and concludes treaties." The Premier's failure to consult the Privy Council before signing the Tsinan agreement on March 24 (see CHINA, under *History*) was also criticized and on April 10 he formally apologized to the Privy Council. There was general dissatisfaction with the cabinet's militaristic policy toward China, but the immediate cause of Baron Tanaka's downfall on July 2 was his failure to publish the official report dealing with the mysterious death of Marshal Chang Tso-lin in June, 1928. The train in which the Manchurian war lord was fleeing from the Chinese Nationalist forces was bombed as it passed over a viaduct of the Japanese-controlled South Manchuria Railway and the Marshal died of the injuries he received. Charges of Japanese connivance at the Marshal's death led to an investigation by the government. Although publication of the report was withheld due to the opposition of the Ministry of War, it became known that the investigators had recommended the punishment of Colonel Kawamoto, officer in charge of the railway guard, and other high army officials. On July 1, the War Office announced that Colonel Kawamoto would be punished for having

turned over the patrolling of the viaduct on the night of the murder to Chinese guards and that General Muraoka had resigned the Manchurian command. The suppression of the report tended to confirm the charge that the government was involved in Chang's death, and sufficient pressure was brought to bear upon Baron Tanaka to bring about his resignation.

Yuko Hamaguchi, leader of the Minseito, or Liberal party, and former Minister of Finance and of Home Affairs, then formed a new cabinet composed at follows: Foreign Affairs, Baron Kijuro Shidehara; Home Affairs, Kenzo Adachi; Navy, Admiral K. Takarabe; War, General I. Ugaki; Finance, Junnosuke Inouye; Justice, Viscount C. Watanabe; Education, I. Kobashi; Communications, M. Koizumi; Agriculture and Forestry, C. Machida; Commerce and Industry, M. Tawara; Railways, R. Fugi; Overseas Affairs, G. Matsuda.

The Minseito party, of which Premier Hamaguchi was president, came into power with a programme of high tariffs and financial retrenchment, peaceful economic expansion abroad, the reduction of armament, and more friendly relations with China. In general, it favored the interests of the landowners and the population. It had only 172 seats in the House of Representatives, however, as against 220 by the Seiyukai (opposition party), 30 by the Shinto Club, 14 by the Independents, eight by Proletarian parties, seven by Kensei Isshin-kai, four by the Meiseikai, three by the Business Men's party, and one by the Kakushin Club. Although outnumbered in the House of Representatives by the Seiyukai opposition, the government proceeded energetically with its programme. It immediately reduced the budget, adopted a policy of reducing the national debt, and postponed new government enterprises (see under *Finance* above). Although retrenchment was recognized as an essential preliminary to the removal of the gold embargo, the economic measures adopted contributed to the depressed condition of business and industry and caused a general decline in profits and an increase in unemployment. On the other hand, foreign trade improved notably and yen exchange grew markedly firmer. The new government appointed Viscount Momiura Saito to his former post as Governor-General of Korea, in which he had won wide recognition for his statesmanship and liberalism.

The action of the Shinto Club in joining the Seiyukai made it practically certain that the Hamaguchi Cabinet would be forced to appeal to the country early in 1930 for a majority to carry out its programme. The Shinto Club was organized after the 1928 elections among deputies who left the Minseito party. The hopeless position of the government in the Lower House was evidenced soon after the opening of the Diet in December, when the opposition nominee for Speaker was elected. In the meantime, evidences of widespread corruption among certain members of the former Tanaka Government had been brought to light which promised to aid the Liberals (Minseito party) in a general election. Heikichi Ogawa, Minister of Railways in the Tanaka Cabinet and vice president of the Seiyukai, was imprisoned on a charge of accepting bribes from promoters of railway projects. Several of his subordinate officials were also imprisoned for corruption. In December, General Hanzo Yamanashi, former Governor-General of

Korea, was indicted on a charge of accepting bribes.

With Ogawa in jail, the death of Baron Tanaka on September 29 left the Seiyukai without a leader. The place was filled by the election of Ki Inukai, a former Minister of Communications and leader of the Kokuminto, or Nationalist party, which dissolved in 1922.

Communist and other radical activities gave the government some concern during the year. In the spring both houses of the Diet passed a resolution approving the emergency imperial ordinance promulgated in June, 1928, which gave the courts the option of imposing the death penalty upon persons convicted of violating the so-called "peace preservation" law. The law prohibited any person from organizing or joining a society whose object was to alter the national constitution or destroy the system of private property. Ninety-nine Osaka Communists were sentenced early in the year to from two to eight years imprisonment for staging demonstrations at the general elections in 1928. A police roundup of Communists in April was repeated in October and November, when 825 persons were arrested.

OTHER EVENTS. Other developments during the year included the appointment of William R. Castle, Jr., former U. S. Assistant Secretary of State to succeed Charles MacVeagh as the American Ambassador at Tokyo, and the inauguration of direct diplomatic relations with Canada on October 21. On May 3, Yotaro Yamamoto, president of the South Manchuria Railway, laid proposals before the cabinet calculated to ease the tension between China and Japan over the latter government's control of the majority stock in the railway. He suggested that the government sell its stock to private investors, that all administrative functions of the railway zone be turned over to "the railway zone of Kwantung, the territory in Manchuria under lease to Japan, and that an advisory board of 12 be created to assist the president in administering the road. See CHINA, under *History*.

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JAPANESE BEETLE. See ENTOMOLOGY, ECONOMIC.

JARNEFELT-PAKARINEN, MAIKKI. A celebrated Finnish dramatic soprano, died in Abo, Finland, July 5. She was born in Joensuu, in 1871. After studying with Mme. Marchesi in Paris and Julius Hey in Berlin, she made her debut in Breslau and sang for several seasons in various German opera houses. The unusual success of her first appearance in Stockholm, in 1903, induced her to limit her engagements to the opera houses of Scandinavia and Finland, where she was regarded as the foremost of dramatic and concert singers. In 1893 she married the composer, Armas Jarnefelt, from whom she was divorced in 1908. Even after her marriage, in 1910, to Selim Palmgren, she continued to use her first husband's name on the stage.

JEBEL SHAMMAR. See ARABIA.

JENKS, JEREMIAH WHIFFLE. American economist, died Aug. 24, 1929, in New York City. He was born in St. Clair, Mich., Sept. 2, 1856, was graduated from the University of Michigan

in 1878, and studied in Germany for several years. In 1881 he was admitted to the Michigan bar. He taught Greek, Latin, and German in Mt. Morris College in 1879-80, and again in 1881-83. In 1886-89 he was professor of political science and English literature at Knox College, in 1889-91, professor of political economy and social science at Indiana University, and from 1891 to 1912, professor of political economy and politics at Cornell University. He was professor of government and director of the division of public affairs from 1912 to 1917, and after 1917, research professor of government and public administration and director of the division of Oriental commerce and politics in New York University. In 1899-1901 he was expert agent of the United States Industrial Commission and consulting expert of the U. S. Department of Labor on the investigation of trusts and industrial combinations in the United States and Europe. Following this, as a special commissioner of the War Department, he investigated questions of currency, labor, internal taxation, and police in the Orient. In 1903 he was employed by the government of Mexico as special expert on currency reform. In 1903-04 he served on the United States Commission on International Exchange, which was in charge of the reform of currency in China. In 1913 he founded the Far Eastern Bureau and was its director until 1921. During 1907-10 he served as a member of the United States Immigration Commission. After 1918, he was a member of the High Commission of Nicaragua and director of the Pacific Railways and the National Bank of Nicaragua. At the time of his death, he was president and chairman of the board of the Alexander Hamilton Institute. His published writings include *Henry C. Carey as Nationalist* (1885), *The Trust Problem* (1900), "Industrial Combinations in Europe" (vol. xviii, *Report of Industrial Commission*, 1901), *Report on Certain Economic Questions in the English and Dutch Colonies in the Orient* (1902), *Citizenship and the Schools* (1906), *The Political and Social Significance of the Life and Teachings of Jesus* (1906), *Life Questions of High School Boys* (1908), *Principles of Politics* (1909), *Governmental Action for Social Welfare* (1910), *The Immigration Problem* (with W. J. Lane, 1913), *The Testing of a Nation's Ideals* (with C. F. Kent, 1915), *Business and the Government* (1917), *Jesus' Principles of Living* (with C. F. Kent, 1920), *Great American Issues* (with J. H. Hammond, 1921), *We and Our Government* (with R. D. Smith, 1922), and "Science of Business" (vol. 1, *Modern Merchandising Course*, 1927).

JEWISH SOCIAL SERVICE. See WELFARE WORK.

JEWS. That anti-Semitism exists in the United States is a fact, that official Jewry refuses to recognize its existence is another and probably more curious fact. The conduct of official Jewry (i. e., those persons interested in the synagogues, philanthropy, etc.) is based upon the presumption that American Jews form a religious and not a racial or cultural, group. Hence, official Jewry supports theological seminaries, settlement houses, and charities generally, but refuses to recognize the need for a Jewish university (though Jewish academic scholars are becoming extinct), an official census of Jews, or the creation of methods for making Jewish education a reality. On the theory that Jews form an in-

tegral part of American life, certain Jewish groups, notably the fraternal order B'nai B'rith, have been carrying on negotiations with Protestant bodies for the purposes of disseminating good will in the Protestant churches. Such a programme was inaugurated in 1924 with the Federal Council of the Church of Christ as joint sponsor and everything went on admirably until the question of proselytizing among Jews was reached. At this point in the spring of 1929, despite goodwill, the Council of the Protestant Home Missions Board flatly refused to surrender its right to convert Jews. So that official Jewry is to have good will—and home missions.

The increasing preoccupation with cultural matters shows a definite effort to break with the "melting pot" theory. Schemes for spreading Jewish education are appearing in increasing numbers and bureaus of Jewish education have sprung up in many cities. There is an earnest effort, among certain groups, to cope with the serious problems presented by the large number of unschooled Jewish children. Surveys have shown that more than 50 per cent of the children of school age (7 to 13 years), in most communities do not attend Jewish schools. By organization, propaganda, building funds, etc., strenuous efforts were being made to cope with the situation. Unfortunately, curricular advances have been negligible. The theological seminaries continue to serve as the founts of inspiration. Except for the Yiddishists (those people interested in Yiddish as a cultural medium) there is no lay group preoccupying itself with the collection of artifacts, preparation of scholarly theses, writing of texts—in short, that necessary spade-work that must be done before a cultural tradition can be erected.

The Jewish educational programme as carried on had little in it to attract cultured parents. There is no reason why a minority like the Jews in America cannot achieve a distinctive culture, even in the heart of a dominant alien civilization. In modern times, it has been done by the Irish in Great Britain, the Flemish in Belgium, the people of Provence in France, and the people of Catalonia in Spain. The dilemma is apparent, however, there are divided loyalties, and for most influential Jews the terms American and Jew are mutually exclusive. The reform—and wealthy—groups conceive of Jewish education as essentially a theological arm. They will support Jewish education, Hillel Foundations, Jewish Centres, etc., as long as their purposes are religious and American (i.e., teach citizenship, Americanize the alien, etc.). Once they become Jewish and lay, that is to say, really serious, they are shunned. This situation partially explains the insignificance of the American Jews as a cultural group despite their essentially middle-class position. In short, they have money and trained intelligence but can point to no distinctive achievement as Jews. It is doubtful whether this unfortunate state will be resolved unless the group decides that the only answer to anti-Semitism is the serious preoccupation with a distinctive group culture. This needs money and money in all likelihood will not be forthcoming.

OTHER COUNTRIES In Germany, events of the year indicated that anti-Semitism had not entirely abated. Largely due to the agitations of the so-called National Socialist party, there continued an organized effort to harass the Jews. There were reported deseciations of cemeteries,

the breaking into of synagogues, and attempts at incendiarism. In Bremen, a band of hooligans attacked a number of passersby whom they took for Jews. Several ritual murder scares also made their appearance in the country during the year.

The same tale is to be recounted of *Austrian* events for the year. In this country, the most prominent single phenomenon connected with Jewish life is anti-Semitism. There were riots at a number of the Austrian universities including Graz and Vienna. In *Hungary*, the new educational law, nullifying the "numerus clausus," was the cause for considerable excitement, particularly among student bodies. In some of the universities, newly admitted Jewish students, both men and women, were evicted, and the Ministry of Education was compelled to close for a short time three institutions in which these disorders had taken place. In *Rumania*, under the leadership of the Maniu peasant government, it would seem that definite efforts were made to check anti-Semitism. Government officials were demoted for failure to act in disorders and courts martial were ordered of local gendarmerie when it was reported that anti-Jewish riots in the Iasi district were not summarily checked. Following the election of the Maniu government,

Jewish deputies presented a memorandum on the following questions upon population desired immediate action: (1) Citizenship (2) The organization of Jewish communities and increased subsidies for the support of Jewish agricultural activities (3) A budget to cover the costs of maintaining Jewish secular schools (4) Extension of government support to Jewish private schools (5) The establishment of teachers' seminaries for training teachers for Jewish schools (6) Exemption of Jewish pupils in government schools from attendance on the Sabbath. It would appear that considerable dissension existed among the various Jewish groups in the country and that community action was impossible in most instances because of adherence of a sizable proportion to the discredited Briarman Liberal party.

In *Poland*, as in previous years, the Jewish group was engaged in combating anti-Semitism, endeavoring to secure legislation to remedy certain constitutional restrictions, and at the same time was waging a very definite struggle to maintain its economic existence. During the year, numerous minor occurrences took place which indicated that anti-Semitism had not yet abated in that country. In June, for example, charging that a group of Jewish high schools had mocked a Catholic procession, university students of Lemberg invaded the Jewish quarter and ran amuck for several hours. In the course of this raid, two synagogues were wrecked in addition to the buildings of the Jewish newspaper. During the year, reports indicated that the economic lot of Polish Jewry continued to be unhappy. Credit organizations reported that definite obstacles were being placed in the way of the Jews in the obtaining of credit, particularly at the hands of the State Economic Bank. One index of the burdens of the Jewish population is to be found in the number of suicides reported in 1928. Out of a total of 1680 suicides in the country, 891 were those of Jews, despite the fact that the Jews constitute only a little over 10 per cent of the population.

In *Russia*, as in Poland, the leading questions before the Jewish community were the mainte-

nance of an economic life, anti-Semitism, and the anti-religious attitude of the official government. During the year, the work of settling Jews on the land was continued with energy. However, the position of the declassified Jews of the cities was still a miserable one, and it was estimated by official sources that fully two-thirds of the Jews of the country were dependants. For example, in the summer of 1928, unemployment was twice as high among Jews as among non-Jews, no less than 40,000 unemployed Jews registered in Odessa labor exchanges in July. Led by Jewish communists, the government proceeded on its policy of stamping out Jewish religious observances. Agitation was conducted against attendance in the synagogue; and the government made efforts to enforce the law against the existence of religious schools.

ZIONISM The outstanding events of Zionist history were completion of the organization of the Jewish Agency and the crisis in Palestine affairs as the result of the rioting that took place in the fall of the year when Arab mobs attacked Jewish settlements (see **PALESTINE**). The final ratification of the pact between the Zionists and the non-Zionists took place at Zurich in August. At its first business session, the Jewish Agency Council elected Louis Marshall, the American leader, president, and Lord Melchett, the British leader, vice president. Felix M. Warburg of New York and Lord Melchett of London each subscribed \$500,000 toward the financing of the Palestinian corporation through which the Jewish Agency was to carry on its construction work. Despite the efforts of some non-Zionists to emphasize the religious basis of the Jewish Agency pact, the meetings of the Council indicated plainly that the placing of Palestine on a sound economic footing was the chief problem before the Jewry of the world. The Council of the Jewish Agency closed its session with the election of Baron Edmund de Rothschild as honorary president, Dr Chaim Weizmann, president; Louis Marshall, chairman, Lord Melchett, associate chairman Felix M. Warburg of New York was chosen chairman of the Administrative Committee of 40, composed of 20 Zionists and 20 non-Zionists. American non-Zionists included in this committee were Dr Cyrus Adler, Dr Lee K. Frankel, James Becker, Meyer Elsasner, Alexander Kalen, Herbert H. Lehman, Louis Marshall, Felix M. Warburg. The American Zionist members elected to the Council were Morris Rottenberg, Judge William N. Lewis, Gedaliah Bublick, Rabbi Aaron Teitelbaum.

A meeting of the Jewish Agency Administrative Committee in London following the Palestine outrages (September 15) presented a series of demands to the British government in which it insisted that the Palestine Administration was to be held liable for compensating victims of the Arab attacks. The Agency also urged that the Jews be accorded every opportunity for self-defense and that there be established a legal method for forming such defense with Jewish volunteers. The Agency further requested that the Palestine Administration be instructed to place at the disposal of the Jewish Agency in Palestine a substantial sum for the purposes of immediate relief. A fourth resolution requested the allotment of a substantial number of immigration certificates for new Jewish immigrants. The news of the death of Louis Marshall, who had been largely responsible for effecting the pact

leading to the Jewish Agency, arrived during the sittings of the committee.

The thirty-second annual convention of the Zionist Organization of America met at Detroit, Michigan, June 30-July 2. The sessions were concerned with discussions of the Jewish Agency, the rôle of Hadassah, Avukah, Young Judaea, Keren Hayesod, American Zionist Commonwealth, and the United Palestine Appeal. The convention indorsed the Jewish Agency agreement, voted to continue *The New Palestine* (a publication), and gave its approval to the conduct of the various Zionist affiliated organizations. The record of the year had been one of recovery from the controversies of the previous period, and the healing process was accomplished with comparatively few difficulties. Strength was given to the administration by the appointment of D. I. M. Rubinow as executive director and the election of Dr Mordecai M. Kaplan to the chairmanship of the Administrative Committee. Mr Louis Lipsky was reelected president.

The sixteenth biennial Zionist Congress also held its meetings in Zurich, July 27-August 11. Some 320 delegates attended from most of the countries in the Western world. The chief subject on the agenda was the ratification of the pact between the Zionists and the non-Zionists leading to the creation of the Jewish Agency discussed above. The line-up at the that the centre bloc had been considerably weakened over the past two years. The Laborites held 85 votes, the Mizrahi party (orthodox Zionists) 45 votes; the Zionist Revisionists and the Radical Zionists 30 votes. The presidential address of Chaim Weizmann, prophesied that a greater and speedier progress in the Palestinian work could be expected as the result of the ratification of the agency agreement. Dr Arthur Rabin at the second session warned the delegates that there were in operation certain tendencies that were menacing the continuance of the Jewish people as a group. Chief of these he declared were conversions to other faiths, intermarriage, and an unchanging mortality rate. A process of disintegration of Jewish culture and Jewish religion, particularly in Russia, was under way. Only Palestine constituted an exception to the prevailing tendencies, and it was in this country, small as it was, that real efforts were being made to revive the Jewish religion and Hebrew language.

A crisis threatened the meetings of the Congress when the American Zionists insisted that they be given an equal number of seats with American non-Zionists on the Council of the Jewish Agency. The demand was made by Louis Lipsky, president of the Zionist organization of America, and in this he was backed by Rabbi Abbi Hillel Silver and Judge William N. Lewis. A compromise was effected by which the American Zionists agreed to accept 18 seats on the Council instead of the 10 previously allowed them. It is to be noted, however, that the American non-Zionists are to have 44 seats. The upshot of the discussions was the acceptance by the Zionists of the Jewish Agency pact. The Revisionists, however, dissented and withdrew from the Congress as a result of what they considered a surrender of Palestine to the non-Zionists. The Congress also voted a budget of £750,000 for the next two years. The Congress terminated with the election of a coalition executive including two Laborites and two Mizrahi members headed

by Dr. Chaim Weizmann. The following was to be the composition of the executive of the Congress: Dr Weizmann of London, president; Louis Lipsky of New York, Dr. Selig Brodetaky, professor at the University of Leeds, Harry Sacher of Jerusalem, Col. Frederick H. Kisch of Jerusalem; Miss Henrietta Szold, formerly of New York, now of Jerusalem; Dr. Arthur Rupp of Jerusalem, Felix Rosenblueth of London, all General Zionists, Laborites Joseph Sprinzak of Jerusalem and S. Kaplanaky of Jerusalem; Miz-rachi, Orthodox Zionists, Lazarus Barth of Germany and Rabbi Meyer of Berlin, president of the Mizrachi Zionist Organization, formerly of New York but later of Jerusalem

PALESTINE ECONOMIC CORPORATION In November, following the proposal of the Zionist World Congress and the acceptance of the scheme by the Jewish Agency Council, a group of prominent American Jews laid the groundwork for the establishment of an American business corporation to further the economic development of Palestine Prime movers in the project were Associate Justice Louis D Brandeis of the U S Supreme Court, Felix M Warburg, Lee H Frankel and Bernard Flexner This was the first public appearance Mr Brandeis had made, with regard to Zionist matters, since his accession to the Supreme Court bench He and the others expressed their faith in the possibilities of the economic development of the country, believing that the outstanding successes Jews had met with in other countries could be repeated here It will be recalled that at Zurich in August Mr Warburg and Lord Melchett had each already subscribed \$500,000 towards the capitalization of a Palestinian economic corporation

STATISTICS There follows herewith a series of estimates of Jewish population in the more important countries of the world This is the work of Dr H S Linfield and is reprinted from the *American Jewish Year Book* for 1929-30 The total number of Jews in the world in 1929 was estimated at 15,324,515 persons

WORLD DISTRIBUTION OF JEWS

<i>Name of Country</i>	<i>Number of Jews</i>
Abyssinia	50,000
Aden and Perim	3,747
Afghanistan	18,185
Alaska	500
Algeria	100,000
Arabia	25,000
Argentina	200,000
Australia	21,615
Austria	850,000
Azerbaijan	24,676
Belgium	44,000
Brazil	30,000
British Empire	514,442
British Malaya	703
Bulgaria	43,209
Canada	126,196
Chile	2,000
China	12,000
Congo (Belgian)	177
Crimaea	51,516
Cuba	8,200
Curaçao	565
Cyprus	195
Czechoslovakia	354,342
Danzig	9,239
Denmark	5,947
Dominican Republic	55
Egypt	59,581
Estonia	4,566
Finland	1,715
France	200,000
France and Possessions	551,000

WORLD DISTRIBUTION OF JEWS

<i>Name of Country</i>	<i>Number of Jews</i>
Georgia	23,473
Germany	564,379
Gibraltar	1,123
Great Britain	297,000
Greece	125,000
Guiana (British)	1,788
Hawaii	77
Hong Kong	150
Hungary	473,310
India	21,778
Indo-China (French)	1,000
Iraq	87,488
Irish Free State	5,148
Italy	50,000
Jamaica	1,250
Japan	1,000
Kenya	100
Latvia	2,120
Kirghizia	95,675
Libya	49,000
Lithuania	155,125
Luxemburg	1,953
Malta	85
Mexico	16,000
Morocco (French)	117,512
Morocco (Spanish)	8,000
Netherlands	150,000
New Zealand	2,380
Norway	1,457
Palestine	157,800
Panama	25
Panama Canal Zone	750
Paraguay	400
Peria	40,000
Peru	300
Philippine Islands	500
Poland	2,854,000
Porto Rico	200
Portugal	1,000
Portuguese East Africa (Mozambique)	100
Rhodesia (Northern)	110
Rhodesia (Southern)	1,289
Rumania	900,000
Russia (R S F S R)	518,260
Russia (R S F S R) in Europe	2,662,139
Russia (U S S R)	2,820,429
Russia (U S S R) in Asia	114,953
Saar Region	4,554
Serb-Croat-Slovene Sta	64,159
Siberia	44,725
S W Africa	200
Spain	4,000
Surinam (Dutch Guiana)	818
Syria and Lebanon	35,000
Sweden	6,469
Switzerland	20,979
Tanganyika (German East Africa)	10
Tanger Zone	15,000
Trans-Caucasian Rep	57,608
Tunisia	65,000
Turkey in Asia	70,000
Turkey in Europe	120,000
Ukraine	1,795,540
Union of South Africa	62,103
United States (Continl)	4,228,029
United States and Possessions	4,229,401
Uruguay	150
Uzbek and Turcoman Republics	25,689
Venezuela	411
Virgin Islands	70
West Russia (Gov't of Witebask)	115,613
White Russia	395,184

During the year ended June 30, 1928, 11,639 Jews were admitted to the United States (38 per cent of the total) Against these, there were recorded 253 departures, making a net increase of 11,386 A total of 898 Jews were debarred from admission, and 213 were deported The following were the reported destinations of the newly arrived Jewish immigrants California, 238, Connecticut, 135; Illinois, 759, Massachusetts, 304, Michigan, 655, Missouri, 115, New Jersey, 498; New York, 7100; Ohio, 303, Pennsylvania, 752, other States, 720 Of the total number of 11,639 Jewish immigrants, 4771 were from Poland, 1761 from Canada, 904 from

Russia, 754 from Rumania, and 3449 from other countries in Europe, Asia, Africa, Australasia, and countries of the Western Hemisphere. During 1928, a total of 4766 Jews entered Canada via ocean ports. (This includes 470 immigrants from the United States.) During 1927, a total of 5584 Jews entered the Argentine. During 1928, 2178 Jews entered Palestine and 2168 Jews departed from the country.

JOAN OF ARC ANNIVERSARY. See CELEBRATIONS

JOHNS HOPKINS UNIVERSITY, THE A nonsectarian institution of higher education for men (women are admitted to certain courses) in Baltimore, Md., founded in 1876. The enrollment for the autumn of 1929 was 6124, distributed as follows: School of higher studies of the faculty of philosophy, 486; school of higher studies in education, 59; school of medicine, 284; hygiene and public health, 1500; engineering, 318; business economics, 77; college of arts and sciences, 330; college for teachers, 1451; night courses for technical workers, 640; evening courses in business economics, 1201. The enrollment for the 1929 summer session was 1101. The faculty numbered 660. The productive funds amounted to \$25,538,424 and the income for 1928-29 from all sources was \$2,381,605. Important gifts to the university during 1929 included \$50,000 to establish the Wallace King visiting lectureship, \$3,000,000 for additional beds in the medical and surgical departments, \$400,000 for cancer research, \$120,000 to endow the Francis P. Garvan chair of chemical education, and gifts from individuals and companies in 22 States for the establishment of national fellowships in chemistry at \$1000 each per year. The Carnegie Out-Patient Dispensary and Diagnostic Clinic was dedicated in December, 1928, and the Wilmer Ophthalmological Institute and the Welch Medical Library in October, 1929. A new wing, costing \$500,000, also was added to the physiological building of the school of medicine, so as to enlarge the facilities of the departments of pharmacology, physiology, chemistry, and physics. In the autumn of 1929 the school of higher studies in education began operation as a separate unit of the university, similar to the school of higher studies of the faculty of philosophy, the degrees of M.Ed. and D.Ed. being offered. The main library contained 363,000 volumes and the new Welch Medical Library, 97,000 volumes. Joseph Sweetman Ames, Ph.D., succeeded Dr. Frank Johnson Goodnow as president in July, 1929.

JONES, ERNEST LESTER American engineer and superintendent of the U. S. Coast and Geodetic Survey died Apr. 9, 1929, in Washington, D. C. He was born in East Orange, N. J., Apr. 14, 1876, and was graduated from Princeton University in 1898. After 10 years of business research and secretarial work, he became deputy commissioner in the U. S. Bureau of Fisheries (1913-15). He was appointed superintendent of the U. S. Coast and Geodetic Survey in 1916, becoming commanding director in 1920. He also served on the International Boundary Commission of the United States and Canada. Under his direction, an accurate charting of Alaska's coast line was made. In the World War, he was colonel of the Division of Military Aeronautics, and was decorated by the King of Italy, made an officer of the Legion of Honor, and was cited for the Distinguished Service Medal. He wrote *Alaska*

Investigations (1914); *Hypsometry* (1915); *Elements of Chart Making* (1915); *Neglected Waters of the Pacific* (1916); *Safeguard the Gateways of Alaska* (1917); *Aerial Surveying* (1919); *Earthquake Investigation in the United States* (1925); *Tide and Current Investigation of the U. S. C and G S* (1926), published by the United States Government; *Surveying from the Air* (1922); *The Evolution of the Nautical Chart* (1924); and *Science and the Earthquake Perils* (1926).

JONES, HENRY ARTHUR English dramatist, died Jan. 7, 1929, in Hampstead, England. He was born in Grandborough, Buckingham, Sept. 20, 1851, and attended the grammar school in Winslow until he was 13, at which early age he was thrown upon his own resources. His knowledge of English and French literature and drama came from private study. Having early become interested in the theatre, in 1879 he produced the play, *A Clerical Error*. His first success came three years later with *The Silver King*. After this, his position as a dramatist was established, and he continued to write plays, some 60 in number, both comedies and tragedies, but all of a social nature. Among them are *Saints and Sinners* (1884), *Huddiman* (1889), *Judah* (1890), *The Dancing Girl* (1891), *The Tempter* (1893), *Michael and His Lost Angel* (1896), *The Rogue's Comedy* (1896), *The Lovers* (1897), *The Manœuvres of Jan* (1898), *Carnegie Sahib* (1899), *Miss Dan's Defence* (1900), *The Princess's Nose* (1902), *Whitewashing Julia* (1903), *Joseph Entangled* (1904), *The Heroic Stubbs* (1906), *The Hypocrites* (in America, 1906), *We Can't Be as Bad as All That* (1910), *Mary Goes First* (1913), *The Luc* (in America, 1914), *Cock o' the Walk* (in America, 1915). He also wrote *Renaissance of the English Drama* (1895), *Foundations of a National Drama* (1913), *Shakespeare and Germany* (1916), *Patriotism and Popular Education* (1918), *My Dear Wells* (1921), and *What is Capital?* (2d ed., 1925).

JONES LAW. See PROHIBITION

YUGOSLAVIA The official name attached by royal decree on Oct. 3, 1929, to the Balkan state formerly known as the Kingdom of the Serbs, Croats, and Slovenes. Established at the close of the World War (Dec. 29, 1928), it comprised the formerly independent kingdoms of Serbia and Montenegro, Bosnia and Herzegovina, Croatia and Slavonia, former autonomous provinces of Austria-Hungary, portions of the Banat, Backa and Baranja, integral parts of Hungary proper, Dalmatia, a former province of the Austrian Empire, and Slovenia, composed of portions of former Austrian provinces. Capital, Belgrade. Area, 108,346 sq. km. in 1929. Alexander I.

AREA AND POPULATION The 1921 census of Jan. 31, 1921, the first taken since 1910, was 96,134 square miles and the population 12,017,323, representing a density of 125 to the square mile. The population was divided by provinces as follows: Serbia, 4,129,638; Montenegro, 1,099,857; Bosnia and Herzegovina, 1,880,000; Dalmatia, 621,429; Croatia, Slavonia, Medumurje, Kik, and Karst, 2,739,593; Slovenia, 1,056,464; and Banat, Backa, and Baranja, 1,480,413. The total estimated population on May 1, 1929, was 13,400,000. For the reorganization of the provincial administrative system in 1929, see below, under *History*. The majority of the inhabitants speak Serbian and Croatian. Other important linguistic groups are the Slovene and other Slavic lan-

commodities entering the import and export trade in 1927 and 1928 are shown in the table on page 429.

While Czechoslovakia displaced Austria as the chief source of imports in 1928, supplying 18 per cent of the total, Italy was again Yugoslavia's principal customer, taking 26 per cent of all exports. Austria took 17.9 per cent of the exports, Germany, 12 per cent; Czechoslovakia, 9 per cent, and the United States, 0.9 per cent, while of the imports, Austria supplied 17.3 per cent, Germany, 13.6 per cent, Italy, 12 per cent, and the United States, 4.9 per cent. Imports from the United States increased from \$4,481,000 in 1927 to \$6,784,000 in 1928.

FINANCE For the fiscal year ending Mar. 31, 1930, receipts were estimated at 12,158,721,100 dinars and expenditures at 12,158,072,800 dinars (one dinar exchanged at \$0.0176). The 1928-29 budget estimated that revenues and expenditures would balance at 11,555,794,000 dinars, but preliminary reports indicated that both receipts and expenditures would fall considerably below estimates.

Actual receipts for the year 1927-28 totaled 10,772,036,400 dinars and actual expenditures 10,513,128,000 dinars, as contrasted with estimated revenues and expenditures of about 11,690,000,000 dinars. The principal items of expenditure in the 1929-30 budget included Debt service, \$68,000,000 dinars, national defense, 2,550,000,000, pensions, 1,032,000,000; education, 780,000,000, state enterprises, 4,320,000,000, all other, 2,600,000,000. Estimated sources of revenues included Direct taxes, 1,684,000,000, indirect taxes, 3,400,000,000, monopolies (gross), 1,905,000,000, state enterprises (gross), 4,329,000,000, all other, 835,000,000.

According to the Minister of Finance, the public debt on Mar. 31, 1929, was 31,477,350,000 dinars (\$553,998,000), or a per-capita debt of 2349 dinars (\$41). Dinar exchange remained at approximately \$0.0176 during 1927 and 1928, despite the unfavorable trade balance. The legal stabilization of the currency planned for 1928 was not attempted due to the failure to secure a large foreign loan. Note circulation in 1928 averaged about 5,439,200,000 dinars as compared with 5,558,462,000 dinars in 1927.

COMMUNICATIONS With the exception of 300 miles of railway belonging to a private company, all the railway lines of Yugoslavia, totaling 6280 miles at the end of 1928 (5147 in 1924), were under the administration of the state. About 230 miles of additional line were under construction at the end of 1928. In 1926 railways carried 40,029,000 passengers, and 17,236,000 metric tons of freight. Receipts of 2,525,000,000 dinars for telegraph and telephone systems, which are government owned, had 58,509 and 98,700 miles of wire, respectively, in 1927 and their gross receipts were \$912,700 and \$1,985,000, respectively. The merchant marine in 1928 consisted of 145 vessels of 100 tons or more, with a gross tonnage of 260,912. Automobile transportation is increasing and in 1928 a regular passenger air service was inaugurated between Belgrade and Zagreb.

GOVERNMENT Under the constitution adopted June 28, 1921, executive power was vested in the King and legislative power in a single chamber of National Assembly, which consisted of 315 members. As a result of the election of Sept. 11, 1927, the party grouping in the National Assembly was

as follows: Radicals, 111; Independent Democrats, 24; Democrats, 61; National Agrarian party (Croat party), 60, Serb Agrarians, 9; Mohammedans, 18; Slovene Clerical party, 21; other parties, 10. The King in 1920 was Alexander I, born Dec. 17, 1888, who succeeded to the throne with full royal rights on Nov. 6, 1921. On Jan. 6, 1929, he dismissed Parliament, abolished the 1921 Constitution, and proclaimed a dictatorship. See below, under *History*.

HISTORY

The parliamentary impasse reached toward the end of 1928 through Croatian and Slovenian opposition to Serbian domination of the Yugoslavian state (see 1928 YEAR BOOK) was ended on the night of January 5-6, 1929, by a royal decree announcing the dissolution of parliament, the suspension of the constitution, and the establishment of a military dictatorship under General Pera Zhivkovitch, acting on behalf of King Alexander. The King's proclamation declared that parliamentary government had been so abused "by blind party passions" as to prevent every useful development in the state.

"To seek to remove these abuses by fresh elections would have been a waste of time and valuable energy," the decree stated "By such methods, we have already lost many precious years. We must try other methods and tread new paths."

THE DICTATORSHIP General Zhivkovitch, who was commander of the Royal Guard, was made Premier and Minister of Interior in the new cabinet appointed by the King on January 6. Other members of the cabinet were: Deputy Prime Minister, N. Ouzounovitch; Foreign Affairs, Dr. Vojislav Marinkovitch; Transport and Communications, Father Anton Koroshetz; Defence, General Stevan Hajitch; Finance, Stanko Shverlyuga; Social Affairs, Commerce, and Industry, Dr. Matya Dimkovitch; Education, Bozho Maximovitch; Public Worship, Dr. Tugomir Alaouovitch; Justice, Dr. Milan Serzhkitch; Public Health, Dr. Vrosh Krul; Mines, Forests and Agrarian Reform, Lazar Radivoyevitch; Posts and Telegraphs and Public Works, Sveta Savkovitch; Agriculture and Irrigation, Prof. Otto Frangeah.

On February 17, the King issued another decree constituting a Supreme Legislative Council of 17 nominated members. It included 11 Serbs, four Croats, and two Slovenes. Its functions were to be largely advisory. The dictatorship immediately prohibited public assemblage (January 9) and announced a drastic press law under which three Zagreb newspapers had their editions confiscated on January 8 for printing an interview with Dr. Vlatko Matchek, the Croat leader. On January 13 two Turkish language newspapers printed in Southern Serbia were suppressed and the Budapest *Pester Lloyd*, semi-official mouthpiece of the Hungarian government, and the *Berliner Tageblatt* were ordered excluded from the kingdom. General Zhivkovitch, in an interview on January 10, announced that the aim of the new régime was to establish order and discipline, unify the laws, and reconstruct the country's economic life. Once this programme was carried out, he said, the democratic system of government would be reintroduced. King Alexander, on January 16, reiterated that his ultimate aim was "more just electoral laws, true parliamentarianism and real democracy." Dr. Matchek, while expressing the fear that the Serbian party

would attempt "to continue its old prejudicial policy toward the Croats," announced that his party was willing to give a new régime "a chance to lift Yugoslavia out of its present slough of dependency and inertia."

The dictatorship proceeded energetically with its programme. On January 19, the King signed a decree reorganizing and unifying the judicial system, on January 27, two other decrees greatly increased the powers of the Prime Minister and established a single penal code for the entire kingdom modeled upon those in effect in Hungary and Italy. Heavy penalties were prescribed for criticism of the government and for attacks upon "the sacred institutions of monarchy." In line with the decision to abolish all political parties of a racial or religious nature which were not definitely Yugoslav in character, the Croat Peasant party was officially dissolved on January 21 and the Radical, Independent Democrat, Serbian Peasant, and Socialist parties were dissolved three days later. Political clubs maintained by students were ordered immediately disbanded.

As it became evident that the policy of the dictatorship was one of unification and centralization rather than of federalism and autonomy, the Croats resumed their stubborn opposition. Dr. Mathek declared on January 22 that, "Croatia's relations to Serbia can be established only through a Croat parliament. We demand complete legislative and executive freedom, having only such public business in common with Serbia as is necessary for the conduct of foreign policy."

Meanwhile, the new régime put into effect badly needed administrative and political reforms. In April, the Ministries of Religion, Public Health, Posts and Telegraphs, and Agrarian Reform, were consolidated for purposes of efficiency, superfluous employees were dismissed, and there was a general improvement in the civil service. Croat newspapers, which had been tolerated at first, were gradually suppressed and army officers who appeared hostile to the dictatorship were retired, among them General Pesitch, chief of the general staff.

On May 20, Svetozar Pribitchevitch, former Minister of Education and leader of the Independent Democrats, was interned and two days later Dr. Mathek was arrested for having given an interview to an American newspaperman on the political situation in Yugoslavia. The censorship of political news grew increasingly rigorous. Unable to voice their protests within the kingdom, a number of the Croat leaders escaped to neighboring countries, where they carried on a campaign against the dictatorship. On August 8 the Zagreb chief of police forbade a projected public commemoration of the anniversary of the death of Stephen Radich, the former Croat leader. Puncica Ratchitch, who shot Radich in Parliament in 1928, was brought to trial in May and sentenced to 20 years imprisonment—the maximum under Serbian law.

Apparently convinced that it would be impossible to create a unified Yugoslav nation on the basis of existing traditional racial and religious divisions within his kingdom, Alexander on October 3 decreed the drastic reorganization of the internal administrative system. The official designation of the state as the Kingdom of the Serbs, Croats, and Slovenes was changed to that of Yugoslavia, the names of Serbia, Croatia, Slo-

venia, Dalmatia, Macedonia, Montenegro, Bosnia, and Hercegovina were ordered abolished along with the 33 former provinces and in place of the latter were established nine banats, cutting across the former regional boundaries and, with the exception of Littoral Province, bearing the names of the rivers flowing through or beside them. While the boundaries of Croatia and Slovenia were not materially altered, Bosnia was completely recast, its former compact block of Moslem inhabitants being distributed in small minorities among four banats. The areas, populations, and capitals of the nine new provinces, or banats, were given by the January, 1930, issue of *Foreign Affairs* (American) as follows.

JUGOSLAVIAN PROVINCES AREA AND POPULATION

Provinces	Capital	Population	Area in square miles
Drava	Ljubljana	1,040,000	6,151
Sava	Zagreb	2,320,000	14,242
Vrba	Banjaluka	850,000	7,935
Littoral	Split	800,000	7,495
Drina	Sarajevo	1,400,000	11,299
Zeta	Cetinje	740,000	12,476
Danube	Novi Sad	2,100,000	10,870
Morava	Nish	1,200,000	9,928
Vardar	Kopljje	1,405,000	15,272

The banats were given a considerable measure of autonomy, but the bans, or governors, who assumed their functions on November 11, were appointed by the Crown. Their powers included the naming and dismissing of all lower officials, and the control of the provincial finances, they were entrusted also with part of the work of the Ministries of Trade, Public Works, and Social Welfare. Belgrade remained a separate unit outside of the provincial administrative areas. A strictly nationalistic system of education replaced the former system of education in the confessional schools, the aim being to insure the bringing up of all children as Yugoslavs rather than as Serbs, Croats, Slovenians, or Slovenians. Finally, the Sokols, or combined athletic and political organizations, which played such a prominent part in the history of the South Slavs, were ordered abolished.

In the economic field, the dictatorship made less impression. The agrarian credit crisis continued and repeated efforts to secure the large foreign loan necessary to the stabilization of the currency proved unsuccessful. Some gain in national unity was reported toward the end of the year, but the drastic repression of opposition elements continued. More than 2000 Croats, among them Dr. Mathek, were arrested in December following the discovery of an alleged conspiracy to bomb special trains en route to the celebration of King Alexander's birthday on December 17. The deaths in prison of a number of those arrested were described as suicides by the police, an explanation which was received with general skepticism.

FOREIGN RELATIONS Relations with Italy continued strained. No steps were taken for the renewal of the five-year treaty of friendship with Italy, which expired on January 27. In April, there was a flare up on anti-Italian feeling following the publication of documents in the *Giornale d'Italia* implying that the Belgrade Government was preparing for guerrilla warfare with Italy. The Yugoslav Foreign Office denounced the documents as forgeries from start to finish.

Meanwhile, there was anxiety in Belgrade as a result of Italy's success in virtually encircling Yugoslavia through understandings with Austria, Hungary, and Bulgaria. On May 21, the Little Entente treaties of alliance—including Yugoslavia, Czechoslovakia, and Rumania—were renewed after a conference of the Foreign Ministers of the three countries at Belgrade. The ratification by Yugoslavia in November of the so-called Pirot Convention covering the frontier dispute between Yugoslavia and Bulgaria was expected to aid materially in the settlement of that delicate problem. On September 9, Yugoslavia was elected to a seat on the Council of the League of Nations. For Yugoslavia's connection with the reparations and optants questions, see HUNGARY, under *History*, and REPARATIONS, see also ITALY, BULGARIA, and AUSTRIA, under *History*.

JULIANITE. See MINERALOGY
JUNIOR COLLEGES. See UNIVERSITIES AND COLLEGES

JUVENILE DELINQUENCY. See CHILD WELFARE

KAISER WILHELM'S LAND, *Kaiser-wilhelmsland*. A mandated territory under the control of Australia. It was a colony of Germany at the outbreak of the World War in 1914, but was shortly captured by Australian forces. It occupies the northern part of S. E. New Guinea. On Dec. 17, 1920, the League of Nations assigned it to Australia under a mandate. See GERMAN NEW GUINEA.

KAMERUN, *kame-ron'*, CAMEROON or CAMEROONS. The name applied to the territory between British Nigeria and French Equatorial Africa, extending from the Gulf of Guinea to the south shore of Lake Chad, formerly a German protectorate, but occupied by the British and French during the World War and divided in 1919 between France and Great Britain, the former getting far the greater part. Area, 200,725 square miles, population, 2,578,733.

FRENCH KAMERUN. At the time of the division of the former German protectorate in 1919 France received an area of 166,489 square miles (also exclusive of the area ceded to Germany in 1911, which, after the War, was annexed to French Equatorial Africa), population in 1926, 1,878,683, including 1570 Europeans. The seat of the Government is at Yaoundé, and the chief port is Douala. In 1925 there were 73 government schools with a total attendance of 10,549. The principal products are cacao, rubber, almonds, ivory, tobacco, palm oil, and palm nuts. In 1927 the imports amounted to 194,476,148 francs, and the exports to 160,797,699 francs. The general budget for 1927 balanced at 41,768,350 francs and there was a special railway budget of 16,000,000 francs. There were 369 miles of railway. The colony was created an autonomous territory by decree of May 28, 1921, and is under the administration of a French Commissioner-Commissioner in 1929, M. Marchand.

BRITISH CAMEROONS. Great Britain received about 34,236 square miles of Kamerun in the division of 1919. The population is estimated at about 700,050. Cacao, palm kernels, rubber, hardwood, and ivory are the principal products. In 1927 the imports were £318,457 and the exports £303,747. In the same year, 186 vessels of 284,247 tons entered the port of Victoria. The revenue and expenditure, now incorporated with those of Nigeria, amounted to £90,224 and £126,306, re-

spectively, in 1926-27. The Governor of Nigeria is the administrator of the British Cameroons. See NIGERIA.

KANSAS. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,769,257. According to the State census taken in 1925, the population was 1,812,986. The estimated population on July 1, 1928, was 1,835,000. The capital is Topeka.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Wheat	1928	11,516,000	138,060,000	\$138,063,000
	1929	10,473,000	177,383,000	167,144,000
Corn . .	1929	6,103,000	106,802,000	79,033,000
	1928	6,634,000	179,118,000	116,427,000
Hay	1929	2,282,000	8,971,000	41,026,000
	1928	2,396,000	4,646,000	39,023,000
Oats . .	1929	1,197,000	28,249,000	12,995,000
	1928	1,301,000	37,729,000	15,846,000
Grain sorghum	1929	1,091,000	19,638,000	13,747,000
	1928	1,284,000	28,635,000	17,466,000
Potatoes	1929	47,000	4,375,000	6,344,000
	1928	54,000	7,660,000	3,402,000
Barley	1929	608,000	12,464,000	6,232,000
	1928	633,000	17,661,000	8,830,000

* Tons

MINERAL PRODUCTION. Tenth of the States in 1927 in rank according to value of mineral production, Kansas produced in that year minerals to the total value of \$120,368,526; it had produced in 1926 to the total of \$165,060,612. The decline was due almost entirely to a fall in the price of petroleum, which consequently failed in 1927 to supply more than half of the total, as it had formerly done. Ascribable in part to the decrease in activity resulting from lower prices, there followed in 1928 a period of smaller petroleum production. The quantity produced in the State in 1928 was 38,332,000 barrels, in 1927, 41,069,000. The value of the product was 1928 (estimated), \$50,800,000, 1927, \$58,300,000. Natural-gas production, on the other hand, did not decline in 1927, attaining 42,646,000 M cubic feet, in value \$12,833,000, as against 38,095,000 M in 1926, with a value of \$12,547,700. The output of natural-gas gasoline, which was 36,093,000 gallons with a value of \$1,746,000 in 1927, was little changed for 1928, being 35,700,000 gallons, as to quantity, but attained the higher value (estimated) of \$2,378,000. Coal production again fell in 1928, it was estimated for that year at 2,809,724 short tons, in value \$6,861,000. For 1927 it had been 3,443,762 tons, in value \$9,648,000. The mine production of zinc in 1928 was 107,251 short tons, and in 1927, 109,427 short tons. The value of zinc mined was 1928, \$13,084,622, 1927, \$14,006,656. Lead mined was 25,276 short tons in 1928 and 28,463 in 1927, in value, \$2,923,016 for 1928 and \$4,554,080 for 1927. Cement production was active in 1928, the shipments reaching, for the year, 6,787,568 barrels, against 6,141,837 for 1927, shipments had the value, for 1928, of \$10,091,330, and for 1927, of \$9,939,412. The clay products of the State for 1927 were valued at \$3,805,509. Salt production in 1927 yielded 794,780 short tons, having a value of \$2,971,344.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were for maintenance and operation of governmental departments, \$15,020,532 (of which \$654,670 was aid to local educa-

tion). for conducting public-service enterprises, \$439,056, for interest on debt, \$1,142,000, for permanent improvements, \$12,065,867, total, \$28,676,455 (of which \$12,049,825 was for highways, \$2,180,197 being for maintenance and \$10,460,428 for construction). Revenues were \$27,005,310. Of this, property and special taxes formed 34.7 per cent, departmental earnings and compensation to the State for officials' services, 12.1, sales of licenses and taxation of gasoline, 38.5. The valuation of property assessed for ad valorem taxation was \$3,683,648,778. The total funded or fixed debt outstanding was \$25,500,000, the net debt but slightly less.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1 1929, was 9345.34. There were built, in 1929, 2.63 miles of first, and 12.30 of second, track.

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to the operations of 1927, there were in the State, in 1927, 1767 establishments. These employed 50,000 earners, whose wages for the year totaled \$59,925,089. Materials and supplies used in production cost \$518,141,326. Manufactured products attained the combined value of \$681,570,334.

EDUCATION The movement for distributing State aid to the end of equalizing educational opportunity in schools throughout the State gained advancement through a recommendation to this purpose in the report of the State Tax Code Commission. For the year ending with June 30, 1928, the school population of the State was estimated at 544,524 persons, between 5 and 21 years of age. There were enrolled in the public schools 425,124 pupils, those of the public junior colleges and kindergartens not included. The year's expenditure for public-school education totaled \$39,400,849. The monthly salaries of teachers averaged \$164.97 for men and \$139.81 for women.

CHARITIES AND CORRECTIONS The State Board of Administration, starting with 1905, exercised centralized control over the State institutions of care and custody. It had full charge of 16 State institutions. These were: State Penitentiary, Lansing, Reformatory (for prisoners from 16 to 21 years of age), Hutchinson, Boys' Industrial School, Topeka, Girls' Industrial School, Beloit, Women's Industrial Farm, Lansing, hospitals for the insane at Topeka, Osawatomie, and Larned, Hospital for Epileptics, Parsons, Home for the Feeble-minded, Winfield, State Orphans' Home, Atchison, School for the Deaf, Olathe, School for the Blind, Kansas City, Vocational School (colored), Topeka, Western University (colored), Quindaro, Tuberculosis Sanatorium, Norton.

LEGISLATION The regular biennial session of the State Legislature was held, adjourning April 14. The Legislature did not carry out the purpose of the State administration to shape a new scheme of State taxation. They did, however, provide for a referendum to be held in 1930, on the proposal to levy a State income tax. The gasoline tax was increased by 1 cent a gallon, with a view to the completion of 2095 miles of State highway in the course of the ensuing two years. Appropriations of nearly \$20,000,000 were made to cover the expenditures of the biennium. A highway commission was created and two bodies that had been abolished by former legis-

lative action were resurrected, one being the public service commission and the other the tax commission. There was also brought into being a new body, the State Commission on Labor and Industry, charged with directing workmen's compensation, factory and mine inspection, and the supervision of women's and children's labor. An act was passed, retroactive for 6 years, to enable claimants to recover overcharges on railroad freight shipments. Voters absent from their homes on primary or election day were empowered to cast their votes by mail.

In the business field, the most important act of the session was the repeal of the State bank guarantee law, designed to put an end to a bank guarantee system that, like those of some other of the Mid-Western States, has failed to prove its merit upon long trial. The repeal sought to authorize the banks' recovery of bonds that they had deposited under the original act, and this provision was later invalidated by the State Supreme Court. The capital to be required of new State banks was raised to the minimum of \$100,000 in cities of 75,000 inhabitants or over, and proportionately elsewhere. In the educational field, compulsory kindergartens were abolished, counties were enabled to put their scholars in the high schools of other counties, paying tuition therefor, when advisable, and school districts were allowed to maintain transport for pupils to and from school. Conservancy districts were authorized for flood protection and the cleaning of streams, districts, on the other hand, were authorized for the purpose of surrounding flood waters in the western part of the State, to be used for irrigation. Cities were permitted to establish municipal airports. The organization of private banks was prohibited by act. Mutual hail insurance companies were required to deposit \$20,000 each for the protection of policy-holders. Counties were authorized to place highway construction on the county basis, doing away with township control of roads.

POLITICAL AND OTHER EVENTS The resignation of Senator Curtis to become Vice President of the United States on March 4 created a vacancy in the State's delegation in the Senate. This vacancy Governor Reed proceeded at the beginning of April to fill by appointing as Senator Henry J. Allen, former Governor and later director of publicity for the presidential campaign of Herbert Hoover. Allen had been on former occasions an opponent of Curtis in the Republican field. A tax code commission, created with a view to surveying the means for raising revenue required for the prosecution of highway improvement, issued in December a report recommending a general sales tax and a State tax on incomes. A law of 1929 requiring commercial vehicles entering the State to have Kansas licenses was passed by way of reprisal for a similar course on the part of Oklahoma and a series of arrests and prosecutions followed in April, on both sides of the Oklahoma line. The Forest, Fish, and Game Commission proceeded with its policy of creating lakes for sport, by starting on a project for a lake near Tonganoxie. Private interests negotiated for lease of land at Kansas City along the public levee, for the erection of a \$1,000,000 grain elevator.

OFFICERS Governor, Clyde M. Reed, Lieutenant-Governor, J. W. Graybill, Secretary of State, E. A. Cornell, Auditor, Will J. French, Treasurer, Tom B. Boyd, Attorney-General, Wil-

ham A Smith, Superintendent of Public Instruction, George A. Allen, Jr.

JUDICIARY Supreme Court Chief Justice, William A. Johnston; Associate Justices, Rousseau A. Burch, John Marshall, John S. Dawson, W. W. Harvey, Richard J. Hopkins, William Easton Hutchinson

KANSAS, UNIVERSITY OF A State institution of higher education in Lawrence, Kans., founded in 1864 The 1929 autumn enrollment was 4378, of whom 129 were registered in more than one school, leaving a total enrollment of 4249 Of this number, 1586 were women and 2663 men, distributed as follows: Graduate school, 228, college of liberal arts and sciences, 2433, engineering and architecture, 598, fine arts, 342, law, 141; pharmacy, 70, medicine, 325, education, 95; business, 146. The 1929 summer session had an enrollment of 1787, of whom 963 were women and 824 men The full-time faculty members numbered 248. The endowment fund amounted to \$236,000 and the income for the year, including the balance carried over from 1928, was \$2,484,951 There were 212,000 volumes in the library Chancellor, Ernest Hiram Landley, LL.D.

KANSAS WESLEYAN UNIVERSITY. A coeducational institution under the auspices of the Methodist Episcopal Church at Salina, Kans., founded in 1885 The enrollment for the autumn of 1929 was 600, distributed as follows, College of liberal arts, 290, college of music, 110, business college, 200 The 1929 summer session had an enrollment of 115 The faculty numbered 32 The endowment amounted to \$100,000, while the income from the General Fund was \$122,393. A gift of \$10,000, in addition to \$25,000 given in 1928 for the retiring of the bonded indebtedness of the university, was made by Walter P. Chrysler There were 15,000 volumes in the library The new administration building, containing administration offices, class rooms, and the Sams Memorial Chapel, was completed during the year at a cost of \$250,000. President, L. B. Bowers, A. B., D.D.

KARAFUTO. The name applied to the Japanese half of the island of Sakhalin (see SAKHALIN), which comprises that portion south of the 50th parallel of N. latitude Area, approximately 13,934 square miles, population, according to the census of 1925, 203,504 The chief industry is the herring fisheries, although the colony is suitable for agriculture and pasturage The herring catch averages more than 375,000,000 kilograms annually, the greater part of which is manufactured into fertilizer The total value of fishery products in 1928 was 20,557,432 yen The Japanese government supplies Japanese settlers with seed and domestic animals There are also valuable forest lands and mines, the chief minerals being coal and alluvial gold Oil production in 1928 totaled 539,481 tons For the year ending Mar 31, 1929, revenues totaled 32,646,370 yen and expenditures, 25,691,271 yen, leaving a surplus of 6,955,099 yen (exchange value of the yen in 1928 averaged \$0.4640) Governor in 1929, K. Kita.

KEANE, THE MOST REV. JAMES JOHN. American Roman Catholic archbishop, died in Dubuque, Iowa, Aug 3, 1929 He was born in Joliet, Ill., Aug 26, 1857, and was educated at St. John's University in Minnesota and at Grand Seminary in Montreal In 1882 he was ordained Roman Catholic priest and in that year became assistant pastor of St. Mary's Church in St.

Paul, Minn., following which he was pastor of St. Joseph's Church in the same city. He was professor and bursar at St. Thomas's Seminary in St. Paul, from 1886 to 1888, and president from 1888 to 1892 He was pastor of the Church of the Immaculate Conception in Minneapolis (1892-1902) and was consecrated third bishop of the diocese of Cheyenne in 1902. In 1911 he was transferred to the archbishopric of Dubuque

KEEFE, DANIEL J. An American labor leader, died in Elmhurst, Ill., Jan 3, 1929 Born in South Chicago, in September, 1855, he began work in a shingle mill when 8 years old He later became a lumber handler and a longshoreman He was made president of the Lumber Unloaders' Association in 1882, and of the International Longshoremen, Marine and Transport Workers' Association in 1893, serving for many years He was one of the first members of the executive committee of the National Civic Federation, and he was at one time sixth vice president of the American Federation of Labor He also served on the Industrial Peace Commission at Washington in 1906 President Roosevelt appointed Mr. Keefe Commissioner General of Immigration, Dec 1, 1908, a position which he held until May 31, 1913.

KELLOGG-BRIAND TREATIES. On January 19, the U. S. Senate ratified the Anti-War Pact by a vote of 85 to 1 (Senator Blaine) Ratification came as the result of a compromise in the Foreign Relations Committee by which a unanimous report of the committee was submitted to the Senate by Senator Borah which interprets the pact, but expressly states that it does not constitute a "reservation or reservations to the same" Twenty-five Senators had signed a round robin circulated by Senator Bingham of Connecticut, demanding that the Foreign Relations committee submit an "interpretative report," and a compromise was finally effected by which this report was issued with the non-reservation statement insisted upon by Senator Borah

The report giving the "true interpretation" of the pact states

1 The hope and belief that the pact will facilitate the use of peaceful means of settlement of international disputes

2 The understanding that the right of self defense is in no way impaired by the pact, and that each nation is free at all times and regardless of treaty provisions to defend itself

3 The Monroe Doctrine is included as a part of the national security of the United States and the right to maintain this Doctrine is included in our right of self defense

The report incorporates four statements "bearing on the question and as to the true interpretation of the Monroe Doctrine as it has always been maintained and interpreted by the United States" The first of these is a quotation from President Monroe's message to Congress of Dec 2, 1823, which formulated the Doctrine as prohibition of European intervention south of the Rio Grande The second, third and fourth are statements of President Cleveland (message of December 17, 1895), Elihu Root (July 1, 1914), and Professor Theodore Woolsey (June, 1914) which justify President Monroe's declaration as inherent in the right of self-defense No mention is made in the Senate report of the message of President Roosevelt of December 6, 1904, in which the right and duty of the United States to intervene in the affairs of Latin American States "in flagrant cases of wrongdoing and impotence" is added to the Doctrine as originally formulated by President Monroe The "exercise of an international police power" by the United States under the Monroe Doctrine has become, since 1904, the chief cause of complaint against us in Latin America Does the non-intervention of President Roosevelt's interpretation in this latest definition of the Monroe Doctrine imply that a unilateral intervention

policy in Latin America for the United States is not consistent with the terms of the Anti-War Pact! If so, this will doubtless facilitate the adherence of the A. B. C. powers to the pact. The signature on January 5, 1929, of the arbitration and conciliation agreements of the Pan-American Arbitration Conference is another long step along this same road. Both of these developments should do much to better United States Latin American relations.

4. Finally, the Senate's report states that the Anti-War Pact provides no sanctions against a treaty-breaking State, "express or implied," and that the signatories are relieved of their obligations under the treaty as concerns the violating State. It is significantly silent in regard to the attitude the United States will take toward the application of League sanctions against an aggressor.

On Aug. 27, 1929, the following telegram was received by the Secretary of State from the Principal Secretary of State for Foreign Affairs of Great Britain, who was at the time attending the first reparations conference at The Hague:

On the first anniversary of the signature of the Pact of Paris for the Renunciation of War I send you my warmest greetings and congratulations. I believe that this day will be recognized by future generations as marking the beginning of a new epoch in the history of civilized mankind. The Pact of Paris is one of the foundation stones upon which we have now to build the structure of enduring peace and I am confident that it will be, in years to come, the source of undying honor to the government and people of the United States among the nations of mankind.

Arthur Henderson

On August 28, Secretary Stimson sent the following telegram to the American Ambassador at London:

Please convey to His Majesty's Principal Secretary for Foreign Affairs an expression of my sincere thanks for his thoughtful message of congratulation transmitted on the occasion of the first anniversary of the signing of the Multilateral Pact for the Renunciation of War.

Before the first anniversary of the signature of the Treaty for the Renunciation of War, which signature took place at Paris Aug. 27, 1928, the fifteen signatory States had deposited their instruments of ratification with the Government of the United States and had brought the Treaty into force (July 24, 1929), thirty-six of the forty-nine States invited to adhere to the Treaty had deposited their instruments of adherence and had become parties to the Treaty, legislatures or other constitutional authorities of four states (Costa Rica, Haiti, Switzerland, and Venezuela) had approved adherence to the Treaty, so that only formal deposit of instruments of definitive adherence at Washington remained in order to put the treaty in force as to them, seven states (Bolivia, Colombia, Ecuador, Mexico, Paraguay, El Salvador, and Uruguay) had signified their intention to adhere to the Treaty, and two states (Argentina and Brazil) had not signified their intention to adhere to the Treaty. Moreover, one state (Free City of Danzig), not included among those originally invited, had accepted the Treaty and had completed its adherence except for deposit of its instrument of adherence at Washington.

During August the following States deposited their instruments of definitive adherence at Washington and became parties to the Treaty for the Renunciation of War:

State	Date of Instrument	Date of Deposit
Greece	June 25, 1929	August 4, 1929
Honduras	June 29, 1929	August 5, 1929
Chile	July 22, 1929	August 12, 1929
Luxembourg	August 7, 1929	August 24, 1929

KELMAN, THE REV. JOHN Scotch Presbyterian minister, died in Edinburgh, Scotland, May 3, 1929. He was born June 20, 1864, and educated at Edinburgh University and New College. His study at New College was interrupted by three years of travel in Australia, where he attended Ormond College in Melbourne for one session. In 1890 he became assistant to the Rev. George Adam Smith in Aberdeen and in 1891 was ordained minister at Peterculter, Aberdeenshire. He was minister of New North Church in Edinburgh from 1897 to 1907 and minister of St. George's United Free Church, also in Edinburgh, from 1907 to 1919. In 1919 he came to New York as pastor of the Fifth Avenue Presbyterian Church, remaining until 1924, when he went to England to become pastor of the Farnham Presbyterian Church in Hampstead. Because of ill health, he retired in 1925. During the World War, he served with the Y M C A. in France, for which he was made an officer of the Order of the British Empire. He was the author of a great number of books on both religious and literary subjects. Among them are *The Holy Land; The Faith of Robert Louis Stevenson; The Road; A Study of John Bunyan's Pilgrim's Progress; The War and Praching; and Prophets of Yesterday and Their Message for To-day; A Study of Hellenism and Hebraism*, as represented by *Thomas Carlyle, Matthew Arnold, and Robert Browning*.

KENNEDY, THE REV. GEOFFREY ANKETELL STUDDERT—English clergyman, died Mar. 8, 1929, in Liverpool, England, at the age of 46. He was educated at Trinity College in Dublin and was ordained in the ministry in 1908. From 1914 to 1921, he was vicar of St. Paul's in Worcester, and after 1922, rector of St. Edmund the King. He was also a chaplain to the King of England and a messenger of the Industrial Christian Fellowship. During the World War, Mr. Studdert-Kennedy was one of the most popular of the army chaplains, winning the nickname "Woodbine Willie" by his habit of handing out to the British soldiers cigarettes of that brand. After the war, he was active in '... to remedy the industrial troubles of '... He wrote *Rough Rhymes of a Padre* (under the pseudonym "Woodbine Willie"), *The Hardest Part, Luck, Food for the Fed-up*, *The Wicket Gate*, and *The Word and the Work*.

KENTUCKY POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,416,630. The estimated population on July 1, 1928, was 2,553,000. The capital is Frankfort.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod. Bu.	Value
Corn	1929	2,938,000	80,795,000	\$73,523,000
	1928	3,029,000	86,638,000	63,972,000
	1929	473,000	361,845,000	55,858,000
Tobacco	1928	388,700	800,700,000	75,175,000
	1929	1,272,000	1,802,000	28,116,000
Hay	1928	1,302,000	1,712,000	27,852,000
	1929	50,000	4,400,000	5,940,000
Potatoes	1928	57,000	5,985,000	4,788,000
	1929	15,000	1,385,000	1,638,000
Sweet potatoes	1928	14,000	1,246,000	1,433,000
	1929	240,000	2,882,000	3,568,000
Wheat	1928	125,000	1,000,000	1,380,000
	1929	290,000	6,235,000	3,679,000
Oats	1928	305,000	7,930,000	4,520,000

* Pounds. * Tons.

MINERAL PRODUCTION. Kentucky, having outstripped Illinois in coal production in the troubled year 1927, took third place among the States of the Union as a coal producer and retained this position in 1928. The output of coal, which normally would contribute about three-fourths of the total value of a year's mineral production of all sorts, nevertheless fell somewhat in 1928, a year that brought labor war in the coal mines to a late and doubtful conclusion. Mining fell off in western Kentucky during the period of labor suspension, between the end of March and the middle of September, but remained normal in eastern Kentucky. It resulted that the coal production of the State attained the total for 1928, large under the circumstances, of 61,860,379 short tons, as against 60,123,998 tons for 1927. The value of coal mined was \$96,722,000 for 1928 and \$119,249,000 for 1927. Petroleum production rose once again, to 7,325,000 barrels, in value (estimated) \$11,830,000, for 1928, from 6,719,000 barrels, in value \$11,220,000, for 1927. The clay products attained the value of \$7,257,004 for 1927, as against \$7,076,858 for 1926. The yield of natural gas was 10,206,000 M cubic feet, in value \$3,277,000 for 1927, for 1926 it had been 10,410,000 M cubic feet, or \$3,378,000. Native asphalt was produced to the quantity of 344,220 short tons in 1927, as against 320,430 in 1926, and to the value of \$1,700,000 in 1927 and \$2,530,480 in 1926. The yield of stone attained \$2,863,779 for 1927, not counting fluor spar, of which were produced 57,495 short tons, in value \$1,040,338. The total value of mineral products was \$152,614,177 for 1927, for 1926, \$146,768,273.

FINANCE. State expenditures in the year, ended June 30, 1928, as reported by the Federal Department of Commerce, were for maintenance and operation of governmental departments, \$18,834,199 (of which \$5,757,455 was aid to local public education), for interest on debt, \$628,216, for permanent improvements, \$16,176,079, total, \$35,638,494 (of which \$17,231,021 was for highways, \$2,411,292 being for maintenance and \$14,819,729 for construction). Revenues were \$33,832,940. Of these, property and special taxes formed 34.3 per cent, departmental earnings and remuneration for officers' services, 7.1, sales of licenses and taxation on gasoline, 39.5. Taxable property was valued at \$3,064,233,497. State taxation thereon was \$10,783,140. Funded State debt (not including warrants) was \$2,507,021 gross and \$2,141,119 net.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 4036.78. There were built, in 1929, 4.52 miles of additional second track.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to operations of 1927, there were in the State, in 1927, 1851 manufacturing establishments. These employed 74,912 wage earners, whose wages for the year totaled \$83,858,607. Materials and supplies used in production cost \$250,632,957. Manufactured products attained the combined value of \$447,764,961.

EDUCATION. The facilities at the State university were augmented by the completion of dormitories, an auditorium and buildings for the training of teachers. The school population, as estimated for 1928, was 686,910. There were enrolled in the public schools of the State, in 1929,

581,511 pupils. Of these, 526,472 were in elementary, and 55,039 in high-school, grades. Expenditure for public schools totaled \$27,357,550; of this sum \$7,003,517 was listed as State expenditure. The salaries of teachers, by the year, averaged \$767 for elementary and \$1406 for high-school positions.

CHARITIES AND CORRECTIONS. The management of the State institutions for the care or custody of individuals rested in 1929, as previously, in a State Board of Charities and Corrections. This board was a statutory bipartisan body of eight uncompensated members, two necessarily women. It had as its principal agent a Commissioner of Public Institutions, who was its own nominee. The seven institutions under the board's management, with their respective average populations of the year ending June 30, 1929, were: Eastern State Hospital (mental), Lexington, 1460; Central State Hospital (mental), Lakeland, 1944; Western State Hospital (mental), Hopkinsville, 1685; State Reformatory, Frankfort, 2013; State Penitentiary, Eddyville, 868; Houses of Reform, Greendale (boys and girls), 616; Feeble-minded Institute, Frankfort, 520.

POLITICAL AND OTHER EVENTS. There was held on November 5 an election of members of the Legislature, which resulted in the loss of Republican control. William Harrison, Republican, was reelected Mayor of Louisville. At a special congressional election on May 28 to fill a vacancy in the third district, John W. Moore, Democrat, was elected to replace a Republican Governor Sampson carried on his efforts to bring the plan for State issue of textbooks to the schools into working order. Opponents of the scheme of uniform State textbooks brought suits against the law. The State Court of Appeals in one case sustained on June 20 the constitutionality of the law, but held that the textbook commission had adopted books at a faster rate than the law provided. In spite of difficulties as to revenue with which to pay for books, the Legislature of 1928 having voted no such revenue, the textbook commission advertised in July for bids on the supplying of books. Earlier advertisements for bids, thrown out by the courts, had sought that publishers supply certain "hybridized" texts, containing portions of two or more books, which the commission had sought to adopt. The antagonism to the Governor's course in this matter led to an effort to prosecute him criminally for receiving gifts from book publishers. He was indicted, together with another commissioner and numerous book companies, in Franklin County on September 20, and was brought to trial. The court held that the books "presented" were simply samples and instructed the jury to acquit.

The State Highway Commission issued bonds and notes to the total of \$10,767,000 for the acquisition or construction of 15 toll bridges. One of these bridges was to be built between Henderson and Evansville, over the Ohio River. Bridges at Clay's Ferry and at Rio and Munfordville were acquired. Doubt as to the amount of revenue to be derived from projected structures over the Ohio at Carrollton, over the Tennessee at Eggners Ferry, and over the Cumberland at Canton checked the proposal to issue bonds likewise for these projects, it appearing uncertain that the tolls would cover the financial charges. A contest between the State and fire insurance companies over an increase of 12½ per cent in the insurance rates, after a duration of three years,

was settled in May by the State's allowing the companies to retain collections under the increase up to Apr. 1, 1927, while companies were to make a refund of part of the excess for the subsequent period. Power interests proposed to the Federal Power Commission a plan by which they would supply \$250,000 for improving the surroundings of Cumberland Falls as a public park, in return for the grant of a power development at the falls. The Isaac W. Bernheim Foundation was incorporated to acquire and hold some 13,100 acres in Bullitt and Nelson counties to be maintained as a forest and preserve.

OFFICERS Governor, Flem D. Sampson, Lieutenant-Governor, James Breathitt, Jr., Secretary of State, Ella Lewis, Attorney-General, J. W. Cammack, Auditor, Clell Coleman, State Treasurer, Emma Guy Cromwell, Commissioner of Agriculture, Labor, and Statistics, Newton Bright, Superintendent of Public Instruction, W. C. Bell.

JUDICIARY Court of appeals: Chief Justice, Gus Williams, Associate Judges, William Rogers Clay, W. F. Griggs, R. P. Deitzman, M. M. Logan, William H. Reese, S. S. Willis.

KENTUCKY, UNIVERSITY OF A coeducational, State institution of higher learning in Lexington, Ky., founded in 1866. The enrollment in the autumn of 1929 was 2884, distributed as follows: Graduate school, 205, arts and science, 1118; agriculture, 244, engineering, 580, law, 90, education, 380, commerce, 580. There were 1504 students registered in the summer session of 1929. The faculty numbered 255 members. The productive funds amounted to \$184,075, and the income for the year was \$1,599,514. The library contained 95,005 volumes. President, Frank Le-Rond McVey, Ph.D., LL.D.

KENYA COLONY AND PROTECTORATE (formerly the EAST AFRICA PROTECTORATE) A British colony and protectorate in East Africa bordering on the Indian Ocean between the Umba and Dick's Head and extending inland as far as Uganda, a Crown colony and protectorate since 1920. Area, 225,100 square miles, population in 1926 estimated at 2,736,517, including 12,529 Europeans, 30,583 Asiatics, and 10,557 Arabs. The Juba River, formerly the northern boundary, and a strip from 50 to 100 miles wide on the British side of the river, was ceded to Italy on July 29, 1925. Nairobi, the capital, had 32,864 inhabitants, of whom 3612 were European. The largest town is Mombasa, with a population in 1926 of about 39,824, of whom 869 were Europeans. In 1925 there were 20 government schools in operation including 6 European, and over 900 mission and native schools. The agricultural products include rice, coconuts, cotton, sisim, groundnuts, cassava, and sugar cane in the low lying areas. In the highlands, where the temperature is moderate and the rainfall good, maize, coffee, wheat, sisal, and other crops of lesser importance are grown. In 1926 there were 2,756,000 sheep in the colony.

The merchantable forests extend over 4500 square miles, of which 316 square miles are tropical. The mineral resources consist of nation, diatomite, gold, graphite, marble, limestone, and manganese. They are not fully explored as yet, and only gold mining is carried on to any extent. There is a uniform customs tariff in Kenya, Uganda, and Tanganyika. Imports into Kenya and Uganda, exclusive of government stores, totaled \$5,748,000 in 1928 and \$7,697,180 in 1927.

Domestic exports in 1927 amounted to £5,397,216. The chief import was cotton piece goods and the chief export raw cotton. The tonnage of vessels entered and cleared in 1927 amounted to 3,615,935. In the same year, the government revenue for Kenya totaled £2,846,100, expenditure, £2,515,115, public debt, £10,000,000. The Kenya and Uganda Railway is the chief means of communication and is owned by the state. It operates 961 miles of main line and branches, as well as steamer service on lakes Victoria and Kioga, and a motor transport service. The colony is governed under the constitution of December, 1925, which provides for an executive and legislative council. Governor and Commander-in-Chief in 1929, Lieut.-Col. Sir Edward W. M. Grigg.

HISTORY A constitutional union of Kenya, Tanganyika, and Uganda under a High Commissioner and the maintenance of effective Imperial control over the proposed union, especially in matters concerning racial relations, were recommended in the report of the so-called Hilton Commission on Closer Union of the Dependencies in Eastern and Central Africa made public in London on Jan. 17, 1929. The recommendations aroused fear among European settlers in the territories concerned that they would lose their autonomy in dealing with the natives. In October, Sir Samuel Wilson, Permanent Under-Secretary of State in the Colonial Office, who investigated the situation in British East Africa at the request of the Conservative government following the issuance of the Hilton Commission report, submitted supplementary recommendations. He suggested that the powers of the High Commissioner should be confined to the complete control over customs, railways, ports and harbors, posts and telegraphs, and defence, that he should be assisted by a Central Council whose authority would be restricted to the same subjects, and that everything else, including the control of native affairs, should be left to the local legislatures. The question of the appointment of a High Commissioner and of the powers which he should exercise were still under discussion at the end of the year. See TANGANYIKA and UGANDA.

KENTON COLLEGE A college of arts and sciences for men in Gambier, Ohio, established in 1824 by the Protestant Episcopal Church and associated with it. The enrollment is limited to 250. The number registered for the autumn term of 1929 was 256. The faculty numbered 22 members. The endowment funds amounted to \$1,671,000, and the income for the year was \$209,000. The value of buildings and equipment was \$1,755,000. Pierce Hall, including the Philander Chase Memorial Tower, was opened for use in September, 1929. The building, costing \$350,000, is the commons and recreational centre for students. The library contained 45,000 volumes. President, William F. Pence, LL.D., DD., LL.D.

KINDERGARTEN ASSOCIATION, NATIONAL See NATIONAL KINDERGARTEN ASSOCIATION.

KINGSLEY, JOHN STERLING American biologist, died at sea, Aug. 28, 1929. He was born Apr. 7, 1853, in Cincinnati, N. Y., and was graduated from Williams College in 1875, studying later at Princeton University and at the University of Freiburg. During 1876-78 he was curator at Peabody Academy of Science, assistant in the United States Fish and Game Commission, 1877-80, and curator of the Worcester

Natural History Society, 1881-82. He became professor of zoology at Indiana University in 1887 serving two years. During 1889-91 he was professor of biology at the University of Nebraska and from 1892 to 1913, at Tufts College. From 1913 to 1921, he was professor of zoology at the University of Illinois, and from the latter year, emeritus professor. Professor Knevel edited the *Standard Natural History* (1882-83), the *American Naturalist* (1884-96), and the *Journal of Morphology* (1910-20). He wrote *Elements of Comparative Zoology* (1896), *Vertebrate Zoology* (1899), *Guides for Vertebrate Dissection* (1907), *Comparative Anatomy of Vertebrates* (1912, 3d ed, 1926), and *Vertebrate Skeleton* (1925).

KIWANIS INTERNATIONAL. An organization of clubs made up of not more than two of the leaders in each business and profession, united for the rendering of civic and social service to the community. Each club enjoys autonomy but at the same time functions in direct connection with district and international administrations. There are 29 geographical districts, each with a governor, in the United States and Canada. The first club was organized in Detroit, Mich., in January, 1915. By 1917 the organization had spread into Canada. The name "Kiwaniis" was coined to express the constructive, unselfish work of Kiwanians. The motto of the organization is "We Build," is also an expression of its aims are to crystallize community sentiment for municipal improvements, to cultivate public opinion for purer politics, and to promote community cooperation in all good things. At the close of the year 1929, the international organization consisted of more than 1830 clubs, with an approximate membership of 102,000. Some 40,000 civic and welfare projects were carried out by these organizations during the year. Horace W. McDavid of Decatur, Ill., was the international president for 1929-30, Fred C. W. Parker of Chicago, secretary; and Raymond M. Crossman of Omaha, Neb., treasurer. Headquarters are in the Federal Reserve Bank Building, 104 West Jackson Boulevard, Chicago.

KLEE, EUGEN. An American choral conductor, died in Philadelphia, December 18. He was born in Kaiserslautern, Dec. 15, 1869. Having received a solid musical education from his father, he studied for two years in Karlsruhe with Felix Mottl (1890-92), and then for another year in Munich under Ludwig Thuille and Josef Rheinberger. In 1894 he settled in Philadelphia as organist at the Church of the Advocate and conductor of the Kreuznacher Sängerbund. His exceptional talent as choral conductor attracted wide attention, when, at the end of the first year of his directorship, the society won the first prize at the National Singing Festival in New York (1895). This success led to his appointment as assistant conductor of the United Singers of Philadelphia and conductor of several smaller societies. After his election as regular conductor, he gave up the other societies and devoted his entire energy to the United Singers, who then carried off the first prize at several competitive festivals. While conductor of the Junger Männerchor in Philadelphia, he won the coveted Kaiser Trophy in 1912. Then the Arion of Brooklyn secured his services, with the result that at the next festival (1915) they carried off the same prize. During

1917-21 he was conductor of the New York Liederkrantz. After that, he lived in retirement in Philadelphia.

KLENGEL, JULIUS A. celebrated German cellist, died in Leipzig, in September. He was born in that city, Sept. 24, 1859. He studied at the Leipzig Conservatory under Hegar ('cello) and Jadassohn (composition) and spent practically all his life as solo 'cellist of the Gewandhaus Orchestra and professor of that instrument at the Conservatory. His compositions consist of four 'cello concertos, two *Konzertstücke* for 'cello and orchestra, a suite for two 'cellos; about 40 smaller pieces for 'cello, a *Serenade* for string orchestra, two string quartets, a piano trio.

KLOCKMANNITE. See CHEMISTRY, under MINERALOGICAL CHEMISTRY.

KNIGHTS OF COLUMBUS. A fraternal society of Roman Catholic men, organized under a special charter granted by the General Assembly of the State of Connecticut in 1882. The order is composed of a supreme council, a board of directors, and State and subordinate councils. On June 30, 1929, there were 61 State councils and two territorial jurisdictions. The subordinate councils, numbering 2544, had a membership of 637,122, of whom 247,040 were insurance members and 390,082, associate members. These two classes were developed through deviation from one of the chief purposes of the organization, to urge Roman Catholic men to insure provision after death for those dependent upon them, expansion in membership permitting others to join the associate class with certain restrictions as to their rights. By the step-rate plan of insurance, adopted in 1902, every insured member on the average was to pay the cost of his own insurance at his own age. In 1929 two improvements in the insurance plan were adopted: the automatic assessment loan provision and the two-year rule covering hazardous and extra-hazardous occupations.

The four principles of the order—charity, unity, fraternity, and patriotism—emphasize to members the necessity of rendering service in time of illness, death, or distress, the gathering together of men for better citizenship, the value of mutual assistance, and loyalty to duly authorized civil government. Since the World War, the society has offered to ex-service men evening courses in academic, commercial, and trade or technical subjects free of charge and has conducted correspondence courses for ex-service men and other members of the order. Its programme of boy-guidance work was organized in 1922 at the request of the bishops of America. It includes a two-year course in boy-guidance work at Notre Dame University, established through the endowment of a chair by the order. Scholarships are furnished outstanding Catholic men graduates of colleges, who are particularly adapted to the work. The Circles of Columbian Squires, the junior order for boys between 14 and 18, in 1929 numbered 55 with a membership of 2216. The objectives of the junior order are to develop a programme of activities most suitable for boys of the middle adolescent group; to train Catholic boys for future leadership, and to develop them through the five-fold programme into high-type Catholic gentlemen.

The 1929 supreme convention was held August 20-22 in Milwaukee, with an attendance of approximately 1500 members. The supreme officers reflected were: Martin H. Carmody, supreme

knight; John F. Martin, deputy supreme knight, William J. McGinley, secretary; D. J. Callahan, treasurer, Edward F. Fahey, M.D., physician; Luke E. Hart, advocate; the Rev. John J. McElvney, chaplain, and David F. Supple, warden. The order publishes *Columbia*, a monthly magazine with a circulation of more than 700,000. The headquarters of the supreme council are in New Haven, Conn.

KONEL. See CHEMISTRY, INDUSTRIAL, under *New Alloys*

KONGO, BELGIAN, and KONGO FREE STATE See CONGO

KOREA or CHOSEN. A peninsula of eastern Asia annexed by the Japanese Empire under the treaty concluded between Japan and Korea on Aug. 22, 1910, and incorporated as an integral part of Japan by an Imperial Rescript of 1919. Capital, Seoul.

AREA AND POPULATION. The area is given at 85,231 square miles, population at the end of 1928, 19,189,699, including 469,043 Japanese, compared with 17,288,949 in 1920. At the end of 1926, the largest cities with their populations were: Seoul, 306,363 (81,559 Japanese), Pusan, 106,323 (40,803 Japanese), Pyong-Yang, 114,471 (23,545 Japanese), Tai-Ku, 77,263 (23,513 Japanese).

EDUCATION. In 1926 there were for the education of the Japanese 456 elementary schools with 55,853 pupils, 11 middle schools with 4840 pupils, one medical school, one technical high school, 22 girls' high schools, with 6332 pupils, one commercial high school, one special school for law, and various kindergartens and private schools. For the education of the Koreans, there were 1311 common schools, with 391,058 pupils, 74 private common schools, with 16,592 pupils, 37 higher common schools, with 12,404 students, besides various industrial schools, and a medical and technical college. There is a university at Seoul with 467 students in 1927.

PRODUCTION, ETC. Agriculture is the principal occupation of the Korean people, and rice is the staple agricultural product, followed by barley, Italian millet, soy beans, wheat, and red beans. Methods of agriculture preclude the use of mechanical devices. The Korean's main beast of burden is his ox or cow. As a result of the encouragement given by the government to the breeding of cattle and the measures taken to prevent stock diseases, the number of cattle in Korea gradually increased from 900,000 in 1910, at the time of the annexation to Japan, to 1,594,894 in 1927. Of the 1927 total, 259,663 were slaughtered and 43,086 exported. In 1927 the rice crop amounted to 84,998,445 bushels, in the previous year the barley production was 35,410,630 bushels, agricultural products also included 21,757,085 bushels of soy beans, 157,489,981 pounds of upland American cotton, and 57,149,756 pounds of native cotton. Fruit growing and the raising of silk cocoons were extending progressively.

The principal native industrial products of Korea are textile fabrics, paper, pottery, metal ware, manufactured tobacco, brewed drinks, and leather. These industries are mostly carried on as subsidiary household industries. Pulp, cement, sugar, flour-milling, and silk-spinning factories have recently been introduced. The chief mineral products are gold, silver, zinc, copper, lead, iron, tungsten ore, graphite, coal, quartz, and kaolin.

COMMERCE. The total trade of Korea with Japan and foreign countries in 1928 amounted to 779,969,467 yen, of which 365,978,524 yen represented exports and 413,990,943 yen, imports. Exports were 2 per cent and imports 8 per cent higher than in 1927, when the total trade amounted to 762,341,709 yen. Exports to Japan were valued at 333,829,337 yen, or 91.2 per cent of the total, and imports from that country at 295,839,921 yen, or 71.5 per cent of the total. China ranks next to Japan in the volume of trade with Korea.

The principal imports in 1928 were cotton piece goods, millet, machinery, silk goods, timber, and fertilizers, the chief exports, rice, soy beans, raw silk, fish, pig iron, and fertilizers.

FINANCE. Actual ordinary and extraordinary revenue in the fiscal year ending Mar. 31, 1929, amounted to 238,152,294 yen and total expenditures to 217,690,321 yen, leaving a surplus for the year of 20,461,973 yen. The approved budget for 1929-30 provided for revenues and expenditures of 246,852,843 yen. The Hamaguchi cabinet, which assumed office in Japan in July, 1929, reduced the approved budget by 10,421,304 yen. The public debt on Mar. 31, 1929, stood at 353,034,204 yen. The finances of Korea form a special account in the budget of Japan.

COMMUNICATIONS. The length of railway lines open to traffic in Korea on June 30, 1929, totaled 2062 miles, of which 1622 miles were owned and operated by the Government and 440 miles by private interests. Under a 12-year construction programme adopted by the Japanese Diet, the government planned to build 860 miles of new line tapping the forest resources of the upper Yalu River district, the mineral resources of northern Korea and the marine products of southern Korea, and to purchase 210 miles of private railways connecting the government lines. A new line stretching 388 miles between Genzan and Kwamei was opened to traffic in September, 1928, and 60 miles of additional line were scheduled for completion in 1929. In the fiscal year ending Mar. 31, 1928, the government lines carried 20,058,401 passengers and 5,569,774 tons of freight, the total receipts amounting to 37,311,687 yen. In the same year there were 8511 miles of telegraph and 8266 of telephone line.

GOVERNMENT. Korea is governed as an integral part of Japan through a governor-general entrusted with large administrative powers. In 1929, Viscount Minoru Saito, former Governor-General of Korea, was reappointed to that post as the successor to General Hanzo Yamanashi.

KOWEIT. See ARABIA

KU KLUX KLAN. The year 1929 fairly may be said to mark the passing of the Ku Klux Klan as a national institution. In the spring of the year, the organization announced the closing of its Washington office and a return to Atlanta. Thus, the Ku Klux Klan again reverted to its status as a sectional organization.

KULAKS. See RUSSIA, under *History*.

KURDISTAN, koor'de-stan'. A more or less vague term applied to a region in eastern Asia Minor comprising a portion of Turkey and the northern section of the vilayet of Mosul in the new independent state of Iraq (see MESOPOTAMIA). The inhabitants are Kurds, a semino-madic people related to the Persians in race and language. The population is estimated at 2,500,000. Shortly after the World War, there was an attempt to create an independent Kurdistan. The

movement was completely crushed by the failure of the Treaty of Sévres, after which the remaining Kurds divided in political allegiance to the Turkish, Persian, and Mesopotamian governments.

KWANGCHOW-WAN, kwangchōwan A small territory on the coast of the Chinese Province of Kwangtung, leased to France in 1898, and two small islands commanding the bay leased to her the following year. Area, about 190 square miles, population estimated at 250,000. In 1927 the imports were valued at 8,661,166 piastres and the exports at 7,559,613 piastres (the exchange value of the piastre in January, 1929, averaged \$0.4854). The chief imports are cotton yarns, matches, and petroleum, the chief exports, straw sacks, swine, cattle, and mats. The port is free and is regularly visited by vessels of a French steamship company. In 1927, 283 vessels of 189,661 tons entered. The local budget for 1928 balanced at 680,000 piastres. The administration is under the Governor-General of French Indo-China. See FRENCH INDO-CHINA.

KWANTUNG, kwant'ung, or KWANTAO A territory at the southern part of the Liaoting Peninsula, leased to Japan by China, as a success to Russia after the Russo-Japanese War. Area, about 538 square miles, population, Dec 31, 1928, 837,219, of whom 733,711 were Chinese. At the end of 1926, there were 52 elementary schools, with 23,121 pupils, for the instruction of Japanese, and 130 schools, with 21,545 pupils, for the instruction of natives. The agricultural products include rice, tobacco, hemp, and various grains and vegetables. The fishing industry is of importance. There is an abundance of salt which is the chief manufactured product. Trade is mainly with Japan and China. Imports in 1928 were valued at 168,524,899 haikwan taels and exports at 199,363,559 haikwan taels (the exchange value of the haikwan tael in 1928 averaged \$0.71). The seat of the administration and the chief port is Dairen, formerly Dalny. The budget approved by the Japanese Diet for the fiscal year ending Mar 31, 1930, estimated revenues and expenditures at 24,091,717 yen. The budget was later reduced by the new Hamaguchi cabinet and made to balance at 23,050,104 yen. In 1928 the Japanese-controlled South Manchuria Railway carried 9,514,049 passengers, and 19,323,514 tons of freight, earning a net profit of 74,281,024 yen (the exchange value of the yen in 1928 averaged \$0.1610). The railway has 691 miles of line. The territory is under a Japanese governor-general. Governor-General in 1929, K. Kinoshiro.

LABOR. The reader is recommended to the following articles for discussions of the various aspects of the history of labor during the year: CHILD LABOR, COOPERATION; LABOR ARBITRATION AND CONCILIATION, LABOR LEGISLATION, MINIMUM WAGE, OLD-AGE PENSIONS, STRIKES AND LOCKOUTS, UNEMPLOYMENT; WOMEN IN INDUSTRY, WORKMEN'S COMPENSATION, and in articles on the respective countries. See also TRADE UNIONS and SOCIALISM for special aspects of the labor situation. In the article LABOR, AMERICAN FEDERATION OF, attention is given to the official history of the outstanding labor federation in the United States.

LABOR, AMERICAN FEDERATION OF The A. F. of L met in annual convention at Toronto, Canada, during October 7-18. The Executive Council's report epitomized the accomplishments of the organization during the preceding year and

at the same time indicated the character of the programme to be pursued for the year 1930. The 1929 membership was 2,933,545, an increase of 37,482 over 1928. If the 500,000 for whom dues had not been paid because of strikes and lockouts were added, the membership rolls would be swelled to 3,433,545. The Executive Council's report called upon the international unions to press their work in the South, demanded the application of the quota system to immigration from Mexico, Central America, and South America, stressed the dire effects of technological unemployment, even in such advanced industries as automobile manufacturing, attacked the widespread discrimination against middle-aged workers, and demanded the creation of a Federal employment service and the enactment of State old-age-pension laws. Fully a thousand men and women listened to the addresses of speakers and joined in the deliberations of the assembly. President Green spoke of the probability, in the near future, of the affiliation with the A. F. of L. of the Brotherhood of Railroad Trainmen with its membership of 185,000. Technological unemployment, according to the Trainmen's representative, has hit the railroad workers severely, for since 1920 fully 350,000 men on the railways have lost their jobs.

On October 10, speakers concerned themselves with the furtherance of cooperation between capital and labor. The Baltimore & Ohio R. R. scheme was described, particularly as it was being applied to the Canadian Railway system. On the other hand, the British fraternal delegates, J. T. Brownlie and James Bell, insisted that capital was according labor partnership in industry "not because of some intellectual reasons, but only because it was driven by great economic forces." The Executive Council's intention to minimize the Southern labor situation by calling upon the international labor unions to carry out the work was summarily checked.

It is important to note that the revolt, such as it was, did not come originally from the A. F. of L. delegates but from the liberal press. The horrors of Southern industrial strife had aroused the United States as had no other economic question in recent years. The unbelievably low wages, the wretched sweating, the complete domination by the industrialists of the local governmental machinery, brought home to the American public the realization that industrial feudalism still lived. On October 15, the A. F. of L. voted to raise a war chest for the purpose of bringing unionization into the South. The A. F. of L. was to raise the money and do the job itself instead of turning it over, in the textile regions for example, to the weak United Textile Workers of America. President Green, in reporting this decision to the delegates, evidently commended the justice of the criticism leveled against the A. F. of L.'s earlier policy, for he said "Then we will have answered those who say that for years we have neglected the South."

On October 16, Prime Minister Ramsay MacDonald addressed the convention. He called upon labor for the support of his peace programme on the ground that the working classes always shouldered the heaviest burdens in war. The Executive Council met with unexpected opposition on its anti-injunction resolution, when Andrew Furuseth, of the International Seamen's Union, attacked the A. F. of L. bill, which was a revision of a measure prepared by Senators

Walsh (of Montana), Norris, and Blaine and was to be introduced in Congress. It was an attempt to meet the objections raised against the defeated Shipstead Bill, which was so sweeping (it denied equity jurisdiction to the courts) that it met with defeat on the grounds of constitutionality.

The A F of L measure aimed at the restriction of the equity powers of the courts. By its terms, injunctions can be granted only after trial has established that unlawful acts have been committed, that substantial injury to property will follow, and that there is no other adequate remedy at law. The following acts would no longer be unlawful: ceasing work, becoming a member of a labor organization, paying strike benefits, assembling to act or organize, combining to act or inviting others to do so, refusing to handle any material produced in whole or in part by non-union labor. Upon application for an injunction, the party to be enjoined would be notified and would have the right to cross-examine. Trials for contempt would have to be before a jury. Mr. Furuseth opposed the bill because he believed that trade-unionism was safe from the injunction only if the courts were denied entirely equity jurisdiction. Mr. Matthew Woll declared in reply that the bill would succeed in effectively limiting the equity power. The convention endorsed the bill, Mr. Furuseth being the only voice in the negative.

Other resolutions included Advocacy of compulsory State arbitration laws for men and women over 6 years of age. The Education Council was to draw up a model measure; reaffirmation of the A F of L's policy for the restriction of immigration from Latin-America and the Philippines; opposition to the conscription of labor in war time; reaffirmation of belief in the innocence of Mooney and Billings; support of an educational and organization campaign among Negro workers; approval of the Federal granting of charters to locals of the Brotherhood of Sleeping Car Porters; a veiled attack on the Conference for Progressive Labor Action (See SOCIALISM). William Green was elected president for his fifth term. The following vice presidents were reelected: Frank D. Meyer, I. A. Rickert, Matthew Woll, James Wilson, James P. Noonan, John Coeheld, A. O. Wharton, and James N. Weber. Secretary Frank Morrison and Treasurer Martin Ryan also were reelected. James Manning and

directly or indirectly more than 12,000,000 workers. During the fiscal year 1929, a total of 522 strikes and lockouts were referred to the Department of Labor for adjustment. These disputes were distributed in 28 different States and the District of Columbia, the great majority of them, however, being in the industrial States of the North. In Pennsylvania, there were 139 such disputes submitted for arbitration, in New York, there were 98; in Massachusetts and New Jersey, there were 41 each, Illinois had 36, and Indiana had 34. On the other hand, Delaware, Maine, and Oregon had but one each. Of these 522 cases in which the good offices of the Department of Labor were employed, 385 were adjusted; 40 were found impossible for adjustment, 21 were recorded as unclassified, 76 cases were pending at the close of the year. Of the cases pending at the close of the fiscal year 1928, 11 adjustments were subsequently made, making the total cases adjusted during that year 396.

SUMMARY OF WORKERS AFFECTED, BY MONTHS, FISCAL YEAR, 1929

Month 1928	Workers affected	
	Directly	Indirectly
July	51,464	11,165
August	10,076	6,909
September	42,598	68,240
October	14,497	34,193
November	11,045	6,394
December	4,247	2,068
Total	384,607	272,671

1929		
January	4,609	8,531
February	28,126	2,534
March	19,187	14,240
April	55,999	27,222
May	121,911	37,253
June	21,410	63,892

As a result of the continued success of the service, the Secretary of Labor in his annual report stated he was convinced "that the gradual reduction in the number of trade disputes was due in no small part to the constant circulation among the employers and employees of the communications of conciliation." The following tables indicate the number of workers affected in the cases submitted for conciliation during the fiscal year 1929 and also a summary of the cases over the period 1914-1929 that received the Department's attention.

SUMMARY OF CASES, 1914-1929

Class	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
Number	33	42	277	378	1,217	1,789	802	457	370	534	544	559	551	545	478	522
Adjusted	28	20	277	378	1,217	1,789	596	338	266	428	348	392	377	395	307	385
Unable to adjust	5	10	23	47	71	111	96	48	41	27	62	64	61	57	67	40
Pending	6	6	21	42	7	13	9	24	31	60	67	42	43	24	53	76
Unclassified	1	6	41	66	214	214	101	47	32	19	69	61	70	69	61	21

Cases pending at end of last fiscal year and now adjusted, 11. Total number of adjustments, 396

Thomas E. Maloy were elected as the organization's fraternal delegates to the British Trades Union Congress. The 1930 convention was to be held in Boston.

LABOR ARBITRATION AND CONCILIATION. UNITED STATES. The conciliation of the Department of Labor has continued, as a result of its trained staff and increasingly improving technique, to be of considerable assistance in the settlement of industrial disputes. Since the creation of the service in 1913, 9048 trade disputes had been submitted to the conciliators, involving

CASES INVOLVING WAGES AND HOURS. The U. S. Bureau of Labor Statistics made during the year a study of the results of arbitration cases involving wages and hours from the period covering 1865 to 1929. There was a total number of such cases of 423. In the pre-war period from 1865 to 1914, decisions were rendered in 54 cases, of which 43 were returned favorable to the workers (79.0 per cent.); nine were returned in favor of employers (16.7 per cent.); and two were mixed decisions. The war period, 1915 to 1920, showed a much higher favorable return, as

far as workers were affected. In these six years, of 98 cases considered, 92 were returned in favor of the workers (93.9 per cent), and only six were favorable to the employers (6.1 per cent). In the post-war period, 1921-1929, there was a total of 271 cases adjudicated, of which those favorable to the workers diminished considerably. Of the total, 164 or (60.5 per cent) were in favor of the workers, 95 (35.1 per cent) were in favor of the employers, and 12, (4.4 per cent) were mixed decisions. The character of the decisions was affected by the series of economic depressions that occurred after 1920. Thus, in 1921, decisions were, for the most part, adverse to the workers' demands. In 1922, 17 cases were adjudged in favor of the workers and 21, in favor of the employers. Similarly, in 1925, 20 cases were adjudged in favor of the workers and 16, in favor of the employers.

During the war period, 1915-1920, in view of extraordinary demands on industry and the unsettled economic conditions, there was an extraordinary growth in the development of arbitration machinery. During the war years proper (1917-18) governmental agencies were created for the adjustment of wages and the control of labor disputes. The following is a list of the Federal war agencies which, among other things, rendered decisions in matters arising out of industrial conflict:

- Cantonment Adjustment Commission
- Shipbuilding Labor Adjustment Board
- Industrial Relations Division—Emergency Fleet Corporation
- Marine and Dock Industrial Relations Division
- National Adjustment Commission (longshoremen)
- New York Harbor Wage Adjustment Board
- President's Mediation Commission
- Administrator of Labor Standards in Army Clothing
- National Harness and Saddlery Adjustment Commission
- Industrial Service Sections of Ordnance, Quartermaster, and Aircraft
- Railroad Administration Board of Railroad Wages and Working Conditions
- Fuel Administration
- Food Administration
- National War Labor Board
- War Labor Policies Board

After the war, Federal agencies withdrew their activities, as far as private industry was concerned, but, because war conditions to an extent existed, more or less continuous action was necessary by some of the arbitration boards. At the early part of the liquidation of the war period, requests for wage reductions and the increase in hours came from the employers and, as was indicated above, in the year 1921 most of the cases were settled in their favor. In the post-war period, arbitration was resorted to frequently in the following industries: street railways, printing trades, electrical trades, and in the men's garment industry.

The most important development of the post-war period was the passage of the Railroad Labor Act of 1926 which abolished the Railroad Labor Board and set up a new machinery for mediation and arbitration. From 1926 to 1929, this new organization had arbitrated in 41 cases. The United States has had only two experiences with compulsory arbitration. These were with the Colorado Industrial Disputes Act passed in 1915 and the Kansas Court of Industrial Relations was created in 1920. Under the Colorado Act, employers and employees are compelled to give the State Industrial Commission 30-days' notice of an intended change affecting conditions of employment, particularly with respect to wages and hours.

The law made it unlawful for an employer to declare a lockout or for employees to go on strike before the Commission terminated jurisdiction. However, the Colorado commission has no compulsory powers. From 1915 to 1924, the Industrial Commission of this State passed on 1042 cases, of which 221 were ruled on in favor of the workers; 190 were ruled on in favor of employers; 334 resulted in mutual agreement; 297 had no record of any final outcome.

The Kansas Court of Industrial Relations was created in 1920 and required that all disputes in industries "affected by a public interest" be referred to the Court. The law also forbade strikes and lockouts in such industries. On Apr. 13, 1925, the Supreme Court of the United States declared unconstitutional the "compulsory arbitration" features of the law. From 1920 to Jan. 1, 1924, this Kansas Court had formally considered 55 cases, of which 27 involved disputes over wages and hours. Of these, five resulted in agreement reached out of court. In 14, the court granted increases in wages, in two, refused such increases, in three, granted decreases of wages, in three, granted decreases in hours. See 1925 YEAR BOOK.

AUSTRALIA The status of the arbitration situation in Australia in 1929 was as follows. Each of the six state parliaments has full authority to legislate on industrial matters within its own territory, and each (with the exception of Victoria, which has a system of wage boards) has created an Industrial Court. In addition, the Commonwealth has the Federal Arbitration Court for the prevention and settlement of those industrial disputes which extend beyond the limits of any one state. It has been possible for either employers or employees to bring an industrial dispute before the Federal Court by extending a disagreement beyond the boundaries of a single state. The result has been in the Commonwealth Court, particularly, of a slowing-up of the arbitration machinery, and in many cases, overlapping in duplication among Federal and State awards. The upshot has been that, in many industries, both Federal and State awards prevail, each prescribing different scales of remuneration or working conditions. Before 1929, the Commonwealth government made other efforts more completely to control the situation. In 1926 an amendment to the constitution was proposed, whose purpose was to give the Federal government more complete control of the situation, but this was rejected by a popular referendum. In 1928 a Federal act was passed seeking to give the Federal government more power to enforce its awards, but this did not seem to succeed in coping with the many difficulties of the situation.

In May, 1929, the then Prime Minister, Mr. Bruce, in addressing a gathering of the premiers of the separate states, called upon the state governments to transfer their industrial powers to the Commonwealth. They, however, refused to do so, and Mr. Bruce accepted the other alternative of transference of the Commonwealth powers to the separate states. In August, the Government introduced before the Federal Parliament a bill for the repeal of the Federal arbitration system. As a result largely of the opposition of the Labor party and due to disaffection among the Government's own ranks, the measure was defeated. The defeat of this important measure resulted in a dissolution of Parliament and the general election of October 12. In the election,

the Labor party captured 46 of the 75 seats of the House, the Nationalists securing 14, the Country party 10, the Independent Nationalists 3, and independents 2 See SOCIALISM

LABOR BANKS. See COOPERATION

LABOR LEGISLATION. In 1920 there were convened in regular session 48 legislatures, including two insular possessions and two territories, and the Congress of the United States. In addition, in several States, the legislatures met in special session The following is a digest of the labor legislation which was enacted during the year

Notable among new laws were the North Carolina workmen's compensation law; the establishment of old-age-pension systems in California, Minnesota, Utah, and Wyoming, the further regulation of private fee-charging employment agencies by nine States—(Alabama, Colorado, Iowa, Michigan, Minnesota, North Carolina, Oregon, Pennsylvania, and West Virginia, the recodification of the Oklahoma coal-mine law with inadequate provision for rock-dusting of coal mines, and the acceptance by Connecticut, Maryland, Texas, and the District of Columbia of the provisions of the Federal vocational rehabilitation law Thirty-nine legislatures acted upon workmen's compensation

Alaska Workmen's compensation law reenacted with no important change other than provision for loss of hearing, teachers' retirement system established, method of paying Territorial employees regulated

Arizona Certain salaries made subject to garnishment, law and section of constitution regarding employment of United States citizens on public property amended, firemen's pension law enacted, mine inspector's salary raised

Arkansas Workmen's compensation law enacted for State highway employees, police pension law enacted, passage by Congress of Newton Bill for maternity protection urged, supervisor of children's and women's labor provided

California Laws requiring cash bonds required of employees, loggers' collection of wages amended, wage deductions because of tips given employees regulated, procedure for filing labor claims changed, committee created to investigate mechanics' lien laws, mechanics' lien law amended, amendments to private employment agency law include farm labor agency among definitions of employment agencies and require notices of refund of fee in case employment is not obtained within forty-eight hours, to be inserted in schedule of fees posted and in receipt given to applicant, child labor law amended, compulsory continuation school law amended, work in air pressure tanks and steam boilers regulated, foundry and metal shop sanitation law amended, weights which women employees are allowed to carry are reduced, weekly maximum compensation raised to \$25 and other sections of workmen's compensation law amended, enactment of Dale Lehlbach Bill requested, old age pension law enacted granting pension not over \$1 a day to citizens 70 years of age or over whose property does not exceed \$3000 in value, constitutional amendment for State employees' retirement system proposed, teachers' retirement law amended, law requiring payroll records and records of hours worked by female employees amended, definition of "mine" and "mineral" in coal mining law amended

Colorado Employers are forbidden to interfere with employees' political activities, law regulating payment of laborers' claims amended, lien law for wells, oil derricks, certain lines, pumping payroll records and station bins, gasoline plants, and refineries enacted, amendment to employment agency law makes granting of licenses conditional upon character and suitability of premises, regulates advertising and requires monthly reports from agencies, factory inspection law amended, amendments to coal mine inspection law include raising of chief inspector's salary, provision that black powder may be used only as specified, and that first and training be carried out among at least 20 per cent of employees of a mine, workmen's compensation amendments include raising of limits on required medical attention and of weekly maximum to \$14, firemen's and teachers' retirement laws amended, group life insurance law amended.

Connecticut Law regulating assignment of future earnings reenacted; arbitration law reenacted, leaves of absence for State department employees authorized, bakery inspection law amended, amendments to workmen's compensation law include increase of compensation for loss of arm, firemen's and teachers' retirement laws amended, Federal rehabilitation act accepted

Delaware Lien law reenacted, creation of public employment bureau authorized, workmen's compensation law amended, mothers' pension law amended, children's bureau appropriation increased

Florida Vacations for certain county employees authorized, mothers' aid law reenacted, with no important changes

Hawaii Mechanics' lien law amended, minimum wage for laborers on public works raised, vacations for public employees shortened, United States citizenship required for public employees' law, quietness for public employees amended, laws for public employees amended

Georgia Workmen's compensation law amendment includes authorization of insurance commissioner to investigate and publish statistics relating to insurance rates (Sensen law volume not available)

Idaho Law providing for arbitration and mediation of labor disputes repealed, workmen's compensation law amendment includes provision that compensation for schedule losses to minors under eighteen be computed upon the basis of adult earning power, teachers' retirement fund abolished

Illinois Threshermen's lien law amended, child labor law amended, amendments to workmen's compensation law include raising of certain weekly maximums for disability and extension of schedule list, amendments to policemen's, firemen's and teachers' retirement laws enacted, commission created to report on a State employees' annuity fund, mothers' aid law amended, mining investigative commission created, certain salaries raised and terms decreased, minimum salaries lowered, more mine drill teams provided for

Indiana Mechanics' lien laws enacted and amended, child labor law amended, amendments to workmen's compensation law include removal of double compensation for minors illegally employed, teachers' retirement law amended, appropriation for employment commission and department of labor increased

Iowa Medical examinations of applicants must not be required in industrial policies, amendments to employment agency law include requirement that applicants for licenses be of good moral character and citizens and that license fees be graduated, amendments to workmen's compensation law include raising of limitations on deducting medical services, group insurance authorized, tax for mothers' aid extended to certain counties, changes made in personnel of rehabilitation department

Kansas Salaries of certain policemen raised, workmen's compensation law amended, policemen's pension funds created in certain counties, firemen's relief fund law amended, commission of labor and industry created to take over administration of labor laws heretofore administered by the public service commission, number of deputy mine inspectors increased

Maine Mechanics' lien law amended, certain telephone exchanges exempted from law prohibiting six hours of continuous labor for women, certain exemptions made to Sunday rest day law, workmen's compensation law amended, workmen's pension law amended, teachers' retirement law amended, mothers' aid law amended, duplication of certain death and injury reports no longer required

Maryland Appointment of social welfare survey commission directed, amendments to workmen's compensation law include empowering of commission to formulate and submit regulatory suggestions, group insurance rector and two inspectors, Federal Vocational Rehabilitation Act accepted, retirement system for court clerks established, appropriation law amended

Massachusetts Law requiring weekly payment of wages amended, law regulating assignment of wages amended, mechanics' lien law amended, Sunday sale of laborers' time permitted, certain policemen and firemen authorized, investigation of employment insurance directed, workmen's compensation law amended, certain State employees' retirement laws amended, study of certain salaries directed

Michigan Commissioner of banking given more authority over credit unions, garnishment and mechanics' lien laws amended, child labor law amended, private employment agency laws completely amended, fees for granting of licenses conditional upon good moral character, business integrity, and any reason within the purpose of the act and grading cost of licenses from \$5 to \$200; child labor law amended, law relating to fans and blowers amended, amendments to workmen's compensation law include provision that double compensa-

tion now be paid to illegally employed minors under eighteen years, teachers' retirement law amended, mothers' pension law amended; appropriation for department of labor raised.

Minnesota Method of paying certain road laborers specified, amendment to employment agency law makes granting of licenses to employment agencies conditional upon suitability of premises and need for proposed agency, in addition to good moral character, as already provided, permit for children between ten and sixteen in certain performances authorized, law regulating location of motors and fire extinguishers in dry cleaning and dyeing establishments amended, workmen's compensation amendments include removal of ninety day limit on medical care, insurance carriers composing the rating bureau required to collectively insure risks rejected by three members of the bureau, old age pension system established granting pensions not over \$1 a day to citizens who are seventy years of age or over and whose property is worth not over \$3000, a compulsory state employees' retirement association is established providing for retirement annuities and benefits for permanent partial and total disability, retirement law for nurses in certain departments of health amended, pensioning certain police officers provided for, mothers' pension law amended.

Missouri Loan law amended, child labor law reenacted, forbidding all children under fourteen except those exempted by the old law to be employed in any gainful occupation and making other important changes, workmen's compensation laws amended, police pension system established, certain laws amended, number of deputy commissioners of labor increased.

Montana Maximum penalty for violation of certain hour laws raised, workmen's compensation amendments include reduction of waiting period if employee has dependents, revision of compensation for total disability, death cases and schedule losses to provide a sliding scale, firemen's pension law amended, vocational rehabilitation appropriation increased.

Nebraska Union labels authorized, compulsory school attendance law amended, workmen's compensation law amended, teachers' retirement law amended, Labor Department's appropriation increased, by amendment the Department of Labor, assisted by commissions of employers, employees and consumers appointed by the department from time to time, is directed to formulate, adopt, publish, enforce and inspect necessary safety codes, rules, and standards, subject to modification or repeal at any time in the department's discretion, Labor Department's appropriation increased, law regulating appointment of secretary of labor and use of appropriated monies amended.

Nevada Wages for unskilled labor on public works raised, payment of certain teachers' salaries authorized, law relating to employment of labor on public works amended, certain mothers' pensions raised, act accept ing Sheppard-Towner Act repealed.

New Jersey Certain wages may be paid by negotiable check; hour law for policemen amended, law regulating shifts in casual work amended, workmen's compensation law amended, trust funds may be created by corporations with a plan for payment of relief of employees, municipal employees retirement law amended, retirement systems for certain public employees created, police pension law amended, provision made for pension payments to dependents of deceased member transferred to membership in another fund, the women's and children's bureau created, payment of certain salaries regulated.

New Hampshire Unless otherwise agreed to, 10 hours' actual labor will constitute a day's work, payment of compensation to State employees injured under certain circumstances authorized, mothers' aid allowance raised.

New Mexico Attachment law amended, wage assignment law enacted; workmen's compensation law reenacted bringing State and political subdivisions under the act, raising weekly maximums, funeral expenses, percent of wages in schedule cases and compensation for facial disfigurement, reducing waiting period and removing 10-day limit on medical attendance and raising cash limits.

New York Law regulating credit unions amended, mechanics' lien law amended, weekly rest day provided for policemen, certain registries for nurses exempted from employment agency law, employment bureaus for public school students authorized, partition law amended, occupational disease list extended and other workmen's compensation amendments enacted, insurance law amended, legislative commission created to investigate condition of aged and report to the Legislature on most efficient method of providing against old age dependency, retirement law for public employees amended, group life insurance law amended, grades for inspectors divided into eight, instead of six, and

salary of supervising inspectors raised, appropriation for State compensation insurance and Department of Labor raised and distribution changed.

North Carolina Mechanics' lien law amended, private employment agency law enacted without repeal of existing law, but new features provide for investigation of moral character of applicant for license and certain other changes made, workmen's compensation law enacted compulsory as to all public employees and as to all private employees in which five or more workers are engaged except agriculture and domestic service, and excluding casual workers, railway employees, convicts and persons selling agricultural products, limiting medical attention to 10 weeks, waiting period to seven days, and compensation for total and partial disability to \$6000.

North Dakota (Lienishment and mechanics' lien laws amended, mechanics' lien law repealed, amendments to workmen's compensation law include liberalization of certain benefit provisions, commission created to investigate teachers' retirement fund.

Ohio Payment of \$300 or less for wage assignments regulated, law regulating wage assignments amended, public utilities commission authorized to make rules to enforce all orders relating to the protection, welfare and safety of railroad employees, three additional occupational diseases made compensable, pension laws for certain public employees amended.

Oklahoma Child labor law amended, sections of coal mine law (subsequently repealed and reenacted) in so far as they relate to lead, zinc, and iron mines, are completely reenacted in a separate law directing inspectors to examine all mine conditions and order their correction, forbidding operators to employ boys under 16, women and girls except as clerks above ground, to have longer than an eight-hour day, and imposing a penalty for noncompliance with mine inspectors' orders, the mining code relating to interstate commerce authorizing substitution of rock dust for water sprinkling or spraying, requiring additional agents to secure certificates of competency, raising salaries of district mine inspectors and seven members of the State Mining Board, providing for an eight hour day, forbidding employment of boys under 16, women and girls except for office work, and making other changes in safety provisions, workmen's compensation law amended, salaries of labor commissioner, chief mine inspector, and district inspectors raised.

Oregon Law regulating credit unions amended, miners' lien law amended, farm laborers' lien law reenacted, arbitration law amended, certain exemptions made to law regulating hours on public works, amendments to employment agency law provided for investigation of character of applicant and of proposed premises and raises license fees and amounts of bonds, compulsory school attendance law repealed, authorization of commission to fix rate of contribution for maritime employment and pay compensation from accident fund to employees (and their dependents) of employers who contribute to the fund, amendments by the Longshoremen's and Harbor Workers' Compensation Act, appointment of committees to study needs of workmen's compensation law and report desirable amendments authorized, teachers' retirement law amended, mothers' aid law amended, constitutional amendment proposed (to be submitted to referendum in November, 1930) providing that State executive and administrative functions be performed by a governing body composed of representatives, in counties of over 200,000 inhabitants a civil service system was established, Bureau of Labor Statistics to be known as Bureau of Labor.

Pennsylvania Law regulating payment of labor on certain public works amended; mechanics' lien law amended, law encouraging cooperative associations repealed, a given number of persons are required for industrial Police, employment agency law incorporates many provisions of old law for regulation in first and second class cities in a State law reenacting existing State regulations, new law directing investigation of licensee-applicant's character and location of proposed agency, dividing licenses into three classifications, regulating foreign employment agents and providing for many more inspections of agencies, reduction of fine for operating without a license, certain child labor laws and laws regulating employment repealed, law regulating employment of females amended, boiler and elevator laws for other than first and second class cities reenacted, building safety law for cities not of the first or second class strengthened, law regulating labor in bakeries amended, amendments enacted to reduce the fine for provision that where rock dust has been substituted or used in conjunction with water, it must be used as specified, that telephones must be provided, so far as practicable, for all landings of shafts and strengthens other important provisions; workmen's compensation law amended, certain State employees' pension laws

amended, mothers' aid law amended, group insurance authorized, violators of labor law made liable for costs. **Porto Rico** Certain drinkmaking establishments exempted from law requiring dispensaries, workmen's compensation amendments include creation of a workmen's compensation bureau to administer the State fund, certain State employees' pension laws amended, commission created to survey causes of industrial unrest, additional loan authorized to liquidate workmen's relief commission.

Rhode Island Reports of certain firms required in amendment to factory law, women working on shifts for a public utility exempted from hour regulations, workmen's compensation law amended, benefits for widows of firemen raised, changes in appropriations for Commissioner of Labor and factory inspectors made.

South Carolina Salaries of Commissioner of Agriculture, Commerce and Industries and factory inspectors raised.

South Dakota Procedure for filing claims on public works specified, workmen's compensation law amended, firemen's pension law amended.

Tennessee Workmen's compensation provided for State highway employees, fees no longer required for inspection of coal mines.

Texas Mechanics' lien law amended, public school teachers must be citizens, enticing of laborers forbidden, law prohibiting blacklisting strengthened, child labor law amended, civil service commission created in certain counties, in first special session, Federal Rehabilitation Act accepted and law enacted regulating emigrant employment agents and requiring an annual license tax of \$5000 for the use of the State and \$2500 for the use of each county and a bond given by agents conditioning the payment of valid debts in second special session mechanics' lien law amended and law regulating emigrant employment agents enacted in first special session reenacted so that agents must pay a State occupation tax of \$1000, a license of \$100 to \$300 for each county and annual license fee of \$10 to do business in any county named in license and must furnish a \$5000 bond to be liable for debts incurred.

Utah Mechanics' lien law repealed, minimum wage law for women repealed, part-time school law for minors amended, law requiring certain school records repealed, old age pension law enacted providing for a monthly pension not over \$25 a month to be granted to qualified applicants 65 years of age or over, who have been United States citizens for fifteen years and have a yearly income not exceeding \$300, firemen's pension law amended, appropriation for industrial commission increased.

Vermont Supervision of Public Service Commission extended, workmen's compensation law amended, teachers' retirement law amended, establishment of pension system for certain municipal employees authorized.

Washington Use of modern spark arrestor limited to spark emitting engines or boilers dangerously near inflammable material, amendments to workmen's compensation law, include extension of departments authority to make lump sum payments, policemen's and firemen's pension laws amended.

West Virginia Law requiring bonds of persons contracting for erection of public buildings amended, fine for Sabbath day labor raised, employment agency law reenacted and now provides for the maintenance of a State public employment bureau, requires applicants for private employment agencies' licenses to be citizens, have suitable premises, and not to have had a license previously revoked, forbids employment agents to misrepresent, requires agents to pay an annual license tax of \$200 and emigrant agents to pay \$5000, adoption of certain safety codes authorized and first aid equipment in factories required, amendments to coal mine law include raising of salary of chief of department of mines, workmen's compensation amendments include empowering of governor to appoint new compensation commission.

Wisconsin So called "yellow dog" contracts made null and void, law regulating hours on public works amended and amount of hours of certain workers directed, law regulating devices to be used in cleaning and dyeing establishments amended, electric wiring law reenacted, workmen's compensation law amended, amendments to old age pension law provide that a majority and not two-thirds of the county elected board be necessary to adopt an old age pension system, certain public employees' retirement laws amended, study of a State employees' retirement plan directed, benefits of any Federal Maternity Act are accepted, sections of children's code reenacted, created or amended with slight changes in mothers' aid provision, group life insurance authorized, bureau of personnel created to replace civil service commission and take over the commission's administrative duties, certain appropriations increased.

Wyoming Necessity no longer a ground for employing a female at any time; law relating to shot-firers in coal mines reenacted; coal mine law amended in so far as certain specifications are concerned; amendments to workmen's compensation law include extension of list of extra hazardous employments, addition of restrictive hernia provision, compensation for disfigurement, and specification that every employer who refuses to make premium payments and against whom an award for compensation has been made shall be personally liable to the State for the benefit of the workmen's compensation fund, a State-wide old age pension system is established providing for the granting of pensions not over \$30 a month to qualified applicants who have attained the age of sixty-five, have been United States citizens for fifteen years and have an income not exceeding \$360 a year.

United States. Inquiries on unemployment provided for in decennial census, small change made in Federal retirement law, Federal vocational rehabilitation accepted for the District of Columbia and appropriation authorized for this purpose.

LABOR LEGISLATION, AMERICAN ASSOCIATION FOR Founded in 1906, this membership organization of socially-minded economists, lawyers, journalists, labor leaders, and employers has worked along scientific lines, fearlessly attacking needless industrial evils from the general welfare viewpoint. It continues its work as the American arm of the International Association for Social Progress formed by the fusion of the three international organizations for labor legislation, unemployment, and social insurance. See SOCIAL PROGRESS, INTERNATIONAL ASSOCIATION FOR.

Progress of the Association was recorded in its substantial quarterly, *American Labor Legislation Review*, the December, 1929, issue of which contained a convenient annual summary and index of all new labor laws enacted in the United States. One of the most important activities of the Association during 1929 resulted in the passage of a workmen's-compensation law in North Carolina. Other activities in the line of workmen's compensation helped to bring about the liberalization of many State laws.

Other important measures in the field of labor legislation were sponsored by the Association. Efforts to bring about the regulation of private fee-charging employment agencies by raising the license fee and requiring that applicants for licenses furnish proof of good moral character, suitability of premises and need of proposed agency were followed in legislation in several States; in 1929 nine States reenacted or amended employment-agency laws on the basis of these proposals. The establishment of state old-age-pension systems also has been urged by the Association for many years; four States in 1929 followed those that had already provided for their aged dependents through the granting of pensions. The campaign for rock-dusting of bituminous coal mines to prevent coal-dust explosions resulted in encouraging increase in the number of coal mines adopting rock-dusting. Other measures urged by the Association and adopted in several States were the strengthening of hour regulations, mine and factory safety laws, measures for the mitigation of unemployment (with particular emphasis upon the long-range planning of public works) and the vocational rehabilitation of disabled workers.

The twenty-third annual meeting was at New Orleans, December 27-28, several sessions being held jointly with the American Political Science Association, the Association of American Law Schools and various local organizations. The chief subjects of discussion were workmen's compensation, employment problems of older workers,

labor injunctions and equity courts, proposals for stabilizing employment, and administration of labor laws. Among the speakers were: Murray W. Latimer, Eva Smill, Tracy Copp, Charles H. Behre, John B. Andrews, Morris E. Leeds, Edwin M. Witte, Noel T. Dowling, Letus N. Crowell, Isaac Heller, T. A. Wilson, John A. Lapp, and Walton H. Hamilton. The president in 1929 was Thomas I. Parkinson, the secretary, John B. Andrews, with headquarters at 131 East 23d Street, New York City. See LABOR LEGISLATION.

LABOR UNIONS. See TRADE UNIONS

LABRADOR. A large peninsula in British North America, forming the easternmost part of the North American Continent, lying between the Atlantic Ocean and Hudson Bay. It includes the northeast portion of the Province of Quebec in Canada and a small strip along the northeast coast dependent upon Newfoundland. In 1927 the dispute which had continued for 25 years between Newfoundland and Quebec over the ownership of the interior of Labrador was settled by the Privy Council. The decision gave the entire watershed of Labrador which drained into the Atlantic Ocean to Newfoundland. This area contains about 30,000 square miles of forests of commercial value. Consult 1927 YEAR BOOK under NEWFOUNDLAND. The population of Labrador in 1927 was 4054.

LABUAN. A small island off the northwest coast of Borneo, ceded to Great Britain in 1846. Area, 30 square miles, population, in 1927, 5996, mostly Malays from Borneo, with about 23 Europeans. Capital, Victoria, with a population of about 1500. Revenue in 1927 totaled 58,611 Singapore dollars, excluding 108,421 dollars received from opium sales; expenditures, 158,423 dollars (Singapore dollar had an average exchange value in 1927 of \$0.5604). Shipping entering and clearing the ports in 1927 totaled 282,006 tons. Trade in the same year amounted to \$5,500,000. The island is administrated under the supervision of the Governor-General of the Straits Settlements.

LACROSSE. As there was no large league competition in lacrosse, the problem of picking the best teams for 1929 was difficult. The game is not popular outside of the colleges except in Olympic years, and it is a minor sport at the colleges, where major sports attract the best athletes. In 1929 the U. S. Naval Academy and Union College had the best records in the Eastern intercollegiate league ranks. Both twelves were strong and led the way for the other lacrosse-playing institutions. The Johns Hopkins University team, which had displayed such strength the preceding year in collegiate and international competition was not up to its usual standard and lost several games.

LAFAYETTE COLLEGE. An institution for the higher education of men in Easton, Pa., founded in 1826. The registration in the autumn of 1929 was 1024, the enrollment being restricted. The faculty numbered 95. The productive funds amounted to \$2,950,000 on July 1, 1929, and the income for the previous year was \$543,500. The number of volumes in the library was 75,000, accessions for the year being 4000. President, William Mathew Lewis, A. M., LL. D.

LAMBERT, ALEXANDER. An American pianist and teacher, died in New York, December 31. He was born in Warsaw, Nov. 1, 1802. After receiving his first musical instruction from his father, he entered the Vienna Conservatory in

1874, graduating four years later from the piano class of Julius Epstein. The next two years he spent in Berlin, assiduously practicing the piano by himself and studying composition with H. Urban. In 1881 he gave several successful concerts in New York, after which he made a tour of Germany and Russia, and then devoted several months of further intensive study of the piano under Liszt in Weimar. In 1884 he returned to the United States, touring the East and Middle West for three years with splendid success. Nevertheless, he suddenly abandoned the career of the virtuoso and settled permanently in New York as a teacher. There he founded, in 1888, the New York College of Music, which rapidly became nationally famous. In 1906 he sold his school and continued to reside in New York, much sought and highly esteemed as private teacher. Among his published works, the most important are *A Systematic Course of Study* (3 vols., 1907) and a *Brief Piano Method for Beginners*, which both attained wide popularity.

LAMBS. See LIVESTOCK.

LANCIANI, lan-chi'né, RODOLFO AMEDEO. A noted Italian archaeologist and senator, died May 22, 1929, in Rome, where he was born Jan. 1, 1846. He studied at the Roman College and at the University of Rome. At the age of 20, he assisted in the excavations at Ostia and, from 1875 to about 1895, directed excavations in Rome. In 1872 he was secretary of the Municipal Archaeological Commission, and in 1875 vice director of the Museo Kircheriano. After 1878 he was professor of Roman topography at the University of Rome. He began his archaeological writing in 1867 with an article on the harbor of Claudius and Trajan at the mouth of the Tiber. In 1886-87 Professor Lanciani visited and lectured in the United States, collecting these lectures under the title, *Ancient Rome in the Light of Recent Discoveries* (Boston, 1888). Other important publications of his are *I commentarii di Frontino intorno le acque et gli acquedotti* (Rome, 1880), a study of the water-supply and distributing systems of ancient Rome, *Ricerche sulle XII regioni urbane* (Rome, 1890), *L'incinerario di Emsedeln e l'ordine di Benedetto canonico* (ib., 1891); *Pagan and Christian Rome* (Boston, 1893); *The Ruins and Excavations of Ancient Rome* (ib., 1897); *The Destruction of Ancient Rome* (New York, 1899); *Forma Urbis Romae* (Milan, 1893-1901), a map of Rome showing the ancient monuments and excavations. *New Tales of Old Rome* (Boston, 1901); *Golden Days of the Renaissance in Rome* (ib., 1906); *Wanderings in the Roman Campagna* (ib., 1909). The degree of LL. D. was given Professor Lanciani by Aberdeen, Harvard, and Glasgow, that of D. C. L. by Oxford, and that of Ph. D. by Wurzburg and Rome.

LANDS, PUBLIC. The Commissioner of the General Land Office reported for the fiscal year ending June 30, 1929, a total of 190,031,722 acres of unappropriated public land in the United States, exclusive of Alaska. In addition, there were approximately 134,000,000 acres of public national forest lands and 20,232,398 acres of stock-raising homestead lands, which were subject to all the provisions of the mining laws, including the general mineral leasing act. Coal was reserved to the United States under patents issued for 10,569,606 acres; oil, gas, phosphate and other deposits under patents for 1,809,958 acres; and minerals reserved under various acts

other than the stock-raising homestead law in patents for 68,086 acres. This made a total of 356,211,771 acres, subject to all or some of the applicable public land laws.

During the year 1929, original disposition was patented on 2,494,647 acres, of which 1,418,471 acres were patented with all minerals reserved. There also were patented 1,890,026 acres under the homestead laws, not including as homesteads 2857 acres patented as soldiers' additional entries. The total area of public and Indian lands originally entered and allowed during the year was 4,612,722 acres, as compared with 3,726,421 acres in 1928. More than 25,000 filings were made in the district land offices and 500 filings in the General Land Office in Washington, involving land in States where district offices had been discontinued.

Total cash receipts from sales, leases, and other dispositions of public lands amounted to \$5,654,435 and from sales and leases of Indian lands, \$539,531, making an aggregate amount of \$6,193,966 for the fiscal year. Of this amount, \$3,884,878 was from bonuses, royalties, and rentals under the law providing for the leasing of mineral rights on the public domain, the largest receipts, \$2,835,871, being obtained from the leasing of mineral lands in Wyoming. The low price of oil, however, during 1929 not only discouraged production but necessarily resulted in diminished receipts for the quantity actually produced on government land, the decrease in royalties was estimated at almost \$800,000. The total receipts were distributed as follows: Reclamation fund, \$2,070,099, general fund, \$885,086, to public-land States and to certain counties within such States, \$2,132,033, to various Indian tribes, \$497,746.

Total expenditures for the conduct of the business of the General Land Office amounted to \$2,237,303, of which \$430,000 was for field-inspection service, employing seven division chiefs and 73 inspectors. For surveys and resurveys, a total of \$2,593,034 was appropriated, 2,593,034 acres being surveyed and 788,653 acres being resurveyed during the year. Survey of agricultural lands alone aggregated more than 3,000,000 acres, the more extensive areas being in Utah, New Mexico, Arizona, Montana, California, and Idaho. The field service also examined 15,948 cases to determine whether or not the laws were being complied with or, in some cases, whether fraud was being resorted to in the acquisition of these lands. Of these cases, 10,474 were reported favorably and 5447, adversely. As a result of these examinations, over 159,000 acres were restored to the public domain by administrative action and 6237 acres by decree of court. In all, 420 hearings were held, 29 indictments being secured and 33 cases being recommended to the Department of Justice.

More than 2400 permits to prospect for oil and gas were issued by the General Land Office up to Mar 11, 1928, when the oil-conservation policy was put into effect. During 1929, 123 coal, potash, and sodium permits were issued, 145 leases covering oil and coal were granted as a result of discovery by permittees, and 8906 oil permits were canceled for failure of the permittees to comply with the terms thereof. Under the Carey Act, pertaining to reclamation and irrigation of public lands, withdrawals, segregations, and patent applications aggregated 1,379,871 acres. Of the amount disposed of, 27,129 acres

were segregated, 5988 acres theretofore segregated were patented, 89,800 acres were canceled, and the remainder was disposed of by interlocutory or other actions. Swampland applications covered 397,320 acres, 11,033 acres being approved and patented and 142,833 acres being canceled. Public lands aggregating 12,090 acres in the Western States were withdrawn for use by the Department of Commerce as beacon sites and intermediate aviation landing fields. The total area included in stock driveway withdrawals at the close of the year amounted to 9,282,975 acres, 11 new driveways being established and 12 being modified.

Railroad and wagon-road listings and selections received during the year covered 161,493 acres; 230,418 acres were certified or patented in satisfaction of such grants, and 137,408 acres of selections were rejected. During 1929, 2181 town-lot cases were examined and 374 patents were issued; more than 60 town-site cases also were considered. The area of the 150 national forests in 1929 embraced 184,564,953 acres, of which 86 per cent was public land. The net increase in national-forest area over 1928 was 161,134 acres, 28,099 acres having been added from the public domain. Surveys made for the forest service aggregated more than 700,000 acres and resurveys, more than 320,000 acres. The Commissioner of the General Land Office in 1929 was C. C. Moore.

LANGMUIR, IRVING American chemist, see CHEMISTRY INDUSTRIAL

LANGTRY, MRS LILLIE An English actress and "society beauty," died in Monte Carlo, Feb 12, 1929. Born, Emily Charlotte Le Breton, on the island of Jersey, Oct 13, 1862, she married Edward Langtry in 1874 and moved to London. There she became the toast of society and the theme of fashionable poets, she was called the "Jersey Lily," after a portrait by Millais, and she signed herself "Lillie." Her stage debut, in *She Swoops to Conquer*, London, December, 1881, was triumphant. She appeared at New York, Nov 2, 1882, and such was her popularity that she returned to America nearly every season until 1915. Although Mrs. Langtry was not considered a great emotional actress, she was apt in artificial parts, such as that in *The Degenerates*, by Sydney Grundy, and her charm always delighted her audience. After Mr. Langtry's death, 1897, she married Sir Hugo Gerald de Bathe in 1899.

LANGUAGE See PHONOLOGY, MODERN

LANKESTER, SIR EDWIN RAY British scientist, died in London, Aug 15, 1929. He was born in London, May 15, 1847, and was educated at St. Paul's School, at Downing College, Cambridge, and at Christ Church, Oxford. He received at Oxford the Radcliffe Traveling Fellowship in 1870, and became fellow and lecturer at Exeter College in 1872. From 1874 to 1890, he was professor of zoology and comparative anatomy at University College, London, in 1882, Regius professor of comparative anatomy at Oxford; and from 1898 to 1900, Fullerian professor of physiology and comparative anatomy in the Royal Institution of London. He was director of the natural history departments of the British Museum from 1898 to 1907, and on retirement was created a Knight Commander of the Bath. In 1884 he founded the Marine Biological Association and in 1892 he served as its president. He was elected a fellow in the Royal Society in 1875 and in 1885 was awarded a royal

medal He was chosen president of the British Association in 1906 He was also a member of the Institut de France and a foreign or corresponding member of most of the scientific academies of the world After 1869 he edited the *Quarterly Journal of Microscopical Science* He also contributed many scientific articles to many general works A prolific author, he wrote scientific books that were both technical and popular They include *A Monograph of the Ophthalaspidean Fishes* (1870), *Developmental History of the Mollusca* (1875), *Degeneration* (1880), *Limulus, an Arachnid* (1881); *The Advancement of Science* (1889); *Zoological Articles* (1891), (edited) *A Treatise on Zoology* (1900-09), *Extinct Animals* (1905), *Nature and Man* (1905), *The Kingdom of Man* (1907), *Science from an Easy Chair* (1st series, 1910, 2d series, 1912), *The Diversions of a Naturalist* (1915); *Science and Education* (1919), *Secrets of Earth and Sea* (1920), *Great and Small Things* (1923)

LAOS. See FRENCH INDO-CHINA

LAURITE. See CHEMISTRY, under *Mineralogical Chemistry*, MINERALOGY

LATIN AMERICA. See PAN-AMERICAN UNION

LATIN STUDIES. See PHILOLOGY, CLASSICAL

LATTER-DAY SAINTS. CHURCH OF JESUS CHRIST of A religious body commonly known as the Mormon Church, existing chiefly in the United States It was organized Apr. 6, 1830, at Fayette, N. Y., by Joseph Smith to whom is credited by his followers the discovery, through divine revelation, of a set of metal plates, buried in a hill, from which by a special power received from God he translated the text of the Book of Mormon, the special sacred book of the church The Mormon articles of faith include belief in God, Jesus Christ, and the Holy Ghost as individual beings, the punishment of men for their own sins, the atonement, divine authority, baptism, laying on of hands, prophecy, salvation for the dead, the Bible "as far as it is translated correctly," the common virtues, and obedience to constituted authorities The membership of the church is largely in the Mountain States, owing to the early settlement of Mormons and their final settlement in Utah

The administrative divisions of the church are known as the general stake, ward, branch, and mission. A stake is a geographical division and comprises wards and branches, and is directed by a presidency of three A ward is frequently a part of a city, and is directed by a bishop and two counselors. The branch, similar to the ward, is directed by an elder In 1929 the church consisted of 101 stakes, 983 wards, and 74 independent branches The estimated membership was 656,000 There were 12 missions in America with a membership of approximately 94,000, the missions in Europe had a membership of 29,000 and those in the Pacific Islands of 15,000 A mission is directed by a mission president In 1929, 2197 missionaries were at work in various countries, 953 being outside the United States The general authorities who have jurisdiction over the entire church are the First Presidency, the Quorum of the Twelve Apostles, the Presiding Patriarch, the First Council of Seventy, and the Presiding Bishopric In 1929 these authorities were: First Presidency Heber J. Grant, president, Anthony W. Ivins, first counselor, Charles W. Nibley, second counselor Quorum of the

Twelve Apostles Rudger Clawson, president, and Reed Smoot, George Albert Smith, George F. Richards, Orson F. Whitney, David O. McKay, Joseph Fielding Smith, James E. Talmage, Stephen L. Richards, Richard R. Lyman, Melvin J. Ballard, and John A. Widtsoe, apostles Presiding Patriarch Hyrum C. Smith Seven Presidents of the First Council of Seventy Brigham H. Roberts, J. Golden Kimball, Rulon S. Wells, Joseph W. McMurrin, Charles H. Hart, Levi Edgar Young, Rey L. Pratt Presiding Bishopric Sylvester Q. Cannon, presiding bishop, David A. Smith, first counselor, and John Wells, second counselor

The church maintains seven temples which are devoted to sacred ordinances for the living and the dead, such as baptisms, endowments, and marriages It also maintains Brigham Young University (qv) at Provo, Utah, six junior colleges, two collegiate institutes, one high school, and 72 seminaries, small schools adjoining high schools and providing special religious instruction The Sunday schools in 1929 had an enrollment of 228,757 pupils and 27,804 officers and teachers Religion classes had an enrollment of 59,574 The auxiliary bodies included a women's relief society, numbering about 62,550 members, who care for the sick and poor The Melchizedek Priesthood, a senior order, had 75,318 members, and the Aaronic Priesthood, a junior order, 74,809 members The two mutual improvement associations, composed of young people, had an enrollment of 106,673 The primary association for those under 14 had 108,596 members The church holds two general conferences each year, one during the first week in April and the other, the first week in October, at which the work of the general authorities is reviewed

LATTER-DAY SAINTS. REORGANIZED CHURCH OF JESUS CHRIST OF After the death of Joseph Smith in 1844, several factions developed among the Latter-day Saints In 1852, in Wisconsin, some of these scattered congregations effected a partial reorganization, which was later completed under the name of the "Reorganized Church of Jesus Christ of Latter-day Saints," and which claims to be the true continuation of that established by Joseph Smith This claim has been successfully sustained in the Federal Court In 1860 these organizations were joined by Joseph Smith, the son of the prophet, who became presiding officer, a position which he held until his death in 1914, when his son, Frederick M. Smith, succeeded him The Reorganized Church holds the same faith and religious practice which Smith established, but rejects as false and inconsistent with Smith's revelation the doctrine of polygamy The membership as reported in 1929 was 106,501, including members throughout the United States and in Canada, Great Britain, Australia, Germany, Isle of Pines, Holland, Switzerland, Norway, Sweden, Palestine, South Sea Islands, Hawaii, and New Zealand The organization in 1929 comprised 760 churches, 6814 ministers, 730 Sunday schools, and 45,000 pupils, and maintained Graceland College in Lamoni, Iowa, the Institute of Arts and Sciences, homes for the aged and a sanatorium in Independence, Mo Its official periodical, the *Santa's Herald*, is issued weekly The office of the first presidency is in Independence, Mo

LATVIA. A Baltic republic formed after the World War from territories of the old Russian Empire Capital, Riga, on the Gulf of Riga.

AREA AND POPULATION. The total area, excluding inland lakes, is approximately 24,400 square miles, made up as follows: The former Province of Courland (about 10,435 square miles), the four southern districts of the Province of Livonia (about 8,715 square miles), and three districts of the Province of Vitebsk (5,292 square miles). According to the census of 1925, the population was 1,844,805, of whom 1,779,593 were Latvian citizens and 65,212, foreigners. The estimated population in 1928 was 1,896,500. From 1923 to 1927, the average annual number of births was 41,393 and of deaths, 27,732, the excess of births being 13,661. The chief cities with their populations at the census of 1925 are Riga, 337,700 (estimated at 338,997 in 1928), Libau, 60,762, Dvinsk, 40,640, and Mitau, 28,321.

EDUCATION In 1927-28 there were 1904 elementary schools, with 7542 teachers and 157,206 pupils. Most of these schools were supported by the state or municipal institutions, as were 82 of the secondary schools in the country. The remaining 56 secondary schools were supported by private persons or societies. In all secondary schools, there were 23,436 pupils and 2558 teachers. According to law, every national minority has a right to its own school, which may employ its own language in instruction, and the State contributes to such institutions in proportion to the percentage of total inhabitants. The number of students in the Latvian University in 1927-28 was 7561 and the number of professors, 320.

PRODUCTION Agriculture is the chief industry of the country, although manufacturing has attracted an increasing proportion of the population. Of the total area of Latvia, 4,197,000 acres, or about 28 per cent, was arable land in 1927, 4,117,000 acres were pasture, and 4,399,000 acres woods and forests. The total value of the chief field crops produced in 1928 was 245,833,000 lats (\$47,466,000), as compared with 273,567,000 lats (\$52,798,000) in 1927. Most crops in 1928 were below average due to unfavorable weather conditions, the potato crops being less than half that of 1927. The area and production of the leading crops were as follows: Wheat, 164,000 acres, 2,490,000 bushels; rye, 637,000 acres, 8,459,000 bushels; barley, 362,000 acres, 3,275,000 bushels; oats, 590,000 acres, 10,037,000 bushels; potatoes, 193,000 acres, 11,593,000 bushels; flax, 170,000 acres, 32,275,000 pounds; hay and clover, 2,777,000 acres, 2,296,000 metric tons. Livestock in the country in 1928 included 961,000 cattle, 535,000 swine, 1,090,000 sheep, and 365,000 horses.

The output of manufactured products showed more than the usual increase in 1928, the total value rising to 430,000,000 lats (\$82,990,000), as compared with 314,271,000 lats (\$66,444,000) in 1927. Wood and metal working, printing, and the manufacture of food, drink, and tobacco, chemicals, textiles, and paper are the leading industries. Exports of manufactured products increased by 35 per cent in 1928, the value reaching \$10,500,000. While the number of workers employed in industry increased by 25 per cent during the year, there was considerable seasonal unemployment. The number of unemployed on Dec 31, 1928, totaled 14,030.

COMMERCE The volume of foreign trade showed a substantial increase in 1928, the value of imports increasing from \$48,248,000 in 1927

to \$59,468,000, or 23 per cent, and the value of exports from \$42,700,000 in 1927 to \$49,938,000, or 17 per cent. Lumber and butter composed more than half of the total exports, while shipments of manufactures increased 34 per cent in value as a result of larger foreign purchases of rubber goods, leather, paper, and linoleum. Foodstuffs, beverages, and tobacco represented 30 8 per cent of the imports, raw materials and semi-manufactures, 25 1 per cent, and manufactures, 43 3 per cent. Germany and the United Kingdom each took about 27 per cent of the exports and furnished 41 and 9 per cent, respectively, of the imports. Soviet Russia took 9 per cent of the exports. Exports to the United States amounted to \$904,800 and imports from that country to \$3,294,000, as against \$1,332,000 in 1927. In 1929 imports increased by 17 per cent to \$69,962,500, while exports rose by only 4 per cent to \$52,437,400, leaving an import surplus of \$17,565,100. Poor crops in 1928, shipping difficulties due to ice early in 1929, and the low prices obtained for agricultural products in foreign markets combined to bring about an adverse trade balance nearly double that of 1928.

FINANCE The budgets for the fiscal years ending Mar 31, 1929 and 1930, balanced at 164,110,000 lats (\$31,673,000) and 164,956,000 lats (\$31,836,000), respectively. For the year 1927-28, actual revenues totaled 178,162,000 lats (\$34,385,000) and actual expenditures, 160,092,000 lats (\$30,898,000). Receipts were 12 per cent above estimates, while expenditures were practically the same as forecast. According to preliminary returns, expenditures declined and receipts again increased in 1928-29, leaving a surplus of about 26,500,000 lats (\$5,114,000). The public debt on Jan. 1, 1929, stood at 82,240,000 lats (\$15,872,000), as against 84,110,000 lats (\$16,233,000) a year earlier. In addition, a \$6,000,000 loan was secured from the Swedish Match Trust in 1928 in return for a match monopoly. All but 637,536 lats represented the external debt, of which \$3,565,000 was borrowed in the United States and \$2,075,000 in Great Britain. The lat remained at the par value of \$0.1930.

COMMUNICATIONS Of the 1776 miles of railway line in Latvia on Jan. 1, 1929, 1666 miles were government owned. In 1928 the railways carried 11,584,000 passengers and 3,613,000 metric tons of freight, earning gross receipts of 45,019,000 lats (\$8,689,000). The freight traffic showed a 21 per cent increase for the year. The state-owned telegraph and telephone system, in the same year, had 19,019 and 135,748 miles of wire, respectively.

The Latvian merchant marine on June 30, 1928, consisted of 98 vessels of 100 tons or more, with a total gross tonnage of 116,764 tons. Vessels entering Latvian ports in 1928 numbered 4335 of 2,015,000 net registered tons and the vessels clearing numbered 4338 of 2,015,000 net registered tons. The Latvian budget for 1930-31 provided 1,200,000 lats for the construction of a 1312-foot quay in the export harbor of Riga with modern equipment, and considerable sums for other improvements in the harbor.

GOVERNMENT Under the constitution adopted by the constituent assembly, Feb 15, 1922, executive power is vested in a President, elected by Parliament for three years, and legislative power in the Saeima, or Parliament, comprising 100 members elected for three years, by universal

suffrage (men and women), equal, direct, and secret ballot, on the basis of proportional representation. President in 1929, Gustav Zemgals (elected Apr 8, 1927), Prime Minister, Hugo Celmins (appointed Nov 30, 1928).

HISTORY The Socialist opposition attacked the Celmins Agrarian-Bourgeois coalition government on four grounds during 1929, forcing a revision of the cabinet membership toward the end of an otherwise uneventful year. The Socialists objected to the government's credit policy, the contemplated changes in the system of national defense, the method of revision of sickness-insurance funds, and the proposal to extend land grants to former German soldiers who assisted in driving the Bolsheviks out of Latvia after the World War Parliament was convened in extra session on August 16 to dispose of these questions. The prolonged controversy over land grants to former German soldiers was ended November 22, when Parliament voted 51 to 39 against the proposal. The German group thereupon withdrew its support from the coalition government and M Berendt, Minister of Justice and a member of the group, presented his resignation.

The reforms within the army proposed by M Osols, Minister of War, for a time threatened the downfall of the cabinet. The Socialists, though unsuccessful in an attempt to secure a vote of censure against the entire cabinet on this issue, forced the resignation of M Osols and, on December 18, the portfolios of War and Justice were given to General Wascetis and M. Pabers, respectively, the new ministers being less objectionable to the Opposition than their predecessors. Other members of the cabinet were Minister for Foreign Affairs, A Balodis, Interior, E. Laimins, Ways and Communications, M Ozols, Agriculture, A Alberings, Education, E Ziemelis, Public Welfare, V. Rubulis, Finance, A. Petrevics, State Comptroller, R Ivanov.

A general strike was threatened for October 18, with the support of the Social Democrats, the Central Committee of the Trade Organizations, and the railway employees, as a result of the government's decision to reorganize the sickness-insurance fund without consulting Parliament. The Government served notice on railway employees that absence from work would be severely penalized and the strike failed to materialize.

LAW, INTERNATIONAL. See **INTERNATIONAL LAW**

LAW ENFORCEMENT. See **CRIME**

LAWN TENNIS. See **TENNIS**

LAWRENCE COLLEGE. A coeducational institution comprising a college of liberal arts and a conservatory of music in Appleton, Wis., founded in 1846. For the autumn term of 1929, 819 students were enrolled in the college and 181 in the conservatory. There were 65 members on the faculty of the college and 25 on the faculty of the conservatory. The endowment, exclusive of buildings and equipment, amounted to \$1,869,920, the income from endowment for 1929 was \$100,205. There were 53,000 volumes in the library exclusive of government documents. During 1929 a graduate school of paper chemistry was organized, with Dr. Otto Kress as technical director, the majority of the paper manufacturers of the State guaranteeing an annual minimum income of \$50,000. The Alexander Gymnasium, costing more than \$390,000, also was

completed. President, Henry Merritt Wriston, Ph D, LL.D.

LEAD. In 1929 the average price of lead, New York market, was 68 cents a pound, compared with 63 cents a pound in 1928. This increase of half a cent per pound in the price, together with a corresponding increase of 6 per cent in production, told the story of a prosperous year for the lead-mining industry. Increased demand from storage battery and lead-covered cable manufactures has been responsible for the improvement.

The recoverable lead which is contained in ore mined in the United States in 1929, exclusive of Virginia, was about 647,500 short tons, as compared with an output of 627,153 tons in 1928, an increase of 3 per cent, according to the estimate of the U S Bureau of Mines. The largest output came from the southeastern Missouri district and amounted to 201,700 tons, compared with 194,270 tons in 1928. The competition between Idaho and Utah for second place had been very close for two years, but Idaho definitely led Utah in 1929 with 152,100 tons, compared with 143,400 tons. In 1928 these States produced 145,323 tons and 145,915 tons, with Utah slightly in the lead. The output of the Joplin district increased from 70,086 tons to 73,500 tons in 1929 and the production of all other important lead-producing States, with the exception of Colorado, increased. Colorado's production dropped from 26,751 tons to 24,900 tons. The price at Joplin of lead concentrates was \$85 a ton at the beginning of the year, rose to a high of \$105 a ton for the weeks of March 23 and March 30, from which it declined to \$85 a ton for the weeks of July 13 to August 31, inclusive, rose again to \$87 50 a ton for the weeks of September 7 to October 26, inclusive, and then declined to \$75 a ton, the low for the year, which held during the last eight weeks of the year.

LEAD PRODUCTION IN UNITED STATES

	[Short tons]	
	1928	1929 *
Central States		
Tri-State district	70,086	73,500
Southeastern Missouri	194,270	201,700
Upper Mississippi Valley	1,706	1,600
Other	454	800
Western States		
Arizona	7,190	7,800
California	946	600
Colorado	26,751	24,900
Idaho	145,323	152,100
Montana	16,880	18,800
Nevada		
New Mexico	7,874	8,200
Oregon	7,805	11,000
South Dakota	7	13
Texas	348	500
Utah	145,915	143,400
Washington	542	400
Alaska	1,019	1,200
Total	627,153	647,500

* Estimated

^b Figures obtained from the Geological Survey, Department of the Interior.

^c Exclusive of total for Virginia, which the Bureau of Mines was not at liberty to publish

The output of primary domestic desilverized lead in the United States in 1929 was about 382,000 tons, of soft lead about 250,000 tons, and of desilverized soft lead about 57,000 tons, making a total output from domestic ores of about 689,000 tons of refined lead, according to statistics compiled by the U S Bureau of Mines. Corre-

sponding figures in 1928 were 351,734 tons of desilverized lead, 225,003 tons of soft lead, and 49,465 tons of desilverized soft lead, making a total of 626,202 tons. The output of lead smelted and refined from foreign ore and bullion was about 103,000 tons, as compared with 154,869 tons in 1928. The total primary lead smelted or refined in the United States in 1929 was thus about 792,000 tons, as compared with a total of 781,071 tons in 1928—an increase of about 1 per cent. The output of primary antimonial lead in 1929 was about 26,000 tons, as compared with 33,058 tons in 1928.

Total imports of lead in ore, matte, bullion, or refined form were 236,968,747 pounds in 1929, compared with 313,174,919 in 1928. Exports also dropped, from 244,471,987 pounds in 1928 to 157,697,470 in 1929. Of this total, 106,006,202 was foreign pig lead that had been imported for refining.

The accompanying table shows the world's output of pig lead (in tons of 2000 pounds), as compiled by the American Bureau of Metal Statistics from direct reports from the several countries, with an estimate for the scattered production amounting to about 10 per cent of the total.

LEAD PRODUCTION OF WORLD, 1929 ESTIMATES

	Jan-Dec
United States *	692,233
Canada *	158,789
Mexico *	274,418
Total North America *	1,125,440
Peru	19,898
Germany	121,872
Italy	24,869
Poland *	37,766
Spain and Tunis *	115,100
Australia	194,048
Burma	89,972
Rhodesia	1,831
Elsewhere, est.	201,000
World's total	1,931,796
United States	692,233
Rest of world	1,239,563

* Total North American production of crude lead is correctly stated, but the distribution by countries is not precise. So far as possible, pig lead produced in the United States from Canadian and Mexican ore is deducted and credited to its country of origin, but production from other foreign ores is not so segregated.

^b Partial

* Represents production of Polish Silesia

Total world output for 1929 amounted to 1,931,796 tons, a monthly average of 160,983 tons against 1,821,080 tons and a monthly average of 151,757 tons in 1928.

The increase shown in Mexico's output is particularly remarkable in view of the low silver prices obtaining throughout the year and the revolution in the spring, which considerably hampered operations. Silver is in many cases responsible for the margin between profit and loss in Mexican lead-mining operations and a recession in price would normally affect output considerably. Further large increases in Mexican lead production do not appear probable, however, as several old properties were nearing exhaustion and prospecting for new mines was dormant. A possibility existed that within three or four years Australia might usurp Mexico's rank as second among lead-producing nations. Three large lead mines were being equipped in Australia, of which the Mount Isa Mine, scheduled to start producing in 1930, probably could add 70,000 tons annually to the world's lead output. Expan-

sion also was being undertaken by American-controlled companies in South America. Increasing production from that continent was indicated for several years. See METALLURGY.

LEAGUE FOR INDEPENDENT POLITICAL ACTION. See SOCIALISM.

LEAGUE OF NATIONS. Economic, social and legal questions were the principal items on the League's programme for January. The Economic Committee continued its investigation of the various problems referred to it by the Economic Conference, the most-favored-nation clause, the reduction of customs tariffs, coal, sugar, treatment of foreigners. Its session was preceded by a meeting of coal technicians. The experts on customs nomenclature continued their work on a standard tariff nomenclature. Constituted under the Geneva Opium Convention of 1925, the Permanent Central Board held its first session, discussing methods of work and its relations with the various League organizations, gaining an insight into the work of the Advisory Committee on Traffic in Opium, which also met during the month.

Preparing for the First Conference for the Codification of International Law, the committee of Jurists met January 28 to consider information from 27 governments, concerning the questions on the Conference agenda. The Committee continued in session in February. At the request of Dr. Stresemann, the German Foreign Minister, the Secretariat placed the question of the protection of minorities on the list of provisional agenda for the Council meeting on March 4. Dr. Stresemann was thought to have particularly in mind the German minorities in territories immediately bordering the Reich. How deeply he felt was shown by his words at Lugano on December 15, which, it was claimed, were inaccurately reported by the general press. According to the *Augsburger Postzeitung* (December 16), Dr. Stresemann declared that the minorities question involved "the most sacred goods of mankind, school, language, and religion guaranteed by the League of Nations." "The education of children"; "protection of religion and language"; "religion, faith and language, as foundation of the nation", were also expressions used by him.

Action by the Opium Committee of the League of Nations in rejecting, by a vote of 7 to 4, the so-called American plan for control of the drug was sharply criticized on February 1, by Representative Stephen G. Porter, of Pennsylvania. The rejected plan was attacked by Sir John Campbell, a Scotchman, representing India, and was defended by Stefano Cavazzoni, of Italy, whom Mr. Porter called "America's friend throughout the controversy." China, Italy, France, and Germany made up the minority.

The Council held its fifty-fourth session in Geneva during the first week in March, M. Scialoja, of Italy in the chair. For the most part, it was a meeting devoted to the slow advancement of matters in hand, rather than to the inauguration of new undertakings. More and more as the operations of the League developed, the meetings of the Council were occupied with the task of supervision, of passing upon the conclusions or proposals of other League commissions or bodies. Thus, at this meeting, the Council reviewed the work in hand of the Economic, Financial, and Mandates Commissions and of the Advisory Committee of Traffic and Opium.

New policy of importance was in the making in

two matters which came before the Council. In its hands was placed the text of the draft convention for financial assistance to victims of aggression. This measure was the complement of the provisions of the Covenant which promise security by combined action against an aggressor. It provides arrangements by which rapid and effective financial assistance would be given to a state attacked or threatened with attack in violation of a League pledge, limited in the sum of \$40,000,000. This financial aid would obviously be of small importance to a great power. To a small power it might bring the means necessary to sustain itself until other action of the member states became effective.

Following its ordinary procedure, the Council ordered the draft convention to be distributed to all members for comment, with the request that these states so instruct their delegates that the Assembly might pass effective judgment upon the proposal.

Out of the debate on Minorities, which claimed most of the Council's time, and into which entered impassioned feelings, came resolutions for further inquiry before change was made in the Council's procedure and policies. What there had been of anger, or mutual accusation in the previous airing of the difficulties gave way to thoughtful, quiet, mediating discussion around the Council table. A mood of combativeness was to some degree tempered into a mood of perceptiveness—which might be said to be the way of achievement for the League.

Delegate Dandurand, of Canada, made proposals for change in the handling of petitions made by minorities, so that fuller knowledge might be provided for fuller attention. Delegate Stresemann of Germany argued for both a change in the procedure for handling petitions, and for new means of assuring the constant proper appreciation of the minorities treaties—outside and beyond the actions on petitions. Delegates Zaleski, of Poland, and Titulesco, of Rumania, warned that the procedure adopted must be acceptable to the states bound by minorities treaties, and sought to limit the range of the inquiry that was on the rim of discussion. Chamberlain, by quiet analysis, Briand by swift, halting, half-bantering criticism, first in one direction, then in another, drew the Council together in a proposal for further study of substantial range—of how the minorities business of the Council could be more satisfactorily handled. To Adachi of Japan, was given the chairmanship of the Committee of Three entrusted with the task. Save when controversy had to have its play, the meeting wore an air of dispatch which was a sign of the competence of the Council and of the secretariat.

Great Britain, Finland, France, Germany, and Poland were represented by their foreign ministers. Of the eight states especially represented on the Council for the discussion of questions affecting their interests, five—Bulgaria, Greece, Hungary, the Serb-Croat-Slovene Kingdom, and Switzerland—sent their foreign ministers to the session.

As usual, the Council considered the work done by the League in various fields, arranging in each case to give effect to the decisions or recommendations of committees. It decided to create two new organizations—a committee of experts to follow the application and extension of the 1928 Convention on Economic Statistics and a com-

mission to inquire into opium smoking in the Far East; to convene two international conferences—one for June 10 in Geneva, to draw up an international agreement on cards for emigrants in transit, the other for November 5, to conclude a convention on the treatment of foreigners. The Council decided at a secret meeting, on March 8, to refer to the committee of jurists, entrusted with the task of revising the statutes of the World Court, the proposal made by Elihu Root as to finding a satisfactory formula, through exchange of views, on the fifth reservation made in 1926 by the United States as to entrance into the Court. Sympathetic references to Mr. Kellogg's note and to Mr. Root were made by all the Council members.

On March 11, the Root formula was taken up by the Committee of Jurists at its first session. The formula did not provide for a veto by the United States, but for withdrawal in case of American dissatisfaction. On March 12, a tacit agreement was reached, providing for an American "representative" empowered to receive immediate notice from the secretariat of the League of any proposal to ask the World Court for an advisory opinion and thus hasten American consent to it. An improved formula, drafted by Sir Cecil Hurst, of Great Britain, provided for notification by the Registrar of the Court, for a time limit and a stay of proceedings, in case such a request for an advisory opinion did come to the Court. Feats, however, were expressed by many of the Latin American Countries that the United States, in excluding all advisory opinions that might touch on the Monroe Doctrine, was unduly limiting the Court's competence. The vexed question as to whether unanimity or only a majority of the Council was needed for a request for an advisory opinion was ruled out of the discussion.

A second session of the Economic Consultative Committee marked the end of the second year of work on the programme bequeathed to the League by the Economic Conference. The committee reviewed the work of the past year and drew up a report containing its conclusions and recommendations on trade, industry, and agriculture. Special aspects of one of the main points of the programme of the Conference—the reduction of trade barriers—were dealt with at meetings of experts on customs nomenclature. A consultation of experts on beet growing marked the second stage of the Economic Committee's inquiry concerning the sugar problem.

The Health Committee sat from May 2 to May 8, when it reviewed the work of its commissions since its October session and noted that the Greek government had approved its plan for the reorganization of the Greek public-health services.

In April the Committee on Communications and Transit held its annual session, taking decisions in regard to the work of its technicians on maritime tonnage measurement, buoyage and lighting of coasts, river law, road traffic, and various other questions. It began its study of a question referred to it by the Council in its resolution of December concerning the state of the Polish-Lithuanian negotiations, and was able to vote that agreement had been reached regarding the jurisdiction of the European Commission of the Danube from Galatz to Braila, on the basis of a text prepared by a special committee of the League Transit Organizations.

On April 15 the sixth Session of the Preparatory Commission for the Disarmament Conference

opened and continued into May. Twenty-four states were represented, including the United States, Turkey, and Russia. During its three weeks' session, the commission began the second reading of the 1927 draft convention, drew up several new texts and proceeded to a thorough discussion of some of the principal questions raised in connection with the preparation of a disarmament convention, namely, effective, trained reserves and material. Naval disarmament was dealt with in an important statement by the American delegation to which the delegates of the principal naval Powers replied.

An examination of a draft convention and resolution deposited by the Soviet delegation led the commission to adopt a resolution concerning the "reduction" of armaments. Proposals from the Turkish and Chinese delegations were reserved for the Disarmament Conference. The commission adjourned to give the governments concerned, time for a thorough examination of the American suggestions regarding naval disarmament. It asked these governments to inform their presidents of the progress of these negotiations so that they might convene the next year with a full knowledge of the facts.

An international conference on counterfeiting of currency sat from April 9 to 20 and drew up a convention that was immediately signed by 25 of the 35 participants. The Economic Committee pursued its study of the most-favored-nation clause, the tariff question, coal and sugar, bills of exchange, safeguarding, etc., and a small committee of experts continued work on a standard customs nomenclature.

A commission, which consisted of the Child Welfare Committee and the Committee on Traffic in Women and Children, prepared two conventions on the assistance and repatriation of foreign minors for transmission to the Council, and studied the position of blind and illegitimate children, the cinematograph in relation to child welfare and the abolition of licensed houses.

Questions relating to a survey of international law and the publication of conventions were considered by a committee of the jurists, which examined over 450 conventions. The number of treaties registered with the League secretariat reached two thousand on April 25.

The fifty-fifth session of the Council came to an end at Madrid on June 15. Except for the session held at Lugano on account of Herr Stresemann's health in December, this was the first regular session to be convened anywhere but in Geneva since December, 1924. It appeared that as part of the arrangement by which Spain agreed to return to the League, the Council promised to hold one of its sessions in Madrid. This action not only satisfied the prestige of Spain, but worked also to the advantage of Primo de Rivera against whom several revolutionary efforts had recently been made but whose position was strengthened, at least temporarily, by the visit of the League Council.

Apart from deciding to hold a conference at Geneva in the autumn to consider the Root-Hurst formula relative to the World Court, the most important action of the Council concerned the protection of minorities. This task was originally confined to the Council by about ten minority treaties negotiated between the principal allied powers and the governments of Central Europe and the Balkans at the close of the World War. The Treaties guaranteed to minorities cer-

tain rights in regard to the acquisition of citizenship and the protection of language, religion, and schools. A number of the Baltic States likewise made declarations promising protection to minorities in connection with their admission to the League of Nations. In the Geneva Convention of 1922, moreover, Germany and Poland accepted minority obligations in regard to Upper Silesia. About 20,000,000 people live under the protection of such treaties.

If a minority feels that its rights have been violated, it may petition the League Council through its government. Any member of the Council (but no nonmember) may ask the Council to take up the question and determine what action should be taken. The weakness of this procedure is that while a minority has the right to petition, the Council is not obligated to act, except at the request of a state member of the Council. This defect was overcome to a certain extent when the Council established a committee of three to determine whether or not a given minority petition should be placed before it.

In Upper Silesia, the minority situation had been particularly acute during two or three years. Ten petitions from this area came before the Council at its meeting in December, 1928. Following a rather violent exchange of views on the subject between Herr Stresemann of Germany and M. Zaleski of Poland, the former declared that he would place the entire minorities question before the March meeting of the Council. At this latter meeting, Senator Dandurand of Canada proposed that minorities should be required to attempt to settle their grievances directly before petitioning the League; but in case their attempts failed, they should then have the right of petition, by a committee of all members of the Council, instead of by the committee of three, and that decisions should be published if so desired. These proposals were aimed to offset the criticism that under existing procedure only a few members of the Council passed upon petitions, and that minorities were not informed of the action taken. In approving the Canadian proposals, Herr Stresemann suggested the establishment of a Permanent Minorities Committee.

These proposals were placed before a sub-committee which presented a report at Madrid. According to the press, this sub-committee rejected practically all of the Canadian proposals, but the Council finally arrived at a compromise whereby in exceptional cases the number of the minorities sub-committee might be increased from three to four, more frequent sessions of the committee were to be held, and greater publicity given to decisions.

It may have been the change of government in England which influenced the Council, in part at least, to go further in its decision than did the report of the sub-committee. On June 18, only a few days after he had become Prime Minister, Mr. MacDonald published an article in *The Sunday Times* (London) in regard to minorities, among which he included the inhabitants of Alsace-Lorraine and the Saar. The article raised a storm of protest in the French press. Whether or not Mr. MacDonald was discreet in publishing this article, it remained true that the minority question was one of the most burning issues before Europe at the time.

Before the session opened, the Spanish Premier, General Primo de Rivera, welcomed the members of the Council placing the Senate Palace at their

disposal The President of the Council, M. Adachi, opened the public meeting with a speech expressing the Council's thanks for the hospitality of the Spanish government. He drew attention to the importance of Spain's cooperation in the League and the part played since the beginning by the Spanish representative. M. Quinones de Leon replied that his government greatly appreciated the honor of receiving the Council and desired fully to cooperate in the League's mission of peace and civilization.

In the course of the session, the Chilean representative, M. Villegas, informed the Council of the settlement of the Tacna-Arica dispute, which had for many years troubled the relations between his country and Peru. M. Adachi expressed the Council's satisfaction at the conclusion of a difference which had lasted for such a long time, and at the restoration of friendly relations between two important Latin-American countries.

The Council approved the agreement concluded in April by the German and Polish governments with regard to the interpretation and application of certain stipulations of the Upper Silesia Convention, and settled a number of petitions from German and Polish Upper Silesia. It approved an agreement for the liquidation of German property in Poland concluded during the session by Germany and Poland under the presidency of the Japanese representative.

Arrangements were made for the convocation of four international conferences, one to draw up a convention on the harmonization of laws, on bills of exchange and checks; another to examine customs, railway, and postal questions concerning the transport of newspapers and periodicals, the third, the first League Conference on the codification of internal law; and the fourth, to consider amendments to the statute of the Permanent Court of International Justice.

Features of the June Council session were the creation of a fiscal committee to promote agreements on double taxation and tax evasion, and to follow taxation questions, the communication to governments of draft convention on the return home of children and young people, and on assistance to foreign minors, the reference to the economic committee of the recommendations of the consultative committee on industrial agreements, the reduction of customs tariffs, and the cooperation of agricultural circles in the economic work of the League.

The Council ratified the report of a special committee approving the plans for the new League buildings.

An important item before the fourteenth session of the Health Committee was the report submitted on the appeal of the Greek government for the creation in that country of a new system of sanitary administration. A group of League experts had been in Greece for several weeks elaborating a project for new laws, a general central administration, a training school for personnel, and, in short, all the various elements needed to give Greece the most modern and up-to-date hygiene facilities. In addition, following a report by Surgeon General Cumming of the United States Public Health Service and Dr. C. E. A. Winslow of Yale, in regard to the methods in use in the United States for stimulating public interest in health administration, the committee took measures for a world study of this subject with the thought of giving it a world-wide impetus. The committee also took further action

with regard to the standardization of sera, which has developed very rapidly, and considered the relationship between public-health administrations and health-insurance organizations, infant welfare, sleeping sickness, occupational cancer, and the like.

In the refugee field, a special advisory commission decided that it was impossible at once to solve the many problems left over from the World War, and that the best course would be to extend the life of the League's refugee organization for ten years until all the million or more unsettled people have found permanent places.

From July 1 to 19, the Mandates Commission was in session. It examined eight annual reports from Mandatory Powers dealing with territories in Asia, Africa, and the Pacific, and studied a series of petitions and general questions.

The sessions of the various organs dealing with intellectual cooperation continued throughout July into August. The plenary session of the International Committee, which also sat as the Governing Body of the Institute of Intellectual Cooperation, was preceded by meetings of its Subcommittee on Intellectual Property, University Relations, Arts and Letters, and Science and Bibliography. In the interval between these meetings and the plenary session of the committee, there was a meeting of representatives of National Committees on International Cooperation.

Delegates of forty-six governments met at Geneva on July 1 to revise the 1907 Hague code for war prisoners and the 1906 Geneva convention on sick and wounded with armies in the field. Objection was raised to the draft convention, drawn up by the Red Cross experts, which was laid before the conference, on the ground of its entering into so many details, and an American convention was proposed as a substitute, which would confine itself to general principles. By a narrow vote, however, it was decided to retain the Red Cross convention as a basis for discussion.

The Malaria Commission of the League's Health Organization accepted an invitation from the Government of India to study there the problem of malaria. Training courses in malaria fighting, organized under the auspices of the Health Organization at Hamburg, London, Paris, and Rome were to be attended by government officials from various European countries.

A new code on prisoners of war and a convention on the treatment of sick and wounded in time of war was signed on July 27 by thirty-two members, including the United States, of the diplomatic conference of forty-seven nations which had been sitting at Geneva for a month. The agreements were thought to be a great advance over the Hague convention of 1907 and the Geneva convention of 1906 which dealt with the same subjects.

During the latter part of August, there were meetings of the Council, the financial committee, the special commission for drafting a convention on the manufacture of arms, a conference of the signatories of the 1928 agreements on ludes and bones, and a delegation of the financial committee to study the gold question. The Council and the financial committee met on August 30, a few days before the opening of the Assembly.

The tenth session of the Assembly and the fifty-sixth and fifty-seventh sessions of the Council and the Conference for the revision of the Statute of the Permanent Court of International

Justice were the principal meetings held in September.

The Assembly sat from September 2-25. Delegates were sent by 53 of the 54 states members of the League, namely, Abyssinia, Albania, Australia, Austria, Belgium, Bolivia, British Empire, Bulgaria, Canada, Chile, China, Colombia, Cuba, Czechoslovakia, Denmark, Dominican Republic, Estonia, Finland, France, Germany, Greece, Guatemala, Hawaii, Honduras, Hungary, India, Irish Free State, Italy, Japan, Jugoslavia, Latvia, Liberia, Lithuania, Luxemburg, the Netherlands, Nicaragua, Norway, New Zealand, Panama, Paraguay, Persia, Peru, Poland, Portugal, Rumania, Salvador, Siam, Union of South Africa, Spain, Sweden, Switzerland, Uruguay, Venezuela. The Argentine Republic was not represented.

The Acting President of the Council, Ali Khan Foroughi (Persia) opened the session with a speech in which he drew the Assembly's attention to the coming into force of the Pact for the Renunciation of War as an Instrument of National Policy, and the General Act for the Pacific Settlement of International Disputes. The idea that violence must finally be banished from international life, as the sovereign force of justice had already banished it from private life, was an idea with which the Assembly was already familiar, and which, during the past ten years, had guided its patient constructive work. This idea was now definitely inscribed as the first great rule of international law and the consequences would be seen in every department of the League's work. He welcomed the Bolivian, Honduras, and Peruvian delegates who, for the first time in several years, took part in the work of the Assembly. M. J. G. Guerrero (Salvador) was elected President of the Assembly by 43 votes out of 51 cast. The Assembly then adopted its agenda and divided its work among the six following committees, to which each of the States represented at the Assembly was entitled to send one delegate.

First Committee: Legal and Constitutional Questions (Revision of the Statute of the Permanent Court of International Justice, progressive codification of international law, accession of the United States of America to the Protocol of Signature of the Statute of the Permanent Court, proposal to confer on the Permanent Court jurisdiction as a court of review in respect of arbitral tribunals established by States, ratification or conventions, amendment of the Covenant as a result of the Paris Peace, application of Article 19.)—Chairman M. Scialoja (Italy), Vice Chairman M. Lumburg (Netherlands).

Second Committee: Technical Organizations (Work of the Economic and Financial Commission, the Organization for Communications and Transport, the Health Organization, Intellectual Cooperation.)—Chairman M. Molle (Switzerland), Vice Chairman M. Coblenz (Netherlands).

Third Committee: Reduction of Armaments (Progress of the Preparatory Commission, Draft Convention on Financial Assistance, Model Treaty to Strengthen Means of Preventing War, League communications, supervision of the private manufacture of arms.)—Chairman M. Benes (Czechoslovakia), Vice Chairman M. Coblenz (Spain).

Fourth Committee: Budget and Financial Questions (Organization of the Secretariat, in particular amendments to the Staff Regulations, report by the committee of five on the new buildings.) Chairman Count Molke (Denmark), Vice Chairman M. Molle (Switzerland).

Fifth Committee: Social and General Questions (Traffic in opium and other dangerous drugs, protection and welfare of children and young people.) Chairman Mr. O'Sullivan (Irish Free State), Vice Chairman Countess Apponyi (Hungary).

Sixth Committee: Political Questions (Mandates, Slavery, Refugees.)—Chairman M. Janson (Belgium), Vice Chairman Count de Penha Garcia (Portugal).

General Committee. The Chairman of the Committees are *ipso facto* Vice Presidents of the Assembly. The Assembly elected six further Vice Presidents who, with the chairman of the committees and the chairman of the agenda committee, constituted its General Committee. The six Vice Presidents constituted its General Committees. The six Vice Presidents elected by the Assembly were M. Briand (France), M. Stresemann (Germany), M. Adachi (Japan), M. Balodis (Latvia), Mr. Ramsay MacDonald (British Empire), and M. Chao Chu Wu (China).

This year's discussion was particularly wide, embracing, as it did, the whole range of subjects within the League's purview, as well as the more important political events of the day, such as The Hague negotiations and their bearing on international relations, the Anglo-American negotiations for naval agreement; the preparation for a conference on the reduction of armaments, the development of the system of arbitration and security, the Covenant and the Paris Pact; the Palestine incidents, the protection of minorities, and the economic situation. It was also during the general discussion that M. Briand, put forward the idea of a federation of European States. He proposed that the delegates should submit this idea to their governments with a view to discussion at the next Assembly. The most important results of this session were obtained in the sphere of arbitration and the judicial organization of international relations, economic co-operation, the measures to combat the opium and drug traffic.

The first category includes the accession to the Optional Clause of the Court Statute of fifteen states, including three permanent members of the Council—France, Great Britain, and Italy, which thus recognized the compulsory jurisdiction of the Court for certain categories of disputes.

Another point which falls within this category is the adoption of two Protocols, one on the revision of the Statute of the Permanent Court of International Justice, the other on the accession of the United States to the Court Statute. The effect of these new accessions to the Optional Clause and the accession of the United States to the Court will be to increase the scope and the importance of the work of that organization. Amendments to the Statute are designed to make the Court a permanent judicial organization in the full meaning of the term, with judges who are specialists in international law.

It should, further, be mentioned that, during the general discussion, Denmark, Finland, France, Latvia, and Czechoslovakia, announced their intention of acceding to the General Act for the Pacific Settlement of International disputes, which was adopted by the 1928 Assembly and came into force in 1929, following the accession of Belgium, Norway, and Sweden.

The coming into force of the Pact for the Renunciation of War gave rise to the idea of reconsidering certain articles of the Covenant which did not seem to be in harmony with the Pact. The articles in question (Nos 12, 13, and 15) appear in theory to admit the possibility of resort to war. In view of the complexity of the question of amendments to the Covenant, the Assembly set up a special committee to study this matter during the coming year.

As regards two questions closely linked up with arbitration—security and disarmament—the Assembly took decisions concerning the establishment of a wireless station to insure independent League communications, the preparation of a

draft convention on financial assistance, the transformation into a general convention of the Model Treaty for Strengthening Means of Preventing War, and the necessity for hastening the work of the Preparatory Commission for the Disarmament Conference with a view to the convocation of the Conference.

As regards economic matters, the Assembly urged that energetic measures should be taken to better the situation which, in the absence of a systematic general application of the recommendations of the Economic Conference, had not, it considered, sufficiently improved. In the course of the general discussion on this point, the British Prime Minister advocated agreements to increase economic freedom, while the French Premier set forth the most striking aspects of the European problem. The German Foreign Minister pointed out that the economic organization of Europe was incompatible with present-day conditions, and the Belgian Foreign Minister launched the idea of a tariff truce, which was at once taken up and treated in greater detail by the president of the British Board of Trade.

This discussion resulted in the adoption of a programme which included a diplomatic conference for the conclusion of a tariff truce and, if necessary, for the establishment of a programme of negotiations for collective agreements to facilitate economic relations by all practicable means. In particular, the removal of hindrances to trade. Decisions also were taken with a view of accelerating the work on coal and sugar.

In the field of social work, the Assembly's discussion on the drug traffic may be regarded as one of the most important that has ever taken place on this subject. For the first time in the League's history, the principle of the limitation of drug manufacture was accepted. This limitation would be effected through an international conference which would fix the total quantity of drugs necessary for the medical and scientific requirements of the whole world, as well as the quotas to be manufactured by the various countries. The Assembly emphasized the vital necessity of the general ratification and application of the Opium Convention of 1925.

Poland, was reelected as a nonpermanent member of the Council, and Jugoslavia and Peru were elected as nonpermanent members. The Assembly and Council, voting simultaneously, elected Sir Cecil Hurst and M. Fromageot to succeed Lord Finlay and M. Weiss as judges of the Permanent Court of International Justice.

The fifty-sixth and fifty-seventh sessions of the Council were held from August 30 to September 6 and from September 13 to 25. The Persian representative, Ali Khan Foroughi, presided at both sessions. The principal business of these sessions was to prepare the discussion of the Assembly or to make arrangements for carrying out its decisions.

In the opinion of the Foreign Policy Association, the Tenth Assembly of the League was apparently one of the most important in League history. Fifty-three out of fifty-four member states sent delegates, the only absentees being Argentina. Twenty-two out of twenty-six European foreign ministers and seven prime ministers were present; at the first Assembly, there were only four prime ministers.

The most concrete gain registered at the Assembly relates to the acceptance of the Optional Clause of the World Court Statute, which pro-

vides for obligatory arbitration of legal disputes between nations. During the recent Assembly, this clause was signed by France, Great Britain, Canada, New Zealand, South Africa, and Irish Free State, India, Czechoslovakia, Italy, and Peru. All of the important countries of Europe were bound by the famous Article 38, the only great power within the League which had not accepted it was Japan. M. Briand announced that France would accept also the general act for the pacific settlement of disputes drawn up at the last Assembly. In order to close the "gap in the Covenant," the British Government proposed an amendment making it illegal for League members to go to war, even in cases where the Council failed to make a unanimous recommendation in regard to a dispute. This proposal was to be studied by a committee of eleven, which will report to the next assembly.

A bold effort to strengthen the peace machinery of the League was made by China. At the fourth meeting the Chinese delegate, Dr. Wu, asked that the Assembly proceed to make use of Article XIX of the Covenant, which permits the Assembly to advise reconsideration by League members of treaties "which have become inapplicable." Later the Chinese delegation proposed that a committee be appointed to decide how to apply Article XIX. The immediate object of this request was to secure the support of the League for China's campaign against the "unequal treaties." It was realized, however, that the establishment of this committee would constitute a precedent which might be used to disturb the European territorial settlement of 1919. After a rather tense discussion, which lasted until September 23, China abandoned its proposal for a committee, but in return the Assembly accepted a resolution to the effect that a member of the League might on its own responsibility place on the Assembly agenda the question of whether or not the Assembly should give advice in any particular case under Article XIX. The resolution declared that, if drawn up in the proper terms, the Assembly should discuss the application and, if it thinks proper, give the advice requested.

Perhaps the most spectacular, if not the most important, event of the Assembly was M. Briand's luncheon to the delegates of the European States, at which he launched his proposal for a United States of Europe. It was agreed at this luncheon that M. Briand should circulate a memorandum on the subject to the European governments and that, having received their views, he should make a report to be discussed by the European governments at the next Assembly. The idea of a United States of Europe was received with a great deal of sympathy, but at the same time several delegates made it clear that they could not support a union directed against other continents. In a speech of September 9, Herr Stresemann expressed opposition to any attempt to make Europe economically self-sufficing. He declared, however, that a European currency and postage stamp were long overdue. Mr. Graham, president of the British Board of Trade, stated that the advantage of any federation was that it secured free trade, but he too reminded his hearers that discrimination against countries or against continents would be contrary to the principles of the League.

Whether or not it was an outgrowth of this discussion, the French, British, and German delegates supported a resolution, which the Assembly

accepted, asking that an international economic conference be called in 1930 to negotiate an agreement providing that, for two years, tariffs should not be increased and that during this period negotiations should be carried on looking toward the eventual reduction of tariffs. Such an agreement should be open to non-members of the League but only on condition of reciprocity.

Another interesting debate dealt with the Bank of International Settlements contemplated by the Young Plan. Norway, Denmark, and Poland declared that this bank, under the control of the seven reparation Powers, might become a danger to other nations, they therefore proposed that the bank be placed under League supervision in accordance with Article XXIV of the Covenant. The proposal was opposed by the reparation powers on the ground that it would be unwise to link up the League with the reparation question, partly on the ground that any such link would further antagonize the United States. The resolution was finally withdrawn, on the understanding that the minutes of the League debates be placed before the committee organizing the bank. Denmark and Poland, moreover, reserved the right to raise the question again in the future.

After a preliminary press interview on September 2, in which he disclaimed any intention of doing anything to hurt the League, Premier MacDonald of Great Britain delivered his eagerly awaited speech to the Assembly on September 3 treating of disarmament and peace. "The problem of the League of Nations," he declared, "is a problem of security." The Kellogg Pact must be made the basis for future work. Articles 12 and 15 of the League Covenant should be revised in accordance with that pact. The British Government was pledged to "do everything it possibly can to hasten preparation for a disarmament conference." Agreement with America was Great Britain's special contribution to that end and was in no wise to be understood as an exclusive position toward other states, and was preliminary to a five-Power conference. Out of twenty points of agreement only three were "still outstanding." Mr. MacDonald also announced that his government had decided to sign the Optional Clause of the World Court agreement. Regard for the older nations of the East was recommended. The disorders in Palestine were declared to have no racial significance, but to be merely outbreaks of criminality and murder. Tariff barriers were deplored. Great Britain would now take the "risks of peace." Frequent applause interrupted the address, especially at the announcement concerning the Optional Clause. British Conservative comment was disturbed over a "too ready" pledge on this point, in view of the Dominions. Some French comment was unfavorable, expressing fear as to the consequences for France of an Anglo-American agreement on naval disarmament. On the day following his address, Mr. MacDonald and Foreign Minister Henderson, of Great Britain, conferred with Premier Briand, of France, for an hour and were reported to have agreed, with certain reservations, to a five-Power naval conference.

The Assembly closed its sessions on September 25 with the adoption of a budget of \$5,642,000 for the expenses of the League's secretariat, the International Labor Office, and the World Court for 1930. This was an increase of \$230,000 over last year, due to the great amount of new work

ordered by the Assembly. Fourteen League members, including Great Britain, France, and Italy, had signed the Optional Clause, accepting in advance the compulsory jurisdiction of the World Court. To the end of 1929, 43 members had signed, of which only 18 had ratified. A Liberian committee of three, consisting of a member of the League Council, a representative of the United States, and a representative of the Liberian government was decided upon in order to investigate the charges of slavery in Liberia made by Prof. Raymond Buell of the United States.

"A great debate," as it was styled, took place in the Disarmament Committee on September 19 as a consequence of the fourfold issue raised by Viscount Cecil of Great Britain with regard to (1) the application of the same principles to land, air, and sea disarmament; (2) the limitation of the strength of a force either by limiting its members or its training, or both; (3) the limitation of war material, and (4) agencies of control. In view of the concessions made by Lord Cushendun in the previous spring to the French demand for the exclusion of the question of trained reserves, the reopening of this question aroused special alarm. The debate appeared to swing between the two points of view on the one hand that any naval agreement would depend on the principles adopted for the handling of the question of land forces and material, and, on the other hand, the French contention that it was useless to be debating concerning matters of land disarmament before a settlement of the essentials of naval disarmament. The debate ended with a compromise resolution drafted by M. Politis of Greece which put the Assembly on record as favoring the view that land disarmament depends in substance on the success of naval agreement and that any five-Power accord is subject to the preparatory commission's approval.

In August, the United States Government transmitted for publication in the League's Treaty Series, the Treaty for the Renunciation of War which had just entered into effect. This treaty was of course formally registered with the League by the other signatories under Article XVIII of the Covenant, it is interesting, however, that its first transmission should have come from the state which took the initiative in the treaty but which is not a member of the League.

In less than ten years, over 2200 treaties have been registered and published by the League in some three score volumes. During August, the following registrations were noted: The Serbo-Croat-Slovene State, treaty of conciliation with the United States; Latvia, extradition treaty with France, Belgium, legal competence as regards Holland; Holland, commercial treaty with Turkey and aerial navigation treaty with Great Britain; Siam, conciliation treaty with Holland; Great Britain, frontier treaty with Brazil, treaty with France over Senegal, and parcels-post treaty between the United States and the Straits Settlements; Hungary, the convention on import and export prohibitions; Italy, private international law agreement with Germany and commercial treaty with China, as well as other treaties by Norway, Denmark, Austria, Germany, Czechoslovakia, and Sweden.

The task of drawing up a draft convention for a tariff truce was scheduled for the Economic Committee, which began its sessions on October

24 Assurances were received from Lucius R Eastman, American member of the committee, quoting Julius Klein, Assistant Secretary of Commerce, that American opinion, far from being hostile to the movement, would favor any step that Europeans took toward increasing their prosperity and buying power. The general trend of reports from other countries, including Great Britain, indicated opinion favorable to the truce. In October, the first meeting of the Fiscal Com-

of 10 per cent on hides and of 12½ to 15 per cent on leather. This rate of duty, however, failed to meet with the approval of the Senate, and hides and leather, as well as imported boots and shoes, were restored to the free list though no bill was enacted by the end of 1929.

The output of American tanneries by kinds of hides and skins represented was reported as follows by the Department of Commerce for 1929, 1928, and 1927.

UNITED STATES LEATHER PRODUCTION

Kind		1929	1928	1927
Cattle (including kip side) *	equiv hides	19,146,582	20,288,793	21,820,368
Calf and whole kip	skins	15,867,726	15,617,325	16,986,711
Goat and kid	skins	55,684,501	54,654,085	50,755,686
Chabretis	skins	2,801,732	3,262,621	3,406,852
Sheep and lamb *	skins	38,980,687	39,015,490	36,061,677
Deer and elk	skins	965,417	859,139	887,910
Kangaroo and wallaby	skins	853,849	882,535	705,268
Seal	skins	243,979	192,214	351,331
Pig and hog	skins	706,115	522,391	347,869

* The following procedure was used in the consolidation of production data. Sides of sole, harness, bag, can, and strap, skirting, collar, latigo, lace, upper, patent, glove, fancy, rawhide, cowhide, n e s, and rough leather were added together and divided by 2. To this quantity was added the actual number of rough belting butts, up holsters, grains, and machine buffed hides. The figures include buffalo hides. Curried belting butts, wetting leather, buffings, and splits were excluded. * Includes skivers but excludes chamois and other feshers

mittee, created as a result of eight years of study for the purpose of considering the problems of double taxation, took place and agreements were reached to free visiting foreign motor cars from present tax difficulties in different countries and in regard to traveling salesmen, who were subjected to considerable inconveniences, while study was begun of the general principles governing the taxation of international trust and holding companies and the measures necessary to avoid the double taxation of various instruments of international trade, such as checks, bills of exchange, and letters of credit.

Two treaties of conciliation and arbitration between the United States on the one hand and Hungary and Rumania on the other were transmitted to the League in October by the American Minister at Berne.

The New League Building was to be located in Geneva in the beautiful Park Ariana—high up on wooded slopes, overlooking the lake, in scenic intimacy with the mountains, yet not more than fifteen minutes walk from the centre of the city. The site was given by the city, after a failure of the authorities to obtain the ground next to the International Labor organization, on the level of the lake. The newly selected site is more imposing than the original one, though not as convenient. The plan of the buildings was determined in an international competition. The most significant spots were to be the Council meeting room, the library, the radio station, and the airplane landing field.

See IRAQ, under History.

LEATHER. The leather industry remained in an unstable condition during 1929 on account of restricted consumption, owing to the policy on the part of shoe manufacturers of buying only enough leather to meet their immediate needs, and on account of the inability of producers to work their plants at full capacity. There also had been left over from the year previous a large amount of unsold leather which had to be realized and, in the endeavor to rid the market of this surplus, prices receded rapidly. For these reasons the Hawley tariff bill, passed by the House of Representatives on May 28, was regarded as a general panacea, as it proposed placing a tariff

Statistics from the Bureau of Animal Industry in 1929 indicated a decrease in the number of cattle, calves, goats, and hogs slaughtered in the United States and an increase in the number of sheep and lambs. The number of cattle slaughtered in 1929 was 8,324,067 as compared with 8,467,308 in 1928, the number of calves, 4,488,996 as compared with 4,679,922 in 1928 the number of hogs, 48,444,604 as compared with 49,795,408 in 1928, and the number of sheep and lambs, 14,023,362 as compared with 13,488,171 in 1928. See LIVESTOCK.

The imports of raw hides and skins in 1929 represented the largest volume since 1923 and were derived from widely scattered sources. South America, particularly Argentina, ranked as the chief source of imported cattle hides which in 1929 amounted to 265,628,593 pounds valued at \$42,615,807, as compared with 276,235,123 pounds valued at \$63,694,386 in 1928. Canada, Germany, Sweden, France, and Latvia were the chief sources of calf and kip skins, the imports in 1929 amounting to 56,067,066 pounds valued at \$16,367,176, as compared with 45,335,725 pounds valued at \$16,104,535 in 1928. New Zealand and Argentina were the principal sources of direct shipments of sheep and lamb skins, total imports in 1929 amounting to 65,478,195 pounds valued at \$21,904,919, as compared with 63,191,979 pounds valued at \$20,730,983 in 1928. Goat and kid skins came chiefly from British India, China, and Brazil and amounted to 100,108,170 pounds valued at \$47,500,323, as compared with 90,803,631 pounds valued at \$41,740,335 in 1928. Total imports of raw hides and skins during 1929 amounted to 515,680,184 pounds valued at \$137,308,664, as compared with 506,021,501 pounds valued at \$150,809,555 in 1928.

The exports of raw hides and skins from the United States in 1929 totaled 37,744,750 pounds valued at \$6,795,631, as compared with 46,419,438 pounds valued at \$11,002,502 in 1928. The exports of leather were valued at \$42,946,939, as compared with \$55,177,834 in 1928. The largest importers of calf and kip leather were the United Kingdom, Cuba, and Brazil; of goat and kid upper leather (including glazed kid), Belgium, Germany, Poland, the United Kingdom, Canada, and

of sole leather, the United Kingdom, China, and Japan.

The imports of leather in 1929 were valued at \$44,559,116, as compared with \$43,237,589 in 1928, an increase being noted in imports of goat and kid, calf and kip, rough tanned, and harness leather. Imports of upper leather included 276,104 pounds of reptile leather valued at \$4,346,808, 4,348,169 square feet of cattle, grains, and finished splits valued at \$744,881; 39,809,885 square feet of calf and kip leather valued at \$12,847,783, 2,061,324 square feet of sheep and lamb leather valued at \$420,728, 14,717,839 square feet of goat and kid leather valued at \$6,507,204; 25,744,840 square feet of calf and kip lining leather valued at \$3,754,957, and 3,948,092 square feet of patent leather valued at \$1,263,263. There also were imported 6,194,174 pounds of sole leather valued at \$2,497,728; 182,098 square feet of glove leather valued at \$59,142, 1,911,115 square feet of seal, sheep, goat, and calf leather, dressed and finished, valued at \$590,394, 294,263 pounds of skins for Morocco, tanned but unfinished, valued at \$330,017, 13,320,303 pounds of rough tanned leather valued at \$7,480,530, and 2,316,682 pounds of harness leather valued at \$980,482. The principal countries which supplied imports of leather were the United Kingdom, Canada, Germany, and France.

During 1929 the United States imported leather manufactured goods to the value of \$41,563,220, as compared with \$25,651,981 in 1928. The value of the leather gloves imported constituted \$16,550,530 of this amount, leather boots and shoes (free of duty), \$17,025,931, leather slippers (free from duty), \$1,432,705, dutiable footwear, \$314,289, bags, baskets, belts, etc., \$4,620,832, and miscellaneous goods, \$1,323,245. The exports of leather manufactures were valued at \$17,733,684, as compared with \$17,503,474 in 1928. See **BOOTS AND SHOES**.

LEAVENWORTH PRISON. See **CRIME**.

LEBANON. See **SIRIA**.

LEDRO, LAKE OF. See **ARCHAEOLOGY**.

LEE, JAMES MELVIN. An American editor, author, and educator, died in New York City, Nov. 17, 1920. He was born on May 16, 1878, in Port Crane, N. Y., and was graduated from Wesleyan University in 1900. He soon joined the staff of *The Union* (Springfield, Mass.), and in 1901-02 he was an English teacher at the Wesleyan Reserve Seminary. From 1902 to 1912, he was connected with various magazines, including *Bohemian Magazine*, *The Circle Magazine*, *Leslie's Weekly*, and *Judge*, which he edited during 1908-12. In 1910-11 he lectured on journalism at New York University and after 1911 was director of the department of journalism there. In addition to his teaching, he was editor-in-chief of *Administration* (1921-23), literary editor of *Editor and Publisher* (1922) and of *Three Am Dash* (after 1923). He wrote *How to be Self-Supporting at College* (1903), *Wordless Journalism in America*, cartoons (1915); *History of American Journalism* (1917), *Newspaper Ethics* (1915), *Instruction in Journalism in Institutions of Higher Education* (1918), *America's Oldest Daily Newspaper* (1918), *Opportunities in the Newspaper Business* (1919), *Business Ethics* (1925).

LEE, WILLIAM GRANVILLE. An American labor leader, died in Cleveland, Ohio, Nov. 2, 1929. He was born in La Prairie, Ill., Nov. 29, 1859, and was educated in the public schools. From 1879

to 1884, he was successively brakeman and conductor on the Atchison, Topeka & Santa Fe, the Wabash, the Missouri & Pacific, and the Union Pacific railroads. After an intermission of four years, when he was recorder of deeds in Ford Co., Kansas, he returned to railroad work as conductor on the Union Pacific (1885-95). In 1895 he was appointed first vice president of the Brotherhood of Railroad Trainmen and in 1909, president. Mr. Lee held the presidency until 1928, when he was defeated for reelection as president, but was chosen general secretary and treasurer of the organization. Under his 19 years of leadership, the Brotherhood of Railroad Trainmen grew in numbers, wealth, and influence. Mr. Lee's conservative but fearless handling of strikes and other difficult situations won for him the respect alike of the trainmen and of the railroad officials.

LEES, THE MOST REV. HARRINGTON CLARE, ARCHBISHOP OF MELBOURNE AND METROPOLITAN OF VICTORIA. Anglican archbishop, died Jan. 10, 1929, in Melbourne, Australia. He was born in England, Mar. 17, 1870, and was graduated from Cambridge in 1892. The following year, he was curate of St. Mary's Episcopal Chapel, Reading, and was ordained priest in 1894. He was chaplain of Turin (1895-97), curate of Childwall, Lancashire (1897-1900), and vicar of St. John's Kemilworth (1900-07). In 1906 he was sent as a missionary to South Africa, but returned to England the next year to become vicar of Christ Church, Beckenham, where he remained until 1919. At that time, he was also diocesan mission preacher at Rochester. From 1919 to 1921, he was vicar of Swansea, South Wales. In 1921 he was made Archbishop of Melbourne, and in 1922 was elected president of Melbourne College of Divinity. During the World War, he was honorary chaplain at the Kelsey Manor Military Depot (1914-18), and at Christ Church V. A. D. Hospital (1914-16), being mentioned in 1919 by the British Red Cross Society for his services. Among his writings are *King's Way*, *Joy of Bible Study*, *St. Paul and His Converts*, *Christ and His Slaves*, *Divine Master in Home Life*, *St. Paul's Friends*.

LEEWARD ISLANDS. A group of islands belonging to Great Britain in the West Indies, the most northerly group of the British Lesser Antilles, lying to the north of the Windward group and southeast of Porto Rico, comprising Antigua, Dominica, Montserrat, St. Kitts (with Nevis and Anguilla), and the British Virgin Islands. Total area, 715 square miles, population at the census of 1921, 122,242, as compared with 127,193 in 1911. The estimated population in 1928 was 123,000. The two largest islands with their area and population in 1921 were Dominica, 305 square miles and 37,059 inhabitants, Antigua, 108 square miles, but with Barbuda and Redonda, 170 square miles, with a population of 29,767. The chief towns are Roseau (Dominica), 7000 inhabitants, St. John (Antigua), 6997 inhabitants, and Basseterre (St. Kitts), 7736 inhabitants. The British Virgin Islands comprise all those in the group which do not belong to the United States, area, 58 square miles, population (1921), 5082. The staple products in most of the islands are sugar, cotton, and molasses. Cacao and onions also are grown. The culture of tobacco is successfully carried on in Dominica. On that island and on Montserrat, lime juice and the extract of lime are important products. In the calendar year 1927, exports totaled \$4,790,000 and

imports, \$4,153,000. In 1928 the receipts for Antigua, Montserrat, St Christopher, and Dominica totaled \$278,000, the expenditures \$277,000, and the public debt, \$201,000. The islands are divided into five presidencies under a central government, at the head of which is a governor, who is also commander-in-chief, a Federal executive council, and a Federal legislative council. Lieut.-Col Thomas Reginald St Johnston was appointed governor in 1929.

LEGION, AMERICAN See AMERICAN LEGION
LEGISLATION See AGRICULTURAL LEGISLATION, LABOR LEGISLATION, paragraphs on LEGISLATION under the several States, and the article UNITED STATES

LEHIGH UNIVERSITY. A nonsectarian institution for the higher education of men in Bethlehem, Pa., founded in 1866 and composed of the colleges of engineering, business administration, and arts and science. The enrollment for the autumn of 1929 was 1532, the largest autumn enrollment in the history of the university. The enrollment for the summer session of 1929 was 449. The faculty numbered 169, including 16 persons on the administration staff. The endowment amounted to \$5,136,999, while the total income for the year was \$1,140,874. There were 187,000 volumes in the library. President, Charles Russ Richards, Eng D., LL.D.

LEHMANN, LILLY. A famous German dramatic soprano, died in Berlin, May 17. She was born in Würzburg, Nov. 24, 1848, the daughter of Marie Loew, a singer and harpist of considerable reputation. When only six years old, Lilly began to study the piano, and from the age of twelve she acted as accompanist to her mother, from whom she also received her entire vocal training. On Oct. 20, 1865, she made her debut in Prague as First Page in Mozart's *Die Zauberflöte*. She then sang in Danzig and Leipzig, and in 1870 became a regular member of the Royal Opera in Berlin. There she soon established a great reputation as a brilliant coloratura singer. The summer of 1875 she spent in Bayreuth studying with Wagner the rôles of Woglinde, Helmwige, and the Forest Bird, which she created the following summer at the first Bayreuth Festival. After that, she returned to Berlin under a life contract. Short leaves of absence enabled her to accept engagements as guest at the principal opera houses of Germany, Austria, and Sweden, as well as Covent Garden. For the première of *Parsifal*, Wagner selected her as the leader of the sixteen Flower Maidens and entrusted to her the selection and training of the groups. Unfortunately, illness prevented her from assuming her own rôle at the first performance in 1882. In the mean time her fame as a great dramatic singer had spread, so that for the first season of German opera at the Metropolitan Opera House (1884-85), Dr. Leopold Damrosch offered her a contract which she was compelled to decline, because of her intendant's refusal of an extended leave. But the next year, when Anton Seidl began his brilliant career at the Metropolitan, she received the necessary leave, made her American debut as Carmen (Nov. 25, 1885), and five days later aroused boundless enthusiasm through her impersonation of Brünnhilde in *Die Walküre*. From that moment she was the idol of the New York public and remained so during her subsequent engagements until 1889.

In those seasons she sang the great dramatic rôles in the works of Beethoven, Mozart, Weber,

Verdi, and especially in those of Wagner, creating at the American premières the rôles of Isolde (Dec. 1, 1886) and Brünnhilde (*Siegfried*, Nov. 9, 1887, and *Götterdämmerung*, Jan. 25, 1888). As she had overstaid her leave in 1889, she found on her return to Berlin the doors of all German opera houses closed to her. Not until two years later, through the personal intervention of the Emperor, was the ban lifted, however, during that time the artist was not idle, but laid the foundation of her fame as one of the greatest interpreters of German *lieder*. In 1891-92 she sang again at the Metropolitan, but this time only in Italian and French operas with the brothers De Reszke and Lassalle. At the Bayreuth Festival of 1896 she was the Brünnhilde of the entire *Ring* cycle.

Her great admiration for Mozart made her not only an unsurpassed interpreter of that master's works, but led her to take an active part in the management of the annual Salzburg Festival, of which she became sole manager in 1905. In the full possession of her extraordinary powers she continued her dramatic career until 1914, when she bade farewell to the stage as Donna Anna in Mozart's *Don Giovanni* at the Salzburg Festival, but still appeared in recitals until 1921. After that, she taught in Berlin, almost to the day of her death.

In the course of her career she sang on the stage 170 rôles in 114 operas, in German, Italian, and French, while her concert repertory included all the standard oratorios and more than 600 songs. From all available records it appears that no singer ever rivaled her in extent or variety of repertory. Long before she ceased her public appearances, her fame as one of the world's greatest mistresses of song had been securely established. As a coloratura vocalist she equaled Patti or Melba, as an interpreter of Wagner she ranked with Materna, Sucher, or Klafsky. In her one person she combined in rare perfection all the supreme qualities of singer and actress: a glorious natural voice, faultless technique, fiery temperament, penetrating intelligence, queenly stage-presence, plasticity of pose, grace of movement. Not only was she a high priestess of art, but she also possessed, in an eminent degree, the gift of imparting the technique of her art to others, such as Olive Fremstad, Melanie Kurt, Geraldine Farrar, Marion Weed, and Florence Wickham. She is the author of *Meine Gesangskunst* (1902), *Studie zu Fidelio*, and *Studie zu Tristan und Isolde* (both 1904), also an autobiography, *Mein Weg* (1913, 2d ed., 1920).

LEHMANN, RUDOLPH CHAMBERS. An English journalist, politician, and oarsman, died Jan. 22, 1929, in Buckinghamshire, England. He was born near Sheffield, Jan. 3, 1856, and was educated at Highgate School and at Trinity College, Cambridge. In 1880 he became a barrister of the Inner Temple. He was active in Liberal politics, and in 1901, was high sheriff of Buckinghamshire and from 1906 to 1911 was a member of Parliament from the Harborough Division, Leicestershire. He wrote on legal subjects, edited the London *Daily News* in 1901, and was a staff member of *Punch* from 1890 to 1919. While at Cambridge, he made a name for himself as an oarsman and in 1899 coached the Cambridge crew. He also coached the Oxford University crew from 1891 to 1903, and came to America to coach the crew at Harvard University in 1896-97. His books include a volume on rowing

in the *Isthmian Library* (vol. iv, 1897; with Dale, *Digest of Overruled Cases* (1887); *The Billabury Election* (1892), *Mr. Punch's Price Novels* (1893); *Anni Fugaces* (1901); *Adventures of Picklock Holes* (1901); *Crumbs of Pity* (1901), *The Sun-Child* (1904); *The Complete Oarsman* (1908), *Memoirs of Half a Century* (1908); *Light and Shade* (1909); an edition of previously unpublished letters of Dickens, *Charles Dickens as Editor* (1912), *Sportsmen and Others* (1912), *The Spark Divine a Book for Animal Lovers* (1913).

LEIPZIG EXPOSITION. See EXPOSITIONS
LELAND STANFORD UNIVERSITY. See STANFORD UNIVERSITY

LEMONS. See HORTICULTURE

LENKER, THE REV JOHN NICHOLAS An American clergyman in the Lutheran Church, died May 17, 1929, in Minneapolis, Minn. He was born in Sunbury, Pa., Nov. 28, 1858, and was graduated from Wittenberg College in 1879, from the Hamma Divinity School of Wittenberg in 1881, and studied at the University of Leipzig, in Germany, in 1882. Ordained in the Evangelical Lutheran ministry in 1880, he was a pastor in Grand Island, Nebr. (1882-86), was with the Board of Church Extension of the General Synod of the Evangelical Lutheran Church in the United States of America (1886-94), was professor of church history, Old Testament exegesis, Hebrew, and German at Trinity Seminary, Blair, Nebr. (1900-04). Moving to Minneapolis in 1904, the Rev. Lenker founded there the Luther Press, and founded and edited the *Northern Review* and *The Lutherans in All Lands* (quarterly). He was also pastor of the Pentecost English Evangelical Lutheran Church. He did extensive research work in Europe, Egypt, and Palestine, was president of the General Lutheran Missionary Conference, vice president of the American Luther Mission for Russia, and organizer of students' missionary societies in Norway, Sweden, and Finland. Dr. Lenker was a translator of the writings of Martin Luther, 13 volumes of the work having been published. In addition to translation, he wrote *Lutherans in All Lands* (1893, supplement, 1919), *Die Luthersche Kirche der Welt* (1901), and *Three-Language Education* (1914).

LEPROSY. An account of the work of the U. S. National Leprosarium at Carville, La. by Hopkins and Denney was published in the *Journal of the American Medical Association* for January 19. The total number based on the admissions and releases since 1894 was 718 and the leading foci are in Louisiana, California, New York, Florida, and Texas, although naturally the disease is indigenous only along the Gulf of Mexico. The large leper population of Louisiana dates only from the establishment of the national leprosarium and amounted to 423 cases in 1929, but the number interned was only 287. The whites are more liable to contract the disease than the blacks, contrary to what has been supposed. Males are much more liable in this respect than females, while the social status represents a cross-section of the normal populace. The disease shows a considerable tendency to appear in near relatives. It may at times be shown that the incubation period is a long one—as much as six years—and while the disease usually first manifests itself by spots on the face, there is no such thing as a prodromal stage nor is there an "initial lesion" as in syphilis and tuberculosis. The

"parole system" has been so perfected that but one paroled patient has developed a recurrence in the past seven or eight years.

LESSING ANNIVERSARY. See CELEBRATIONS.

LEWIS, C. I. See PHILOSOPHY.

LEWIS, PAUL ADIN An American pathologist, died of yellow fever, June 30, 1929, in Bahia, Brazil, where he had gone under the direction of the Rockefeller Institute for Medical Research to study that disease. He was born in Chicago, Ill., Apr. 14, 1879, and, after one year at the University of Michigan, studied medicine at the Wisconsin College of Physicians and Surgeons and at the University of Pennsylvania, receiving his degree from the latter in 1904. He became the same year resident in pathology at the Boston City Hospital. He was assistant in the antivenereal laboratory of the Massachusetts State Board of Health (1905-08), was a fellow in comparative pathology at Harvard (1906-08), and on leaving there became an associate in pathology at the Rockefeller Institute in New York City. In 1910 he went to Philadelphia as director of the laboratory of Henry Phipps Institute, where he remained until 1923, meanwhile holding the professorship of experimental pathology at the University of Pennsylvania. He returned to the Rockefeller Institute in 1923 as an associated member attached to the department of animal pathology, near Princeton. The numerous papers published by Dr. Lewis cover several important and distinct fields in pathology and bacteriology.

LEXICOGRAPHY. See PHILOLOGY, MODERN.
LIABILITY INSURANCE. See AUTOMOBILES, INSURANCE.

LIBBY, EDWARD NORTON American physician and educator, died Nov. 6, 1929, in Jamaica Plain, Mass. He was born in Limington, Me., July 17, 1868, and was graduated from Dartmouth College in 1892, receiving the doctor's degree in medicine in 1895. The same year, he began the practice of medicine in Boston, and for a number of years was senior visiting physician at the Boston City Hospital. At the time of his death, Dr. Libby was dean of Tufts College Medical School, where for many years he taught the theory and practice of medicine.

LIBERIA. A Negro republic on the west coast of Africa, reaching from the British colony of Sierra Leone on the west to the French Ivory Coast on the east, with about 350 miles of coast line, and extending inland at some points to a distance of 200 miles. Area, variously estimated at 35,000 to 43,000 square miles, and population, at 2,000,000 to 2,500,000, most of whom live in the interior. They belong to about 40 tribes and speak as many languages, though they fall into the six main stocks of Mandingos, who are Mohammedans, Gola, Kpwele, Gissi, Kru, and Greboes. The civilized inhabitants, reported at about 50,000, live along the coast, speak English, and are industrious. Capital, Monrovia, with 6000 inhabitants (including Kutoon). The ports of entry are Monrovia, Robertsport, Marshall, Grand Bassa, Buchanan, River Cess, Liberian Gene, Saywolu, Greenville, Nana Cru, Grand Cess, Sasstown, Harper, Kabiak, Half Cavalla, and Webo.

PRODUCTION. Agriculture, mining, and industrial resources are comparatively undeveloped. Although the soil is very fertile, cultivation is backward. Cacao and cotton are produced in

small quantities, but the staple product is native coffee. Other products include Piassava fibre, palm oil, palm kernels, chillies, beniseed, anatto seed, rice, beeswax, and tortoise shell. The American tire manufacturer, Harvey S. Firestone, obtained a million-acre rubber concession from the Liberian government in 1926 and embarked upon a \$100,000,000 development programme. In 1929 it was reported that 30,000 acres had been planted to 6,000,000 rubber trees by a force of 10,000 Liberians under the supervision of about 90 American employees of the Firestone Plantations Company. The wages paid by the company to Liberian workers in 1928 amounted to about \$1,024,000. A number of other concessions were obtained by European and American concerns. The mineral resources include Gold, copper, tin, zinc, monazite, lead, corundum, lignite, and iron. The last named is worked by natives. Some diamonds have been found.

COMMERCE In 1925 the value of imports was \$2,115,021 and of exports \$1,911,053. In 1928 the imports from the United Kingdom were valued at £211,299 and exports to the United Kingdom, at £63,666. The chief exports are coffee, cacao, palm kernels, piassava fibre, palm oil, ivory, rubber, ginger, and camwood. The chief imports are rice, cottons, haberdashery, salt, provisions, arms and ammunition, hardware, tobacco, ready-made clothing, glass, earthenware, rum, gun, building timber, dried and preserved fish, and beads.

FINANCE The budget for 1925-26 provided revenues of \$962,570 and expenditures of \$939,978. The public debt in the same year was slightly in excess of \$2,000,000. Under the terms of a \$5,000,000 loan obtained from American capitalists in 1927, government finances are supervised by a financial adviser appointed by the President of the United States.

COMMUNICATIONS. There are no railways in Liberia and only about 250 miles of highway suitable for motor traffic. Other roads were under construction in 1929. In 1925, 904 ships of 2,082,852 tons entered and cleared the ports of the republic. There is direct cable communication with Europe and America and a wireless station at Monrovia.

GOVERNMENT. The constitution is modeled after that of the United States. Under it, executive power is vested in the President, who is assisted by a cabinet of six ministers, and legislative power in the Congress made up of the Senate and House of Representatives. Qualifications for the franchise are Negro blood and ownership of land, although the natives are not disfranchised, they take no part in political affairs. The official language of the administration is English. President in 1929, Charles D. B. King (elected for the term 1928-1932); vice president, Allen N. Yancy.

HISTORY Charges that slavery existed in Liberia and that a system of forced labor was in operation on the Firestone and other foreign concessions with the approval of the Liberian government caused the government in 1929 to request the appointment of an international commission to investigate the situation. The commission of three members, appointed by the United States, the League of Nations, and Liberia, respectively, was empowered by the government to summon witnesses in connection with the inquiry and to make recommendations to the Government of Liberia as it saw fit. In December, 1929, Charles S. Johnson was appointed as the American member

of the commission and a Norwegian judge, Mr. Meek, was appointed on nomination by the League Council. The inquiry was to last four months.

LIBRARY ASSOCIATION, AMERICAN. The official organization of librarians in the United States and Canada, founded for the purpose of promoting library service and librarianship. In 1876 its membership was 103, in 1929 it was more than 12,000. The activities of the association are carried on by its officers, by its 67 voluntary committees engaged in studying the problems of book buying, book selection, cataloguing, library work with the blind, and the foreign born, etc., by its boards, by hundreds of volunteer workers, and by the members of the headquarters staff, which numbered more than 60 in 1929, including the executive assistants to the A. L. A. committee on library extension, the board on the library and adult education, and the board of education for librarianship.

The association publishes books and pamphlets on library work, buying-lists for libraries, etc. More than 1,000,000 copies of A. L. A. publications were distributed during 1929, most of which were sold. Important publications of the year included *Budgets, Classification, and Compensation Plans for University and College Libraries*, the report of the A. L. A. Committee on Classification of Library Personnel, *College and Reference Library Yearbook, No 1, Children's Library Yearbook, No 1, Guide to Reference Books*, fifth ed., *The Public Library in the United States*, by Arthur E. Bostwick, and *School Library Yearbook, No 3*. The association also published nine courses of *Reading with a Purpose* in 1929: *The Human Body and Its Care*, by Morris Fishbein, *Jerusalem*, by Willard G. Bleyer, *Economics*, by Walton H. Hamilton, *Mental Hygiene*, by Frankwood E. Williams, *Advertising*, by Ernest E. Calkins, *Romance of Modern Exploration*, by Fitzhugh Green, *Salesmanship*, by John A. Stevenson, *Capital and Labor*, by John A. Fitch, and *Home Economics*, by Helen W. Atwater. Each course consisted of an essay, followed by a list of five or six books recommended to the reader in case he wished to read further on the subject. Of the 50 courses published since 1925, more than 600,000 copies had been sold by the end of 1929. It was also estimated that 100,000 persons had read the prescribed books listed. The association issues two periodicals: *The Bulletin of the American Library Association*, a monthly publication which includes the conference proceedings and the handbook, and *The Booklist*, which is issued ten times a year as a guide to the selection and purchase of current books.

The fifty-first annual conference of the association, held during the week of May 13, 1929, in Washington, was attended by more than 2700 members. The John Newbery Medal, given annually for the most distinguished children's book of the year by the section for library work with children of the A. L. A., was awarded to Eric Kelly for his book, *The Trumpeter of Krakow*. The usual meetings of college, school, county, reference, children's, agricultural, and hospital librarians were held. There were round-table discussions on adult education, library extension, religious books, small libraries, radio broadcasting, moving pictures in connection with the work of the library, and library work with the blind and with the foreign born. Meeting with the as-

sociation were the American Association of Law Libraries, the American Library Institute, the Bibliographical Society of America, and the Special Libraries Association. President Hoover was elected honorary member of the association, and Dr. Tietse Pieter Sevensma, librarian of the League of Nations, was made a corresponding member.

Officers elected for 1929-30 were Andrew Keogh, librarian, Yale University, president; Everett R. Perry, librarian, Public Library, Los Angeles, first vice president; Jennie M. Flexner, Public Library, New York City, second vice president; Matthew S. Dudgeon, librarian, Public Library, Milwaukee, treasurer; Linda A. Eastman, librarian, Public Library, Cleveland, and Judson T. Jennings, librarian, Public Library, Seattle, as members of the Executive Board, and John W. O'Leary of the National Bank of the Republic, Chicago, trustee of the endowment fund. The headquarters of the association are at 520 North Michigan Avenue, Chicago.

LIBRARY PROGRESS. The year 1929 in library progress was marked by the establishment of five new State library-extension agencies and the passage of State legislation pertaining directly to the work of libraries. An appropriation of \$4500 was granted to the Colorado Library Commission, formed from two older bodies, and one of \$2000 to the New Mexico Library Extension Service. Similar bodies were organized in Montana, South Carolina, and West Virginia without appropriation. In Mississippi, \$5,000 for each of the years 1928 and 1929 was granted to the State Library Commission, appointed in 1926 without appropriation. A Wyoming State Library Association was formed in October. Mrs. Clate Ausherman of Cheyenne, the State librarian, being elected the first president. Among the laws passed during the year, indicative of library progress, was a law in Illinois permitting an increased tax levy, one in Indiana providing for a State library and historical building, one in Minnesota amplifying the law providing that, in cities and villages of less than 2000, the school board may maintain a public library, and one in New Jersey permitting the library board in cities of the first class to pension the librarian after 25 years of service at the age of 70.

Among the States which passed new laws permitting counties to establish libraries were Arizona, Colorado, Delaware, Oklahoma, and Tennessee, the latter State replacing a law the constitutionality of which was questioned. Southern library development was promoted by grants to certain counties from trustees of the recently established Julius Rosenwald Fund, the grants always being conditional upon local library support. Among the first counties to receive such grants were Webster Parish, La., Davidson and Mecklenburg Counties, N. C., and Hamilton County, Tenn. The further extension of county libraries was discussed at an important conference held in Chicago in December, 1928, when 40 representatives from the U. S. Bureau of Education, the U. S. Department of Agriculture, universities, colleges, educational foundations, farmers' organizations, farm papers, and industries definitely related to rural life met with the American Library Association's Committee on Library Extension. The interest expressed by rural leaders enforced the conclusion that the county library, under trained librarians and ade-

quately supported by public funds, best served rural communities and that all national and State agencies concerned with rural progress shared the opportunity and responsibility for furthering county library development. During the first nine months of 1929, 12 new county libraries were reported, making a total of 276 in the United States.

The expansion of the public-library system during the year was marked along several lines. In the field of adult education, public libraries continued to develop and enlarge their services, 34 readers' advisers in as many libraries being employed to give consulting service, supplemented by suitable books. Educational surveys were made by some libraries and directories of educational opportunities for adults published. Many public libraries continued their work with the *Reading with a Purpose* courses, published by the American Library Association. See **LIBRARY ASSOCIATION, AMERICAN**.

A study of factors contributing to good reading habits and those governing the lack of such habits, undertaken by the American Library Association and the American Association for Adult Education, was completed in 1929 and published under the title, *The Reading Interests and Habits of Adults: Readable Books in Many Subjects*, prepared by Emma Felsenthal under the direction of the American Library Association, also was published as an aid to librarians seeking books in simple, non-technical language for the reader of limited cultural background.

In the public libraries of the 37 leading cities of the United States, 114,000,000 books were circulated during 1929, over 1,000,000 more than were circulated the previous year. The Chicago Public Library lent the largest number of books, 14,128,771, New York, excluding Brooklyn and Queens, was second with 10,877,171, and Los Angeles third, with 8,414,000. Cleveland had the largest per-capita circulation, 8.055, followed by Milwaukee, 7.524, and Rochester, 7.441.

Library schools continued to grow in strength and in number, those at McGill University, the New Jersey College for Women, and Syracuse University being accredited by the Board of Education for librarianship of the American Library Association in 1929, making a total of 18 schools so recognized. Textbooks on basic subjects in library training are being published under the direction of the Board of Education for Librarianship. *Circulation Work in Public Libraries*, by J. M. Flexner, has been completed, *Reference Work*, by J. I. Weyer, was on the press, and the following books were under revision: *Selection and Acquisition of Books for Libraries*, by F. K. W. Drury, *Introduction to Cataloguing and the Classification of Books*, by Miriam et Mann, *The Library in the School*, by L. I. L. I. I., and *Library Service to Children*, by E. L. Power. Fellowship grants were offered by the Carnegie Corporation of New York for study and research in library problems, and the Caroline M. Hewins Scholarship was offered for the first time to young women preparing for work with children in public libraries.

School library work also showed great progress. Courses for school librarians were started at McGill University library school and at the new library school at the University of Minnesota; a five-year, state-wide demonstration of school library service was begun under the Louisiana Library Commission; a revised edition of

the *Teachers College Measuring Stick* was issued, California school librarians published a handbook and a list of books for senior high schools, and marked development of methods of training for teacher librarians was shown in New York State. The Ontario Library Association, for the first time, turned its attention to school library work. Typical of progress in certain cities was the development of curriculum construction, library organization, and administration in Denver, the central cataloguing department in Los Angeles, the new quarters in Long Beach, and the central school library department in San Francisco.

In the field of bibliography, the first and second parts of the preliminary edition of the *List of Serial Publications for Foreign Governments*, containing records of serials of the Pan-American states, other than the United States, and of the British overseas empire, except Canada, were completed, and records of serials of Switzerland, Belgium, and the Netherlands were begun. A grant of \$35,000 was made by the Rockefeller Foundation for the preparation of the Union List of Volume Manuscripts of Foreign Origin before 1500 in American libraries. The *Union Catalogue of Unusual Books in American Libraries* at the Library of Congress was increased to 5,551,406 locations, and a supplement to the *A L A Index, or Union Catalogue of Serials in American Libraries*, was initiated. The Smithsonian Institution continued the work of compiling American titles for the *International Catalogue of Scientific Literature*. The Pan American Union, in carrying out the resolution of the Havana Conference, organized a Bibliographical Pan American Conference to be held in Havana in 1930, as part of this, an extended programme of bibliographical effort in this field has been prepared.

The formation of an International Association of Librarians at the first world Library and Bibliographical Congress at Rome and Venice in June, 1929, greatly strengthened international library relations. Among the 70 American librarians present at the conference were: Andrew Keogh, president of the American Library Association, Herbert Putnam, W. W. Bishop, and Carl H. Milan. South African library development has been made possible by a grant of £13,000 from the Carnegie Corporation of New York, the grant being the result of recommendations made by Milton J. Ferguson, State Librarian of California, and S. A. Pitt, city librarian of Glasgow, Scotland, after a survey made in 1928, authorized by the corporation. The appointment of Señor Joaquín Díaz Mercado, as member for Mexico to the A L A Membership Committee, and of Miss Annie S. Cutter, as guest of honor at the sixty-first anniversary celebration of the founding of the National Library of Mexico, furthered cooperation between Mexico and the United States.

A number of large sums of money were either given or voted for libraries and library work in 1929, including \$1,750,000 given to the University of Michigan by W. W. Cook of New York for the erection of a new law library, \$500,000 provided for the Yale University library fund by Otto T. Barnard, \$400,000 given to Fisk University for a new library by the General Education Board, and \$50,000 donated to the St. Louis Public Library by George T. Steedman for the establishment, housing, and upkeep of an architectural library. Severe losses sustained by the West Palm Beach and Lake Worth libraries in

the Florida hurricane were partially regained by use of a balance remaining from the \$25,000 flood rehabilitation grant of the Carnegie Corporation in 1928. The Bureau of Social Hygiene financed the prison library research conducted in Massachusetts for one year by the A. L. A. Committee on Institution Libraries. A grant of the Carnegie Endowment for International Peace enabled two official delegates to attend the International Library Congress in Rome and permitted the American Library Association to finance extensive exhibits in Geneva, Seville, Rome, Venice, and Kyoto.

Several new university libraries were completed or begun during the year. The University of North Carolina dedicated its new \$625,000 library on Oct. 19, 1929, Lehigh University began the construction of a \$500,000 addition to its library, Loyola University began a \$300,000 building, the gift of Edward Cudahy, and the universities of Cincinnati, Rochester, and Fisk also began new structures. Among the memorial libraries which were dedicated were the B. J. Jones Library at Aliquippa, Pa., costing \$392,000, the Laughlin Memorial Library at Ambridge, Pa., costing \$300,000, the Louis Latzer Library at Highland, Ill., costing \$100,000, the Rauh branch of the Indianapolis Public Library, and the Warner Library at Tarrytown, N. Y. A \$500,000 public library was in process of building at Richmond, Va., and the following libraries were under construction or completed: the San Antonio, Texas, Public Library, the Indiana State Library, Indianapolis, the Michigan State Normal College Library, Ypsilanti, the State Normal College Library, Kent, Ohio, the Teachers College Library, Memphis, Tenn., the Battle Creek College Library, Battle Creek, Mich., the Boys' and Girls' Library, Kenosha, Wis., and the Howe Military School Library, Howe, Ind.

LIBYA. The name of a former Italian colony on the north coast of Africa. In 1919 for administrative and military purposes, it was divided into Cyrenaica and Tripolitania. The pacification of the entire region was virtually completed in 1929 and the government resumed its policy of economic development and Italian colonization. While the soil is light, friable, and in appearance sandy, it has proved capable of producing good crops of many kinds. See ITALY, under *History*, and articles on CYRENAICA and TRIPOLITANIA.

LIEB, JOHN WILLIAM. An American engineer, died Nov. 1, 1929, in New Rochelle, N. Y. He was born in Newark, N. J., Feb. 12, 1860, and was graduated from the Stevens Institute of Technology in 1880. Thomas A. Edison put him in charge of the installation of electric equipment of the Pearl Street Edison Station, and he was appointed first electrician of the Edison Electric Illuminating Company, New York (1882). For the Italian Edison Company, he installed the Edison underground system in Milan, Italy (1883) and, while there, also installed the trolley system. The King of Italy created him a Knight Commander of the Order of the Crown of Italy. He returned as first electrician to the Edison Electric Illuminating Company, in New York, later becoming vice president and general manager of the New York Edison Company. Mr. Lieb assisted in many of the early experiments and tests in electric lighting. He promoted technical education and the work of various technical associations, lectured at universities, and wrote extensively on electricity. He won the Edison

Medal in 1923 for his work in developing the electric central station. Mr. Lieb possessed a notable Leonardo Da Vinci library and documents dealing with the artist's researches in natural science and engineering.

LIENHARD, *Leinhardt*, FRIEDRICH A German journalist and poet, died Apr 30, 1929, in Eisenach, Germany. He was born Oct 4, 1865, in Rothbach, Alsace, and studied theology and philology at the universities of Strassburg and Berlin. After two years (1890-92) as a private tutor, he traveled in Norway, Scotland, France, and Italy, after which he did editorial work in Berlin for the *Deutsche Zeitung* and for *XX. Jahrhundert*. He edited *Der Turner*, a magazine published in Weimar. His works include poetry, dramas, novels, and essays. Among his writings are the lyrics *Lieder eines Elsässers* (1895, 2d ed., 1897) and *Gesammelte Gedichte* (1902, 2d ed., 1906), the dramas, *König Arthur* (1899), *Heinrich von Ofterdingen* (1903, 3d ed., 1911), *Wieland der Schmied* (1905, 2d ed., 1910), the series of essays, *Wege nach Weimar* (1904 et seq.), *Oberlin*, a novel (1910, 13th ed., 1912). His later works include *Der Einsiedler und sein Volk* (1914), a volume of short stories, *Lebensfrucht*, his collected verse (1915), *Jugendjahre*, recollections of his youth (1918), *Der Meister der Menschheit* (1919), *Wer zuletzt Lacht* (1921), *Aus Tausend Tagen* (1924). He was an honorary president of the Shakespeare Gesellschaft and in charge of the Goethe Archives in Weimar.

LIFE INSURANCE. See **INSURANCE**

LIGHT See **PHYSICS**

LIGHTHOUSES The outstanding event of the year in this field was the holding in London of the first International Lighthouse Conference. The famous Corporation of Trinity House, the present-day successor of the ancient monastic order of the Trinity which was given lighthouse privileges in Great Britain over 400 years ago, called the first meeting of this kind, during

July. Some 20 foreign countries were represented. The lighting problem was discussed with reference to the selection of an illuminant. This depends upon the intensity desired, which in turn depends upon the system used, that is, whether a small number of powerful lights or a large number of smaller lights are employed. French practice follows the former plan and economic considerations also make incandescent gas a suitable illuminant for French lights. On the other hand, the general trend has been toward the electric incandescent bulb. Other items of discussion were fog signals, floating aids (ships and buoys) and wireless beacons. See current issues of *Engineering* (London).

Modern electrical equipment has increased application and is steadily diminishing the menace of fog and thereby assuring the safety of shipping entering American ports. In the U. S. Lighthouse Service in June 30, 1929, at the close of the fiscal year, there were 10,001 separate aids to navigation at sea—an increase of 394 over the previous fiscal period. During the year, 123 new automatic marine lights on fixed structures were established and 54 lights were changed from attended to automatic. At the end of the fiscal year, the total number of automatic lights on fixed structures was 1467 and, in addition, there were 942 buoys with automatic lights—a total of 2409.

The extension and improvement of automatic lighting apparatus has been an outstanding feature of the U. S. Lighthouse Service activities during recent years. The radiobeacon system, Commissioner of Lighthouses George R. Putnam stated in his report, was further extended during the year, and its effectiveness and amount of service increased. Ten additional radiobeacons were established and 12 stations were under construction. There was a total of 64 of these beacons in operation at the end of the year. Systematic arrangements for the elimination of interference between radiobeacons were put into

SUMMARY OF AIDS TO NAVIGATION AND CHANGES DURING FISCAL YEAR

Class	Established 1929	Discontinued	Total, June 30—1928	1929
Lighted aids				
Lights (other than minor)	107	47	2,248	2,308
Lighthouse stations		1	46	45
Gas buoys	70	48	554	576
Gas buoys, with whistles or bells	42	218	334	166
Minor lights	288	18	3,182	3,462
Floating lights	21	29	187	179
Total lighted aids	528	353	6,761	6,936
Fog signals				
Railroad signals	10	1	55	64
Sound fog signals (air)	16	10	551	559
Submarine fog signals	2	2		37
Gas buoys, with whistles or bells	42	10	334	366
Whistling buoys, unlighted		7	81	77
Bell buoys, unlighted	13	16	251	250
Total fog signals	86	46	1,313	1,351
Unlighted aids	531	381	7,664	7,814
Buoys	98	17	3,203	3,264
Daymarks	621	418	10,867	11,078
Total				
Grand total *	1,193	807	18,607	19,001
Aids to air navigation			1,263	1,440

* Gas buoys with whistles and bells are counted only once in the grand total.

Not included in further statistics of this report. The number of aids shown includes beacon lights, radio beacon stations, and radio communication stations only. There were also 6300 boundary lights and 1455 obstruction lights in operation June 30, 1929.

effect with successful results. These include synchronization of adjacent stations through automatic clock control to prevent overlapping, and the use of different frequencies for adjacent groups of stations. Many construction projects were completed by the Lighthouse Service or in progress during the period covered in Commissioner Putnam's report. The most important of these was the construction of the primary light and fog signal on Lansing Shoal, near the northern end of Lake Michigan, which was nearly completed at the end of the year, the light being in commission and the lightship withdrawn. The similar station at Poe Reef, Mich., in the Straits of Mackinac will probably be placed in commission in the early part of the fiscal year 1930. Other important construction projects were in progress from Massachusetts to Washington and from Alaska to Louisiana.

Under the Air Commerce Act, the Airways Division of the Aeronautics Branch of the Commerce Department was made part of the Lighthouse Service, functioning under the supervision of the Assistant Secretary of Commerce for Aeronautics. Much progress was made during the fiscal year in extending airway facilities throughout the country. More than 4200 additional miles of airways were lighted, covering 17 different routes. At the close of the year, 10,183 miles of airways were provided with aids to navigation, including 1406 lighted beacons and seven radio ranges.

Ambrose Lightship, the famous beacon marking the entrance to New York Harbor, was moved one and an eighth miles south and a little east of its former position on December 11. The advantages of the new position were that ships are guided well south of a bank only 40 feet deep in places, and that they need not change course between the light and the entrance to Ambrose Channel. The new position is directly in line with the centre line of the channel.

LIGHTNING. See PHYSICS

LIGHTNING PROTECTION. See ELECTRIC POWER AND TRANSMISSION

LIGHTSHIPS. See LIGHTHOUSES

LIGNITE. See COAL

LIME. The sales of lime by producers in the United States in 1929 amounted to 4,260,000 short tons, valued at \$33,387,000, according to estimates of the United States Bureau of Mines. This was a decrease of 4 per cent in quantity and 8 per cent in value, as compared with sales of 4,458,412 tons, valued at \$36,449,685 in 1928. The estimated sales of hydrated lime, which are included in these figures, amounted to 1,527,000 tons, valued at \$12,566,000, a decrease of 5 per cent in quantity and 7 per cent in value from 1,612,818 tons, valued at \$13,540,215 produced in 1928. The average unit value of all lime showed a decrease from \$8.18 a ton in 1928 to \$7.84 in 1929. There was general report of poor demand for lime in 1929, especially for the lime sold for construction, and to a less extent for agricultural lime. Demand for chemical lime, although in some cases reported as poor, was reported by the larger number of producers as the same or better than in 1928. Lower or the same prices were reported by the larger number of producers, with a few reports of higher prices.

Sales of lime in 1929 for construction were estimated at 1,760,000 tons, compared with 1,986,465 tons, valued at \$17,706,420 in 1928, for agriculture, the sales are estimated at 300,000 tons in 1929, against 333,910 tons, valued at \$2,287,558 in 1928. Sales of chemical lime were estimated at 2,220,000 tons for 1929, compared with 2,138,037 tons, valued at \$16,455,667 in 1928. Included in the estimated sales of chemical lime in 1929 are sales of refractory lime (dead-burned dolomite) amounting to 483,000 tons, valued at \$3,857,000. In 1928 this product amounted to 448,761 tons, valued at \$4,283,036.

Of the 23 States leading in production of lime in 1929, 12 showed decreased output, 8 increased output, and 3 showed an output of practically the same as for 1928. Of these same States, 19 showed a decrease in value and 4 an increase in value as compared with 1928. Ohio, the leading State, and Pennsylvania, the second State, in lime production, apparently each decreased in production by 6 per cent. There was a decrease of 9 per cent indicated in the output of hydrated lime in Ohio and of 5 per cent in Pennsylvania.

LIME SOLD BY THE PRODUCERS IN THE UNITED STATES IN 1928 AND 1929

	1928		Hydrated lime	1929 (estimated)		Hydrated lime
	Total lime			Total lime		
	Short tons	Value	(short tons)	Short tons	Value	(short tons)
Ohio	1,013,676	\$8,919,596	674,644	956,000	\$7,800,000	614,000
Pennsylvania	834,050	6,119,036	273,973	780,000	5,800,000	260,000
Missouri	303,014	2,252,420	100,217	314,000	2,262,000	107,000
West Virginia	279,947	1,788,989	40,464	312,000	1,860,000	44,000
Alabama	192,364	1,407,232	34,376	200,000	1,400,000	35,000
Tennessee	183,541	1,238,945	69,721	175,000	1,098,000	47,000
Virginia	174,067	1,208,918	69,988	164,000	1,047,000	50,000
Wisconsin	163,965	1,374,749	11,560	136,000	1,132,000	12,000
Massachusetts	171,944	2,026,019	18,920	135,000	1,436,000	17,000
Illinois	115,523	1,017,001	31,214	121,000	995,000	36,000
New York	98,354	794,301	35,084	107,000	898,000	46,400
Indiana	107,209	784,915	41,664	107,000	688,000	47,000
Michigan	104,917	962,708	18,135	104,000	931,000	17,000
Maine	128,023	1,056,443	(*)	92,000	808,000	(*)
Texas	82,225	751,789	35,123	90,000	745,000	39,500
Maryland	59,508	440,886	19,081	55,000	410,000	85,000
Vermont	52,445	485,235	11,291	52,000	487,000	9,200
Arizona	36,244	343,167	(*)	50,000	473,000	(*)
California	60,751	617,472	14,245	47,000	492,000	10,000
Utah	47,662	385,476	(*)	46,000	365,000	(*)
Arkansas	40,438	339,624	(*)	34,000	283,000	6,300
Connecticut	46,152	529,936	(*)	32,000	380,000	(*)
Washington	24,929	294,922	(*)	32,000	321,000	3,400
Undistributed	145,764	1,389,216	103,098	132,000	1,250,000	91,200
	4,458,412	\$36,449,685	1,612,818	4,260,000	\$33,387,000	1,527,000

* Included under "Undistributed."

The table on page 466 compares the estimated sales of lime by the producers in 1929, by States, with the sales in 1928.

LINDBERGH, COL. CHARLES A. See **AKRO-NAUTICS.**

LINGUISTICS. See **ANTHROPOLOGY.**

LINSEED. See **FLAX.**

LIONS CLUBS, INTERNATIONAL ASSOCIATION OF. An organization of business and professional men's clubs united in one association for the purpose of promoting good government and good citizenship, encouraging efficiency, and promoting high ethical standards in business and in the professions. In 1917 the Business Circle of Chicago issued a call to approximately 150 business organizations, inviting them to send representatives to a meeting in Chicago on June 7. More than 20 delegates, representing 50 clubs, attended this meeting and voted to form an association; the name "Lions" was adopted. Additional Lions Clubs have been organized by choosing one man from each business or profession in the community.

On Nov. 30, 1929, the number of clubs was something more than 2000 and the membership in round numbers, 72,000. Within the two years preceding that date, approximately 875 new clubs had been formed. At the 1929 convention, held June 18 to 21 in Louisville, Ky., Ray L. Riley, state controller of California, was elected international president. The vice presidents chosen were Karl W. Hodges of New York City, Julien C. Hyer of Fort Worth, Texas, and Robert L. McKeever of Washington. Melvin Jones of Chicago has been secretary-treasurer since the organization was founded. Denver was selected as the convention city in 1930. *The Lion* is the official magazine of the association. Headquarters are in the McCormick Building, 332 South Michigan Avenue, Chicago.

LITERATURE, ENGLISH AND AMERICAN. The book-club idea, described in previous YEAR BOOKS, spread during 1929 to England, where a book-selecting committee was organized under the leadership of Hugh Walpole. American book clubs, in order to keep better in touch with foreign writing, added foreign authors to their selecting committees as advisory members. Nevertheless, all was not smooth and easy with them. A couple of American publishers during the year declared war against the book clubs by refusing to submit books to their committees, but the fighting publishers won no recruits, though they were somewhat feebly indorsed by booksellers, and membership lists of the clubs continued to grow, though slowly. The ground of the publishers' attack seemed to lie in the very heavy discount exacted by the clubs, which seriously reduced the return to publishers and authors on club editions. No one denies, however, that the total return is greater when a book is adopted by a book club. The booksellers' objection, rather contradictorily, seemed to lie in their inability to sell books not adopted by the clubs. Apparently adoption by a book club carries with it a heavy bookstore sale. The objectors claimed that too many good books go unnoticed by the public because of the extra impetus given a few books. However that may be, one saw during 1929 no diminution in the number of books presented to the public. In fact, the impression is strong that publishers in 1929 were exceedingly energetic and ambitious.

A striking interest in the World War will be noticed under almost every heading below. The

generation that fought it was at last completely articulate in almost every country, and the generations that merely endured it were avid still for knowledge of it. Of course, there had been war books ever since 1914, but 1929 produced a remarkable quantity and quality.

FICTION. The outstanding novel of the year, the world over, was *All Quiet on the Western Front*, by Erich Maria Remarque, translated from the German by A. H. Wheen. But among novels written originally in English, Ernest Hemingway's *A Farewell to Arms*, about love and war in Italy, was nearly as highly regarded. It is vivid, bitter, and soft beneath hardness. Evelyn Scott showed the madness of war, the Civil War this time, by a series of sketches or stories in *The Wave*. John Cowper Powys published a sombre story of Dorsetshire life, *Wolf Solent*, filled with feeling for nature. In *Dodsworth*, Sinclair Lewis created two full-length Americans, man and wife, against a European background. With delicate and beautiful irony Richard Hughes told of children and pirates in *The Innocent Voyage*. John Galsworthy's *A Modern Comedy*, including the previously published *The White Monkey*, *The Silver Spoon*, *Swan Song*, and two short stories, is an end to his studies of the Forsytes. In Susan Ertz covered a long life, ending at the present. Joan Lowell's *The Cradle of the Deep* was published as a fiction, then admitted to be fiction, and finally unresigned in Corey Ford's *Salt Water Taffy*. D. H. Lawrence's *Lady Chatterley's Lover*, published in Florence, was refused admittance to England or America. William T. Scanlon's *God Has Mercy on Us!*, about the Marines, and Mary Lee's *It's a Great War* divided a \$25,000 prize for war novels. Miss Lee dealt with a woman's experiences amid the fighting. Lynd Ward's *God's Man* was a curiosity—a novel in woodcuts. Hugh Walpole's *Hans Frost* concerned a literary genius. H. G. Wells wrote a scenario for a movie, *The King Who Was a King*. It was not very interesting. *Harriet Hume*, by Rebecca West, was a rather obscure fantasy, technically exciting.

Additional war novels included Richard Aldington's *Death of a Hero* and George Blake's *The Path to Glory*. Historical novels included *Ido*, *Queen of Hearts*, by Gertrude Atherton, *The Laughing Queen*, by E. Barrington, about Cleopatra, *Bird of God*, by Virginia Hirsch, about El Greco, *Stone Daughters*, by John P. Fort, frontier America, *Wanders*, by Phoebe Fenwick Gaye, Napoleonic wars, and *The Issue of This Jest*, by James Stuart Montgomery. Among romantic novels were Percival Christopher Wren's *Soldiers of Misfortune*, L. H. Myers's *The Near and the Far*, Grace Zaring Stone's *The Heaven and Earth of Donna Elena*, Louis Golding's *The Prince or Somebody*. The public appetite for stories of crime and mystery continued unabated, increased perhaps. Among such books *The Bishop Murder Case*, by S. S. Van Dine, *The Dartmouth Murders*, by Clifford Orr, *The Bowery Murder*, by Willard K. Smith, *Shadowed*, by Hilaire Belloc, and *Little Crean*, by W. R. Burnett, may be mentioned. No doubt a hundred others were just as good. The thin, bright stream of fantasy carried such barques as Robert Nathan's *There is Another Heaven*; Alired Noyes's *The Sun Curr*; Helen Beauchamp's *The Love of the Foolish Angel*; Con O'Leary's *This Delicate Creature*.

Some critics say the novel is moving in the direction of fantasy. There was not much evidence

of it this year. Instead, J. B. Priestley's *The Good Companions* was in the Dickens tradition; Henry Handel Richardson's *Ultima Thule*, the third part of a tetralogy, was grim cold realism; Edith Wharton's *Hudson River Bracketed* was like other Wharton books. Edmund Wilson's *I Thought of Daisy*, imitated Proust, Thomas Wolfe's *Look Homeward, Angel*, imitated Joyce. *Brothers and Sisters*, by I. Compton-Burnett, and *The Sound and the Fury*, by William Faulkner, dealt with incest. J. L. Campbell's *The Miracle of Peile* portrayed a saint. In short, all tastes in style or matter could be satisfied by the year's fiction.

Other important novels were: Henry Williamson's *The Pathway*, Arnold Bennett's *Accident*, light stuff, Sheila Kaye-Smith's *The Village Doctor*, "Elizabeth's" *Eruption*, Mazon de la Roche's *Whitecoats of Jalna*; Anne Parrish's *The Methodist Funn*, Rex Stout's *How Like a God*, Stark Young's *River House*, Ellen Glasgow's *They Stopped to Folly*, Thomas W. Higginson's *Hunky*; Anne Douglas Sedgwick's *Dark Hester*, Eleanor Carroll Chilton's *The Burning Fountain*; Du Bose Heyward's *Mamba's Daughters* and *The Half-Pint Flask*, John Rathbone Oliver's *Victor and Victim*, Graham Greene's *The Man Within*, Peadar O'Donnell's *Adriano*, John Erskine's *Sincerity*, Sylvia Townsend Warner's *The True Heart*, Charles Morgan's *Portrait in a Mirror*, Zona Gale's *Borgia*; Liam O'Flaherty's *The House of Gold*, David Garnett's *No Love*, Booth Tarkington's *Young Mrs. Greeley*, Sarah Gertrude Millin's *The Fiddler*, Jesse Lynch Williams's *They Still Fall in Love*, Pitts Sanborn's *Prima Donna*; Gerard Hopkins's *Seeing's Believing*, Walter D. Edmunds's *Rome Haul*, Edna Bryner's *While the Bridegroom Tarnished*, Nella Larsen's *Passage*, Takashi Ohta and Margaret Speiry's *The Golden Wand*, Lorna Rex's *Six Mrs. Greenes*, Helen Grace Carlisle's *See How They Run*, Percy Crosby's *Skippy*, Marjorie Chapman's *Homeplace*, Agnes Smedley's *Daughter of Earth*, Joanna Cannon's *Sheila Both-Ways*, Helene Mullins's *Convent Girl*, William M. John's *Seven Women*.

Theodore Dreiser published, in two volumes, studies of the sex called, *A Gallery of Women*. Other collections of short stories included *Awake and Rehearse*, by Louis Bromfield, *An American Arioso*, by Morley Callaghan, *Slaves of the Gods*, by Katherine Mayo, about India again, *Weather-quand-Wool*, by Percy Mackaye, Southern mountaineers, *Barbarian Stories*, by Naomi Mitchison, ancient life, *Night Club*, by Katherine Brush, modern life, *The Slower Judas*, by G. B. Stern, *Procession*, by Fannie Hurst, *Poor Women*, by Norah Hoult; *The Mountain Tavern*, by Liam O'Flaherty.

Noteworthy among translated fiction was the rush of war books from the German. Remarque's success was mentioned above. There were also Ludwig Renn's *War*, the anonymous *Schlump*, Ernst Junger's *Storm of Steel*, and Ernst Glaeser's *Class of 1902*. Other important translated novels were Sigrid Undset's *The Snake Pit* and *In the Wilderness*, Julian Green's *The Dark Journey*, André Gide's *The School for Wives*, Marcel Proust's *The Captive*, Knut Hamsun's *Chapters of the Last*, Emil Ludwig's *Diana*, Alexis Kivi's *Seven Brothers*, Valentine Kataev's *The Embassadors*, Colette's *Cheri*, André Maurois's *Atmosphere of Love*, Arne Garborg's *Peace*, Hermann Sudermann's *The Wife of Steffen Tromholt*;

Eduardo Zamacois's *Roots*; Gladkov's *Cement*; Guglielmo Ferrero's *The Seven Vices*; Maurice Bedell's *Molnoff*; Susanne Trautwein's *The Lady of Laws*.

POETRY. Though the poetry list for 1929 was not so distinguished as for 1928, it contained many books of high interest. Robert Bridges' *The Testament of Beauty* was a long and profound philosophical poem; Lola Ridge's *Freehead* dared to treat of the Crucifixion, and succeeded; Elinor Wylie's *Angels and Earthly Creatures* thrillingly gave us a woman in love, in *Panases*, D. H. Lawrence vented several hates; he also published his *Collected Poems*, Edith Sitwell indulged in satire in *Gold Coast Customs*, Joseph Auslander wrote *Letters to Women*, mainly dead poetesses, and *Hell in Harness*, Edwin Arlington Robinson's *Cavender's House* was intellectualized narrative, Merrill Moore's *The Nouse That Time Makes* was a fascinating book of unconventional sonnets, *Further Poems of Emily Dickinson*, edited by Martha Dickinson Bianchi added to her already great reputation, Leonie Adams's *High Falcon* won praise.

Other important books of poetry were *Dear Judas*, by Robinson Jeffers; *Near and Far*, by Edmund Blunden, *The Heart's Journey*, by Siegfried Sassoon; *This Delicate Love*, by Winifred Welles, *Twelve Idylls and Other Poems*, by Lancelles Abercrombie, *Blue Junata*, by Malcolm Cowley; *Every Soul is a Circus*, by Vachel Lindsay; *Now the Sky*, by Mark van Doren, *Earthbound and Other Poems*, by Helene Mullins, *A Cedar Box*, by Robert Nathan, *Prophet and Fool*, by Louis Golding; *Compass Rose*, by Elizabeth Coatsworth, *Collected Poems, 1911-1926*, by Robert Graves, *Poems*, by Sir Arthur Quiller-Couch, *The Cry of Time*, by Hazel Hall, *The Devil is a Woman*, by Alice Mary Kimball, *The Last Nail and Manhattan Men*, by Alfred Kreyenborg, *Sarah Simon*, by Hervey Allen. Among the anthologies were *A Comprehensive Anthology of American Poetry*, by Conrad Aiken, *Chief Modern Poets of England and America*, by Gerald De Witt Sanders and John H. Nelson, *An Anthology of Revolutionary Poetry*, by Marcus Graham. Two translations were of interest. *The Jade Mountain*, from the Chinese, by Witter Bynner and Kiung Kang-hu; and *Others Abide*, by Humbert Wolfe, from the Greek Anthology.

DRAMA. The theatre season 1928-29 was generally supposed to be bad, which perhaps accounts for the short list of important plays published in 1929, but among them is R. C. Sherriff's *Journey's End*, indubitably the greatest play brought forth by the World War, John L. Blandston's *Berkely Square*, a moving drama of time-transference, John Galsworthy's *Evil and The Roof*, Eugene O'Neill's *Dynamo*, an unsuccessful attempt to dramatize the search for God in an age of machinery.

Also there were St. John Ervine's *The First Mrs. Fraser*, brilliant comedy, Monckton Hoffe's quiet *Many Waters*, John Drinkwater's *Bird in Hand*, comedy of "humour", Preston Sturges's gay *Strictly Dishonorable*, Padraic Colum's *Balloon*, Frederick Londale's *Canaves Sometimes King*, A. A. Milne's *Toad of Toad Hall*, vol. ix of the *Dramatic Works of Gerhart Hauptmann*. Collections included S. Marion Tucker's *Modern Continental Plays*, Montrose J. Moses's *British Plays from the Restoration to 1820*, and Curtis Canfield's *Plays of the Irish Renaissance*. See THEATRE.

ESSAYS Though the heterogeneity of this section cannot be disguised, a few groupings are possible. Mainly sociological in subject matter were *The Modern Temper*, by Joseph Wood Krutch, studies in pessimism; *The Ordeal of This Generation*, by Gilbert Murray, rather optimistic. *Our Business Civilization*, by James Truslow Adams, finding faults in American life, *The Way the World Is Going*, by H. G. Wells, just what one would expect, and *Adam, the Baby, and the Man from Mars*, by Irwin Edman, pleasant, facile, not deep. Dealing mainly with religion; *The Thing*, by G. K. Chesterton, Roman Catholicism, *Labels and Labels*, by W. R. Inge, Anglicanism, and *If I Could Preach Just Once*, by thirteen authors, including some skeptics. Intended to be humorous were *Is Not Necessary?* by James Thurber and E. B. White, *By Way of Introduction*, by A. A. Milne, *On Straw and Other Concepts*, by D. B. Wyndham Lewis. Of literary interest were six volumes of *The Private Papers of James Russell from Malahide Castle*, edited by Geoffrey Scott, very grand and expensive, *The Missing Muse*, Ohio, by Philip Guedalla, *The Eighteen-Seventies*, edited by Harley Granville Barker, *Nolon and Cereus and Other Greek Essays*, by Alfred Zimmern. Essays mainly descriptive were *Hello Towns*, by Sherwood Anderson, *Swords and Roses*, by Joseph Heigeshimer, *Old Familiar Faces*, by Meredith Nicholson. Others *Consecratio Medici and Other Papers*, by Harvey Cushing, *The Omnibus of Crime*, by Dorothy L. Sayer, *The Pillow Book of Set Shonagon*, translated by Arthur Waley, *The New American Caravan*, edited by Alfred Kreyenborg, Lewis Mumford, and Paul Rosenfield, which included short stories and poems. Among the collections were *Once and For All*, by David McCord, *The 100 Best English Essays*, by Lord Birkenhead, *Essays Toward Truth, Second Series*, by Kenneth Allan Robinson, William Benfield Pressey, and James Dow McCallum, and *Contemporary Essays*, by Odell Shepard.

CRITICISM AND THE HISTORY OF LITERATURE The year was notable for the number of important works on poetry, such as *The Profession of Poetry*, by H. W. Garrod, *The Good Estate of Poetry*, by Chauncey Brewster Tinker, *The Cycle of Modern Poetry*, by G. R. Elliott, *Our Singing Strength*, by Alfred Kreyenborg, *The Garment of Praise*, by Eleanor Carroll Chilton and Herbert Agar, *Poetry and Mathematics*, by Scott Buchanan, *Armour for Aphrodite*, by T. Sturge Moore, *A New Approach to Poetry*, by Elsa Chapin and Russell Thomas, *Medieval Culture*, by Karl Vossler, about Dante, translated by William Cranston Lawton, *Potable Gold*, by Babette Deutsch; *anarchism is not enough*, by Laura Riding; *The Real Rhythm in English Poetry*, by Katherine M. Wilson, *New Light on "Piers Plowman"*, by Allan H. Bright, *Blake's "Innocence" and "Experience"*, by Joseph H. Wicksteed, John Donne, *Craftsman*, by Pierre Legouis.

There were many important general works. *Practical Criticism*, by I. A. Richards, Louis Cazanman's *Criticism in the Making*, June E. Downey's *Creative Imagination*, A. C. Bradley's *A Miscellany*, E. E. Kellett's *The Whirligig of Taste*, Henry Reid Canby's *American Estimates*, Oliver Elton's *A Survey of English Literature, 1780-1780*, Alfred Noyes's *The Opalescent Parrot*, Prosser Frye's *Visions and Chimeras*, Harvey Wickham's *The Impurians*, Burton Rascoe's *A Bookman's Daybook*.

Books on the drama and theatre included. Ashley Thorndike's *English Comedy*, F. W. Bateson's *English Comic Drama 1700-1750*, Bonamy Dobree's *Restoration Tragedy, 1660-1720*, Sheldon Cheney's *The Theatre*, Kenneth Macgowan's *Footlights Across America*, Andrew F. Malone's *The Irish Drama*. Fiction was considered in Edwin Muir's *The Structure of the Novel*, Ford Madox Ford's *The English Novel*, and Gorham B. Munson's *Style and Form in American Prose*. About foreign writers were *French Novelists*, *Manners and Ideas*, by F. C. Green, and *Modern Spanish Literature*, by L. A. Warren.

BIOGRAPHY AND AUTOBIOGRAPHY During 1929 there were the usual floods of biography of all kinds of people. American political personages were portrayed in Thomas Beer's *Hanna*, Paxton Hibben and C. Hatley Giattian's *The Peerless Leader*, William Jennings Bryan, M. R. Werner's *Bryan*, *The Autobiography of Calvin Coolidge*, *Up to Now*, the autobiography of Alfred E. Smith, Willis Fletcher Johnson's *George Harvey*, Col. T. Bentley Mott's *Myron T. Herrick*, *Friend of France*, Allan L. Benson's *Daniel Webster*, Thomas Boyd's *Mad Anthony Wayne*, John Pell's *Elhan Allen*, Frederick Palmer's *Clark of the Ohio*, Bernard Fay's *Franklin*, Dennis Tilden Lynch's *An Epoch and a Man*, about Van Buren; Capt. B. H. Laddell Hart's *Sherman*, Lloyd Paul Stryker's *Andrew Johnson*, Philip Alexander Bruce's *The Virginia Plutarch*. One may learn about American literary persons from Lewis Mumford's *Herman Melville*, a splendid work, Newton Arvin's *Hawthorne*, Phillips Russell's *Emerson*, the *Wicest American*, Jacob Zeitlin and Homer Woodbridge's *The Life and Letters of Stuart P. Sherman*, M. A. De Wolfe Howe's *James Ford Rhodes*, *American Historian*, Lorette Woodworth Reese's autobiography, *A Victorian Village*.

The Christian Science Church strongly opposed the distribution of Mrs. Eddy's *Biography of a Virginian Mind*, by Edwin Flinden Dakin. Some books dealt with unheard-of people, such as *Grandmother Brown's Hundred Years*, by Harriet Connor Brown, *The Life of an Ordinary Woman*, by Anne Ellis, and *My Home and I*, by Mary Eliza Starbuck, the last two, autobiographies. Other Americans were considered in Herbert Ashbury's *Carrie Nation*, *The Woman with the Hatchet*, Frank Lewis Dyer, Thomas Cummertford Martin, and William Henry Meadowcroft's *Edison*, Paul de Kruif's *Seven Iron Ven*, Arthur D. Howden Smith's *John Jacob Astor*, John K. Winkler's *John D.*, a *Portrait in Oils*, Francis Wilson's *John Wilkes Booth*, *Midstream*, by Helen Keller, was a continuation of an earlier autobiography. Frederick A. Pottle's *Stretchers* was war autobiography. Muel Draper's *Muse at Midnight* gave a number of interesting character sketches, as did Rollo Walter Brown's *Lonely Americans*, E. W. Howe's *Plain People*, Gamahel Bradford's *As God Made Them*, and *An Autobiography of America*, edited by Mark van Doren. Vols. II and III of the *Dictionary of American Biography*, edited by Allen Johnson, were published.

One of the most successful and widely read biographies was *Henry the Eighth*, by Francis Hackett. Henry's daughter had two books, *Queen Elizabeth*, by Katherine Anthony, who also published *Catherine the Great*, and *The Moustache Regiment*, by Christopher Hollis, who also published *Dr. Johnson*. Books about other English political figures were. *The Letters and Friend-*

ship of Sir Cecil Spring-Rice, edited by Stephen Gwynn; *Memories of an Old Parliamentarian*, by T. P. O'Connor, *After Thirty Years*, by Viscount Gladstone, about his father; *Field Marshal Earl Haig*, by John Charteris; *Richard Burdon Haldane, an Autobiography*, *Lord Lansdowne*, by Lord Newton, *The Letters of Disraeli to Lady Chesterfield and Lady Bradford*, edited by the Marquis of Zetland, *For the Defence the Life of Sir Edward Marshall Hall*, by Edward Marjoribanks, and *Marlborough*, by Donald Bari (Indsey *Three Persons*, by Sir Andrew Macphail, was about Colonel House, Field Marshal Wilson, and T. E. Lawrence).

The following English literary persons were written about: *Curly to Three Moore and Ten, 1853-1863*, by David Alec Wilson, *Samuel Richardson*, by Brian W. Downes, *Alice Meynell*, by Viola Meynell, *The Life of Lady Byron*, by Ethel Colburn Mayne, *Coleridge, the Sublime Somnambulist*, by John Champentier, *Swinburne*, by Samuel C. Chew, *Dante Gabriel Rossetti*, by R. L. Megroz, *The Life of George Meredith*, by Robert Esmonde Sencourt; *A Life of Charles M. Doughty*, by D. L. Hogarth, *Mr. Gay*, by Oscar Sherwin, *Barrie the Story of a Genius*, by J. A. Hammerton, *Hartley Coleridge*, by Earl Leslie Griggs, *Elisabeth Barrett Browning Letters to Her Sister, 1846-1859*, edited by Leonard Huxley, *Further Correspondence of Samuel Pepys, 1662-1679*, edited by J. R. Tanner, *Undertones of War*, autobiography by Edmund Blunden, *Goodbye to All That*, autobiography by Robert Graves.

Other English biographies of interest were *The Adventures of an Outlaw*, by Ralph Rashleigh, edited by Lord Birkenhead, *Twelve Bad Men*, by Sidney Dark, *Captain Scott*, by Stephen Gwynn, *Memories of J. M. Dent*, by Hugh A. Dent, *The Farrington Diary*, vol. VIII and last, edited by James Grieg.

About French people Georges Clémenceau's autobiography, *In the Evening of My Thought*, translated by George N. Thompson, and John Heard, Jr., vol. III of *Memoirs of Raymond Poincaré*, translated by Sir George Arthur, *King Spider*, Louis XI, by D. B. Wyndham Lewis, *Marshal Foch*, by George Grey Aston, *The Intimate Journal of George Sand*, edited and translated by Marie Jenney Howe, John Garber Palache's *Marie Antoinette, the Player Queen*, *François Rabelais*, by Samuel Putnam, *Francis Rabelais*, by Albert Jay Nock and C. R. Wilson; *La Fayette*, by Brand Whitlock, *Richelieu*, by Hilaire Belloc, *The Incredible Marquis (Dumas, père)*, by Herbert Gorman.

Other biographies include that remarkable collection *What is Bolsho's Twelve Against the Gods*, Joseph Redlich's *Emperor Francis Joseph of Austria*, Weiner Hegemann's *Frederick the Great*, Herbert Eulenberg's *The Hohenzollerns*, *Letters of the Tsar to the Tsaritsa*, translated by A. L. Hynes; *Diary of Tolstoy's Wife, 1860-1891*, translated by Alexander Werth; *Tolstoy the Inconstant Genius*, by Alexander I. Nazarov; *Ibsen, the Master Builder*, by A. E. Zucker, *Nobel*, by Ragnar Sohlman and Henrik Schumuk, *Wolfgang Amadeus Mozart*, by Dyneley Hussey, *William, Prince of Orange*, by Marjorie Bowen, *Karl Marx*, by Otto Rühle; *The Life of Alcibiades*, by E. F. Benson; *The Son of Apollo*, Plato, by Frederiek J. E. Woodbridge; *Casanova*, by S. Guy Endore.

THE FINE ARTS. Important works on painting included Mary Hamilton Swindler's *Ancient*

Painting; R. H. Wilenski's *An Introduction to Dutch Art*; Ernest H. Short's *The Painter in History*, Ruth de Rochemont's *Evolution of Art*, Anita Brenner's *Idols Behind Altars*, about Mexican art, *The Frescoes of Diego Rivera*; Mary Cecil Allen's *Painters of the Modern Mind*; Aldo de Rinaldis' *Painting of the Seventeenth Century*; John Rothenstein's *A Pot of Paint*; Osvald Siren's *Chinese Paintings in American Collections*; Tancred Borenius and E. W. Tristram's *English Medieval Painting*; Sir Dominic Ellis Colnaghi's *A Dictionary of Florentine Painters*.

Among general works were *Art in America*, by Suzanne La Follette, *Art Nonsense and Other Essays*, by Eric Gill, *The Gothic North and These Sad Ruins*, by Sacheverell Sitwell, *The Principles of Christian Art*, by Percy Gardner. About sculpture: A. M. Rindge's *Sculpture*; Stanley Casson's *Some Modern Sculptors*; Joseph Hudnut's *Modern Sculpture*; Ludwig Bachhofer's *Early Indian Sculpture*; A. W. Lawrence's *Classical Sculpture*. About architecture: Le Corbusier's *The City of Tomorrow*; W. A. Starrett's *Skyscrapers and the Men Who Build Them*; Arthur Stratton's *The Styles of English Architecture*; D. S. Robertson's *Greek and Roman Architecture*. Besides, *Magic Spades, the Romance of Archaeology*, by R. V. D. Magoffin and Emily C. Davis, and *German Illumination*, by Adolph Goldschmidt.

RELIGION. *The History of Christianity in the Light of Modern Knowledge*, a collective work, was perhaps the most noticed book in this field during 1920. Edward Scribner Ames's *Religion* was a new statement of its nature and purpose. J. Middleton Murry's *God* grew out of highly charged personal experience. Other religious books were Charles Francis Potter's *The Story of Religion*, Charles Gore's *Jesus of Nazareth*, Walter E. Bundy's *Our Recovery of Jesus*, Reinhold Niebuhr's *Leaves from the Notebook of a Tamed Cynic*; Bernard Iddings Bell's *Beyond Agnosticism*; Hartley Burr Alexander's *Truth and the Faith*; James Sheerin's *The Universal Prayer*; C. H. Dodd's *The Authority of the Bible*; Emile Baumann's *Saint Paul*; Ernest R. Tristram's *Unravelling the Book of Books*; Peter Annlee's *The Scandal of Christianity*, sectarianism; Harry Elmer Barnes's *The Twilight of Christianity*; E. Boyd Barrett's *While Peter Sleeps*; Conrad Henry Moehlman's *The Catholic-Protestant Mind*; Horatio W. Dresser's *Outlines of the Psychology of Religion*; Karl Adam's *The Spirit of Catholicism*, and Jacques Maritain's *Three Reformers*.

SOCIOLOGY. Much distinguished work was done in this field. Walter Lippmann's *A Preface to Morals* discussed man's ethical dilemmas today, searchingly and wisely. Robert S. and Helen M. Lynd made scientific observations of American life in *Middletown: a Study in Contemporary American Culture*. Stuart Chase's *Men and Machines* showed the effects of machinery on society. There was much discussion of marriage. Bertrand Russell's *Marriage and Morals*; G. V. Hamilton and Kenneth Macgowan's *What is Wrong with Marriage?*, a statistical study; Robert C. Binkley and Florence Williams Binkley's *What is Right with Marriage?*; Edward Westermarck's *Marriage*; Iia S. Wile and Mary Day Winn's *Marriage in the Modern Manner*; Ursula Parrott's *Ex-Wife*, and its anonymous burlesque, *Ex-Husband*; "Juanita Tanner's" *The Intelligent Man's Guide to Marriage and Celibacy*. About

Forel's *The Social World of the Ants*; Erik Nordenskiöld's *The History of Biology*, translated by Leonard Buckwell Eyre, F. Ward Jones's *Man's Place Among the Mammals*, Paul Ripper's *Animals Looking at You*, a remarkable collection of pictures, Samuel Christian Schmucker's *Heredity and Parenthood*. There were also A. S. Eddington's short lecture, *Science and the Unseen World*; James Kendall's *At Home Among the Atoms*, Willem J. Luyten's *The Pageant of the Stars*, and Eugene van Cleeff's *The Story of the Weather*.

TRAVEL AND THE OUTDOORS. Some delightful books were to be met with in this field. Commander Edward Milsbørg tells the thrilling story of submarine-raising in *On the Bottom*. A. J. Villiers's *Falmouth for Orders* tells of one of the last voyages of a sailing vessel. Laurence J. Keating, in *The Great Mary Celeste Hoax*, clears a mystery of the sea. *The Last Stand of the Pack*, by Arthur H. Carhart and Stanley P. Young, tells of the extermination of North American wolves. The more usual, yet always interesting, sort of travel book was represented by: Grace Flandrau's *Then I Saw the Congo*, E. Alexander Powell's *The Last Home of Mystery, Nepal*; Douglas Goldring's *People and Places*, Sir Hugh Clifford's *Bushwhacking and Other Asiatic Tales and Memories*, Sir Baldwin Spencer's *Wanderings in Wild Australia*, Webb Waldron's *Blue Glamour*, André Gide's *Travels in the Congo*, translated by Dorothy Bussy, Emil Ludwig's *On Mediterranean Shores*, translated by Eden and Cedar Paul, *Altai-Himalaya*, by Nicholas Koerich; *Deep Song*, by Irving Brown; *Days in the Sun*, by Martin Nexó; *A Baghdad Chronicle*, by R. Levy; *The Holy Cities of Arabia*, by Eldon Rutter; *Mountains, Gold, and Cannibals*, by Doris R. Booth; *New Worlds to Conquer*, by the popular and too-successful Richard Halliburton; *The Red Star of Samarkand*, by Anna Louise Strong; *Red Tiger*, by Phillips Russell; *Four Faces of Siva*, by Robert J. Casey; *Paris in Profile*, by George Slocombe; *Deep-Sea Bubbles*, by Henry H. Bootes; *The Pedro Gormo*, by Capt. Harry Dean and Sterling North; *The Book of Puka Puka*, by Robert Dean Frisbie; *East for Pleasure*, by Walter B. Harris; *Isles of the Egean*, by V. C. Scott O'Connor; *To the Mountains*, by Anthony Betram; *Impressions of Soviet Russia*, by John Dewey; *The South Polar Trail*, by Ernest E. Mills Joyce; the informing and scientific *Ends of the Earth*, by Roy Chapman Andrews; *The Outermost House*, by Henry Beston, about life on a Cape Cod beach; *Four Months' Camping in the Himalayas*, by W. G. N. Van der Sleen, translated by M. W. Hoper; *Ever in Egypt*, by Jane Starr.

Among volumes relating directly to sport, the following might be mentioned: *Athletics*, by D. G. A. Lowe and A. E. Porritt; *Modern Athletics*, by G. M. Bulter; *The Way of a Man with a Hor*, by Geoffrey Brooke; and *The Hunting of the Buffalo*, by E. Douglas Branch.

LITHUANIA. One of the Baltic republics formed out of the territory of the former Russian Empire at the close of the World War. Capital, Kovno, although Vilna, which was transferred to Poland by the Council of Ambassadors in 1923, was still claimed by Lithuanians in 1929 as their capital city.

AREA AND POPULATION. The eastern boundary of the country was defined in a treaty with Russia, July 12, 1920, on the north, the Lithuanian-Latvian frontier almost coincides with the former boundary between the provinces of Cour-

land and Kovno, on the south, the boundary was still undetermined in 1929. In that year, the area was 21,490 square miles and the estimated population 2,316,615. The Memel district, with a population of 170,000, was transferred to Lithuania by the Council of Ambassadors on Feb. 16, 1923, just a month before Vilna was awarded to Poland. Other important cities, with the estimated populations on Jan. 1, 1929, were Kovno, 96,536; Memel, 36,633; Shavli, 22,500; and Poneviej, 20,142. During the period 1924-28, the average annual number of births and deaths were 64,664 and 36,329, respectively.

EDUCATION. In 1928 there were 2401 primary schools with 3466 teachers and 124,578 pupils, and 159 secondary schools with 23,112 pupils. Nine teachers' training colleges had 1319 students in 1928 and the University of Kovno had 258 professors and instructors and there were 3580 students.

PRODUCTION. Agricultural crops and timber constitute the main products of the country, which is preponderantly rural in its development. In 1927 there were 6,515,000 acres of arable land or about 47 per cent of the total, while 3,477,000 acres were devoted to permanent meadow and pasture, 310,000 acres to orchards, shrubs, and bushes, and 2,188,000 acres to forests. The harvest in 1928 was about the same in quantity, though of poorer quality, than in the preceding year. The area and production of the chief crops in 1928 were as follows: Wheat, 395,000 acres, 6,327,000 bushels, rye, 1,161,000 acres, 12,718,000 bushels, barley, 418,000 acres, 6,910,000 bushels, oats, 719,000 acres, 13,377,000 bushels, potatoes, 301,000 acres, 35,262,000 bushels, flax, 237,000 acres, 77,162,000 pounds, clover and prairie hay, 2,292,000 metric tons. Cattle and dairy farming is carried on to a considerable extent. In 1928 the livestock in the country included 1,199,300 cattle, 1,060,400 swine, 1,467,800 sheep, and 611,400 horses.

The production of cut lumber in 1927 totaled 52,184,500 cubic feet, in 1928 the match output was 64,000,000 boxes. Plywood, pulpwood, and chemical pulp were exported in greatly increased quantities in 1928. Of the 7300 industrial enterprises in the country in the same year only 75 employed 50 or more workmen. Most industries were concerned with the handling of forest products, others with the manufacture of shoes, leather products, textiles, tobacco, spirits, and flour. The peat output in 1928 amounted to 67,000 metric tons.

COMMERCE. Imports in 1928 were valued at \$29,109,000 and exports at \$25,688,000, as compared with imports of \$26,569,000 and exports of \$24,593,000 in the previous year. The excess of imports in 1928 was almost double that of 1927. The principal import commodities were cotton cloth, sugar, metal wares, coal and coal products, fertilizers, herrings, iron, machinery, and automobiles. Leading exports were flax fibre, butter, wood pulp, swine, eggs, flax tow, boards, veneer, pulpwood, cattle hides, and meats. Live animals represented 13.6 per cent of the total value of exports, foodstuffs, 21.9 per cent; raw materials, 61.8 per cent, and manufactures, 2.7 per cent, while of the imports live animals constituted only 0.03 per cent, foodstuffs, 17.4 per cent; raw materials, 26.9 per cent, and manufactures, 55.6 per cent. Germany supplied 50.4 per cent of the imports and took 57.7 per cent of the exports; the United Kingdom supplied 6.6

per cent of the imports and purchased 20.3 per cent of the exports. The United States furnished 7 per cent of the imports, valued at \$2,048,000.

In 1929 exports rose to \$32,980,000 and imports to \$30,640,000, leaving a favorable balance of \$2,340,000, the marked increase in exports being due primarily to large sales of cattle and dairy products, chiefly to Germany.

FINANCE Actual revenues in 1928 amounted to 319,821,000 lits (\$31,982,000) and actual expenditures to 280,481,000 lits (\$28,048,000), the lit having a par value of \$0.10. The 1928 figures represented a considerable increase over those for 1927 when revenues amounted to 269,360,000 lits and expenditures to 230,903,000 lits. The budget for 1929 estimated receipts at 300,863,000 lits and expenditures at 259,966,000 lits. On Jan. 1, 1929, the external debt amounted to 86,896,000 lits (\$8,870,000), of which \$6,202,000 was due to the Government of the United States and \$120,000 to the British government. The internal debt was negligible.

COMMUNICATIONS The railroads, all of which are state owned, totaled 974 miles in 1928 and during the same year carried 5,264,000 passengers and 1,600,000 metric tons of freight, the gross receipts amounting to \$3,934,000. The telephone and telegraph systems, also government owned, had 28,675 and 3720 miles of wire, respectively, in 1927. There were also 25,461 miles of highways and 586 miles of waterways navigable for steamboats.

GOVERNMENT According to the constitution of May, 26, 1928, executive power is in the President of the Republic, elected for seven years, who acts through a responsible ministry, and legislative power is in a diet elected for five years by universal, equal, direct, and secret suffrage. President in 1929, Antanas Smetona, Prime Minister, Augustinas Valdemaras.

HISTORY The year 1929 was marked by the continuance of the dispute with Poland over Vilna (see 1927 YEAR BOOK) and of the disturbed internal conditions chronic since the establishment of the Republic. It brought to an end the personal dictatorship of Augustinas Valdemaras, who resigned with his entire cabinet on September 19, after ruling the country as Prime Minister since the *coup d'état* of Dec. 17, 1926.

Early in the year the Premier foiled a plot to overthrow him hatched by General Plechavičius, head of the general staff of the army and leader of the coup which placed Valdemaras in power in 1926. The general appeared to have the support of the bulk of the army in his demand that the Premier settle the dispute with Poland, cancel a newly signed trade agreement with Germany, and return to constitutional methods of government. With the support of a Fascist organization called the "Iron Wolves," the Premier caused the arrest of General Plechavičius and eighteen associates, proclaimed martial law in Kovno, and prevented a threatened outbreak by the army. General unrest manifested itself, however, in repeated riots and on May 6 an attempt was made to assassinate Premier Valdemaras. The government responded with wholesale arrests and with the execution of a number of students alleged to have been implicated in the attempted assassination. Martial law continued in force and on May 6 the Premier announced his intention of dissolving the Social Democratic party in Lithuania. It was reported that 14 So-

cial Democrats were condemned to be executed in July. Opposition to the dictatorship in university circles caused the Minister of Education to inform the authorities at Kovno University on August 5 that all professors at the institutions would be replaced by new appointees on September 1.

The fall of the dictatorship was attributed to disagreements within the Valdemaras cabinet. Another explanation advanced was that the Premier, having assumed control of the treasury during the summer as a result of the illness of Finance Minister Tubelis, was willing to retire. There were reports of a deficit of some \$200,000 in the treasury. President Smetona called J. Tubelis, the former Minister of Finance, to head the new cabinet. It included the following other members of the extreme conservative nationalists: J. Musteikis, Interior, A. Zilinskas, Justice, K. Šakenis, Education, J. Aleksa, Agriculture, V. Vaitakis, War, and Wileišchis, Communications. All except the latter two held the same posts in the Valdemaras cabinet. The new Premier on September 26 announced that his policy included a gradual return to normal constitutionalism and gradual modification of the military censorship.

Opposition by the military clique to Minister of Interior Musteikis forced his resignation on November 23. He was succeeded by Senator Kavetiskis. On October 20, Dr. D. Žaunius, a former associate of Valdemaras, was named Minister for Foreign Affairs. The country's policy toward Poland and the other Baltic states remained unchanged and it became increasingly evident that the new régime intended to follow much the same course as its predecessor. On December 4, the Kaunas District Court reversed the decision of the district commander dissolving the Social Democratic party.

The continued friction between Lithuania and Poland was illustrated by additional measures taken by Lithuanian commanders on July 6 to close the Polish frontier. A note addressed by Lithuania to the League of Nations, charging Poland with fomenting trouble in Lithuania and with responsibility for the attempted assassination of Premier Valdemaras in May, was made public July 19. Poland categorically denied the charges. There were frequent clashes between Lithuanians and Poles in connection with timber transports on the Memel River. See **POLAND**.

LITTLE AMERICA. See **POLAR RESEARCH**.
LIVER TREATMENT. See **ANEMIA, PERNICIOUS**.

LIVESTOCK. Conditions of the livestock industry of 1929 were not quite so favorable as in 1928, though both production and profits to producers were on the whole satisfactory. The total numbers of meat animals slaughtered on farms, as well as by packers, were estimated at well over 100,000,000 head. Prices to producers were well maintained, high average prices being paid for superior grades. Packers, however, reported smaller profits. The most satisfactory prices were received during the first 6 months of the year, after which there was a sharp break in beef and pork prices while lamb showed a gradual decline from a high average of about \$17 per 100 pounds in April to about \$12 at the close of the year. Fluctuations in the lamb market were somewhat erratic, but the general average price for the year was \$14.30, as compared with \$14.60 per 100 pounds for 1928. Some of the largest profits on

record were made from lamb-feeding operations in case of early spring marketing. When the 1929 crop of lambs came to market, price levels could not be maintained. From April to August, market supplies were 9 per cent heavier than in 1928 and 33 per cent greater than in 1924.

The meat animals slaughtered under Federal inspection in 1929 averaged slightly heavier than the animals slaughtered in 1928, but the total numbers and total dressed weights of cattle, calves, and hogs were somewhat less in 1929, as shown in the following table. There were, however, slightly more sheep slaughtered in the current year and the total dressed weight of lamb was about 4 per cent heavier.

in the near future. According to the June and December Pig Surveys of the Bureau of Agricultural Economics of the United States Department of Agriculture, the total pig crop of 1929 was about 74 per cent smaller than the crop of 1928.

Notwithstanding reduced hog slaughter during 1929, stocks of pork in storage were greater during 7 months than in 1928 and the amounts of lard in storage were greater during 10 months than in the corresponding months of 1928. The pig survey of December, as reported by farmers, showed an increase of 6 per cent in the number of sows that were to be bred for farrowing in the spring of 1930 in the United States as a

MEAT SLAUGHTERED AND STORED UNDER FEDERAL INSPECTION IN THE UNITED STATES IN 1929, WITH COMPARISONS

	Cattle	Calves	Hogs	Sheep and lambs
Number slaughtered				
1929				
1928	8,324,067	4,485,996	48,441,604	14,023,362
3 year average *	8,467,308	4,679,922	49,795,408	13,488,171
Total dressed weight of slaughtered animals	9,389,146	4,902,806	44,688,359	13,110,696
1929—lbs				
1928—lbs	4,274,949,000	452,633,000	8,430,318,000	545,491,000
3 year average *—lbs	4,265,056,000	461,952,000	8,379,388,000	522,549,000
In storage on December 31	4,758,510,000	495,049,000	7,860,861,000	508,394,000
1929—lbs	105,349,000 ^b		706,656,000 ^c	5,318,000
1928—lbs	98,913,000 ^d		755,256,000 ^e	5,621,000
3 year average *—lbs	92,245,000 ^f		618,762,000 ^g	1,862,000

* Average for the same period of 1926, 1927, and 1928.

^b 78,478,000 lbs. fresh, and 26,901,000 lbs. cured beef.

^c 147,376,000 lbs. fresh, 477,877,000 lbs. cured pork, and 81,501,000 lbs. lard.

^d 77,051,000 lbs. fresh, and 21,862,000 lbs. cured beef.

^e 151,811,000 lbs. fresh, 518,228,000 lbs. cured pork, and 85,217,000 lbs. lard.

^f 68,124,000 lbs. fresh, and 24,121,000 lbs. cured beef.

^g 118,372,000 lbs. fresh, 437,035,000 lbs. cured pork, and 61,355,000 lbs. lard.

Cattlemen generally prospered during the year, but those who purchased feeders at high prices in the fall of 1928 and marketed them during the slump in the early spring of 1929 suffered losses. On the whole, cattle have maintained relatively good prices since the fall of 1927, when the decrease in the beef-cattle population resulted in a deficiency of domestic supplies. The prevailing high prices of cattle attracted larger imports of canned beef from Argentina and fresh beef from New Zealand. During 1928 the shortage of beef was particularly pronounced in the shortage of the better grades, but the increased average dressed weights of the carcasses in 1929 was an indication of the attempts to pay more attention to finish and quality in beef production. The prices received for finished beef were not an indication of the profits from the business, as feeder cattle were purchased at higher prices and feed prices were high. The kinds of cattle slaughtered in 1929 indicated some tendency toward increased cattle production. The number of calves slaughtered was less than in 1928 and the calf crop was probably as large in 1929 as in 1928, but there was also a decrease in the slaughtering of heifers and cows.

Pork production in the United States is on a tremendous scale, more than 8,000,000,000 pounds being slaughtered annually under Federal inspection in addition to the large numbers of hogs slaughtered on farms. Nearly one-seventh of the pork slaughtered under Federal inspection including lard is exported. Foreign demand was strong because of a decreased production in several of the northern European countries. With a tendency toward increased hog production in these countries, it was expected that American pork products would meet stronger competition

whole and 5 per cent for the corn belt. This was interpreted to indicate practically no change in the production.

The exports of pork products and lard were fully 10 per cent heavier than in 1928. Some indication of shifts in the pork products exported was evident. In recent years there has been considerable interest in the production of the type of Wiltshire side that is in demand by the English market, which continues to be by far the largest importer of American pork products. In 1929, there were 5,039,434 pounds of Wiltshire sides exported, as compared with 931,112 pounds in the corresponding period of 1928. Compared with the total exports of pork products, the exports of Wiltshire sides are relatively insignificant, since 138,423,370 pounds of bacon, 125,796,826 pounds of ham, and 44,787,116 pounds of pickled pork, in addition to a considerable amount of fresh pork, were exported during 1929. The trend toward increased production of Wiltshire sides is significant. Packers are giving every encouragement to the breeding and development of the longer and leaner type of hog which will meet this demand. A decreasing demand for lard by Germany and the United Kingdom, although more lard was imported by these countries in 1929 than in 1928, tends to make the extreme lard hog less desirable and gives cause for payment of a premium for the meatier type of hog.

Conditions in the poultry industry were relatively favorable in 1929 and good prices were received for both poultry and eggs, though supplies of poultry were rather large and prices low during the last third of the year. Stocks of eggs were low and on Dec. 1, 1929, there were only 2,630,000 cases in storage, as compared with 3,542,000 cases in storage on the same date in 1928 and 3,320,000

for the previous 5-year average. The turkey crop was about 9 per cent larger in 1929 than in 1928, resulting in some reduction in prices for the holiday season. The year was favorable for turkey production and there was a tendency to expand the industry in the Western States, where production is on a large scale. The importation of frozen and dried eggs showed decreases as compared with 1928. There were, however, small increases in the importation of both yolks and albumen.

The United States imports considerable amounts of fresh, cured, and canned meats annually. (Owing to the domestic accumulation, the importation of all fresh meats except lamb and mutton was less in 1929 than in 1928. During the latter year, the fresh beef imports amounted to 50,000,000 pounds, but less than 38,000,000 pounds were imported in 1929. Veal importations in 1929 were about 60 per cent of those in 1928 and pork imports were little more than half those in 1928. Imports of lamb and mutton increased from 3,200,000 pounds in 1928 to 4,800,000 pounds in 1929. Importations of canned meats showed a considerable increase on account of the relatively high prices which prevailed in domestic markets. In 1928 but 55,155,841 pounds of these products were imported, as compared with 89,931,947 pounds in 1929.)

The United States being an exporter of pork products largely to Great Britain and Germany, the pork situation in those countries is of much interest. (Great Britain imports the largest amount of American pork, but the products from the United States are in competition with Danish pork products. The Danish spring pig crop was heavy and the bacon exports from Denmark to Great Britain exceeded those of 1928. An increase in the numbers of breeding animals in Denmark also points toward an increased pork production. The imports of Germany were 50 per cent heavier during the year than in 1928, as a result of a decreased local pork production.)

Beef and lamb prices in the United States are influenced by importations from South America and New Zealand. Estimates of the U. S. Department of Agriculture showed that there were increases in the cattle, sheep, and hog production in Argentina. Beef production in New Zealand for the season ended Oct. 1, 1929, was less than half that for the previous year and exports to the United States were about two thirds those for the previous year. Although lamb and mutton production in New Zealand decreased about 3 per cent, as compared with 1928, exports to the United States were more than double those of the previous year.

It is of interest that in the United Kingdom—the largest importer of meats in the world—an effort was made in October, 1929, to retain a larger part of the beef trade in the London area by grading and marking domestic beef as "Home Killed." A similar movement was meeting with much favor in the Birmingham area and in Scottish centres.

TRENDS IN RESEARCH. Newer investigations of livestock production were being so planned that the results might be analyzed in economic terms, as well as in terms of the livestock product produced. With this tendency, more attention was given to the quality of the product. Quality was of primary interest in the studies of meat, egg, and wool production. A national cooperative project for the study of factors influencing the

quality and palatability of meats was started in 1925 by the United States Department of Agriculture in cooperation with a number of the State agricultural experiment stations. The preliminary studies were necessarily somewhat superficial, but attention was directed toward the development of sound measurements for determining quality in meats, and progress was made in developing chemical and physical tests of a fundamental character which were basic for further advance in this field of inquiry. Detailed technical studies also contributed to the knowledge of histological differences between meats showing variations in tenderness and palatability. Studies were under way at the different institutions dealing with the influence of age, breed, sex, and feeding on the quality of beef with a less number of comparable experiments with pork, lamb, and goat meat. The soft pork investigations which have been going on for a number of years were incorporated as a part of the quality-of-meat studies on July 1, 1929.

The interest of pork producers in products desired by the English market has already been mentioned and the Minnesota, North Dakota, and Wisconsin agricultural experiment stations particularly studied the relative merit of different types of hogs for the production of Wiltshire sides. The Iowa and Illinois experiment stations carried on tests of the ability of different types of swine to make rapid and economical gains. There is no test for estimating breeding qualities in meat animals comparable to the advanced registry systems which have become so well established as tests for dairy cattle. Consequently, attempts were made at the Iowa and Minnesota experiment stations to develop a method for measuring the ability of four pigs from individual litters to make rapid and economical gains and produce high-grade carcasses. This was patterned after the Danish system of recording the performance of individual litters when fed under comparable conditions.

Nutrition investigations continued to constitute a considerable portion of the research in the field of livestock production. Particular interest was shown in studies of mineral supplements to common rations. Here, again, the results were frequently measured in terms of the quality of the products, for example, the influence of mineral supplements, sunshine, and ultraviolet radiation on thickness of egg shells, growth of chicks, qualities of calves and pigs produced by breeding stock subjected to these conditions, growth of calves, pigs, lambs, and poultry, and growth and quality of wool were among the subjects investigated.

The 1930 World Poultry Congress was to be held from July 22 to 30, 1930, at the Crystal Palace, London, followed by tours of the British Isles.

CHANGES IN PERSONNEL. The more important changes in personnel included the resignations of Prof. George S. Templeton, head of the Animal Husbandry Department at the Mississippi Agricultural Experiment Station, Prof. M. F. Gaines, professor of animal husbandry at Pennsylvania State College, and Prof. H. A. Bittenbender, chief in poultry husbandry at Iowa State College, all to engage in commercial work. Prof. A. D. Buchanan succeeded Professor Templeton, and Professor Bittenbender was succeeded by Prof. H. O. Henderson. The death of Frank Kleinheinz, a shepherd, and assistant professor of the Uni-

versity of Wisconsin for 38 years, occurred late in 1928.

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See **VETERINARY MEDICINE**

LIVING, COST OF See **STATISTICS**

LLOYD DAM, INDIA See **DAMS**

LOAN EXHIBITIONS. See **ART EXHIBITIONS**

LOANS. See **BANKS AND BANKING**

LOCKOUTS. See **STRIKES AND LOCKOUTS**

LOEB, SOPHIE IBENE SIMON An American newspaper writer and sociologist, died Jan. 18, 1929, in New York City. Sophie Simon was born in Russia, July 4, 1876, and brought to the United States at the age of 6. She was educated in the high school of McKeesport, Pa., and in 1896 was married to Anselm Loeb from whom later she was divorced. In 1910 she was appointed a member of the staff of the New York *Evening World*, where she wrote articles describing the problems of the poor of New York's lower East Side. As a member of the New York State Commission for Widows' Pensions, she studied the relation of the child and the state in England, Scotland, France, Switzerland, Germany, and Denmark, writing a report for the New York Legislature in 1914, and leading the campaign which resulted in New York State's widows'-pension law. She also led campaigns for penny lunches in public schools, the 80-cent gas rate for Brooklyn, N. Y., and a motion-picture law for New York State, making the buildings sanitary and fireproof. Among the many social reforms in which Mrs. Loeb led, or joined in leading, were the regulation of public vehicles by a commission, and securing of an ordinance prohibiting the rental of hack stands in public streets, investigation of the New York Public Service Commission in 1916, resulting in the appointment of a new commission, mediation in the New York taxi-cab industry strike in 1917, securing passage by the New York Legislature of a bill opening schools for community forums and civic centres, examination by a New York State commission of laws relating to child welfare and establishment of the first child-welfare building in the world (1921). Her chief interest was the welfare of children and much of her work was done as president of the Child Welfare Board of New York City. She was the author of *Epigrams of Eve* (1913); *Everyman's*

Child, Century Fables of Everyday Folks; Epigrams of What Eve Said.

LOEB CLASSICAL LIBRARY. See **PHILOLGY, CLASSICAL**

LOSEYITE. See **MINERALOGY**

LOUBET, LOUBÉ, ÉMILE A French statesman, seventh President of the French Republic, died Dec. 30, 1929, in Montélimar, France. He was born Dec. 31, 1838, in Marsanne, Drôme, the son of a peasant proprietor, and was educated in law at Paris. Going to Montélimar to practice his profession, he became mayor of the city in 1870, holding that office until 1899. In 1870 he was elected to the Chamber of Deputies, where he belonged to the radical Republican group. He was elected to the Senate in 1885, and in 1887 he entered the cabinet of M. Tirard as Minister of Public Works. During 1892 he was Premier and Minister of the Interior, and was president of the Senate in 1896 and again in 1898. From 1899 to 1906, he was President of the Republic. Acting in accordance with the constitutional restrictions placed upon the French President, M. Loubet took small share in the foreign and domestic politics of the Republic during his Presidency. He was, however, an adviser to his ministers and supported the developments of this period. An anti-clerical policy was begun which led to the Church Separation Law of 1905. At that time, the decision in the case of the French soldier, Dreyfus, which had been the cause of so much internal strife in France, was revised, Loubet being in favor of the revision. With the encouragement of President Loubet, Foreign Minister Delcassé established cordial relations with Russia, Italy, and Great Britain, with the latter coming to the Anglo-French Agreement of April 8, 1904.

LOUISIANA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,798,509. The estimated population on July 1, 1928, was 1,950,000. The capital is Baton Rouge.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops, in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Cotton	1929	2,060,000	810,000 *	\$67,230,000
	1928	1,990,000	691,000 *	61,844,000
Corn	1929	1,180,000	21,476,000	19,328,000
	1928	1,242,000	21,114,000	19,847,000
Rice	1929	472,000	19,352,000	18,965,000
	1928	487,000	18,750,000	18,875,000
Potatoes	1929	31,000	1,877,000	2,867,000
	1928	41,000	2,750,000	2,870,000
Sweet potatoes	1929	80,000	7,440,000	6,324,000
	1928	74,000	6,660,000	5,661,000
Hay	1929	307,000	352,000 *	4,689,000
	1928	315,000	449,000 *	6,354,000
Sugar cane	1929	173,000	2,768,000 *	
	1928	115,000	1,860,000 *	

* Bales * Tons

MINERAL PRODUCTION. Petroleum, which supplies the chief part of the value of the State's mineral product was less actively produced in 1928. The quantity produced of that year was 21,626,000 barrels; that of 1927, 22,818,000. The value of the product was, for 1928, \$25,500,000 (estimated); for 1927, \$29,740,000. An increase in the output of natural gas occurred in 1927, the quantity produced in that year being 186,961,000 M cubic feet, as against 157,423,000 M in 1926. Gasoline from natural gas attained for

1928 the quantity of 55,500,000 gallons, and for 1927, of 44,844,000; in value, \$3,469,000 for 1928 and for 1927, \$2,442,000. The salt production was, 1927, 606,110 short tons; value, \$2,167,220; for 1928, 630,780 tons; value, \$2,405,351. The total value of the State's yearly mineral product was, for 1927, \$51,266,921; for 1928, \$62,203,543.

FINANCE State expenditures in the year ended Dec 31, 1928, as reported by the U S Department of Commerce, were for maintenance and operation of governmental departments, \$19,545,818 (of which \$5,494,571 was aid to local education), for conducting public-service enterprises, \$66,054, for interest on debt, \$790,903, for permanent improvements, \$8,510,745, total, \$28,913,520 (of which \$10,771,509 was for highways \$3,223,615 being for maintenance and \$7,547,894 for construction). Revenues were \$28,232,870 Of this, property and special taxes furnished 35.8 per cent, departmental earnings and compensation to the State for officials' services, 4.8, sales of licenses and taxation of gasoline 42.2 The gasoline tax yielded \$3,277,305 The valuation of property assessed for ad valorem taxation was \$1,733,552,714 The total funded or fixed State debt was \$17,096,180, both gross and net

TRANSPORTATION The total number of miles of railroad line under operation on Jan 1, 1929, was 4771.96 There were built, in 1929, 29.28 miles of additional second track

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and dealing with operations of 1927, there were in the State, in 1927, 1624 manufacturing establishments These employed 82,415 wage earners, whose wages for the year totaled \$79,673,477 Materials and supplies used in production cost \$427,994,341 Manufactured products attained the combined value of \$638,361,216

EDUCATION Efforts of the State to reduce illiteracy were active in 1929 According to a statement of State Superintendent Harris in the *Journal* of the National Education Association, instruction was furnished in the course of the year to 50,000 or more adult illiterates, such as would enable them to read and write The requirements for teachers' certificates were raised by the State Board of Education to two years of college study, of which a proportion was to have been devoted to professional training and practice teaching The requirement was to become effective on September 1, 1931 In the academic year 1927-28 there were registered, in the public schools of the State, 415,481 pupils, of whom 269,648 were white and 145,833 were colored Of the white pupils, 226,533 were in elementary and 43,115 in high-school grades, of the colored, 141,763 in elementary and 4570 in high school Expenditures for public-school education in that academic year were current, \$18,175,601, total, including debt service and outlay, \$32,010,298.

CHARITIES AND CORRECTIONS A State Board of Charities and Corrections, while not exercising direct administrative functions, supervises State institutions It is composed of six members and the Governor as ex-officio chairman The chief charitable and penal institutions in 1929 were Charity Hospital, New Orleans, Charity Hospital, Shreveport; Central Louisiana Hospital (mental), Pineville, East Louisiana Hospital, Jackson, State Colony and Training School for Feeble-minded, Alexandria; State School for

Deaf, State School for Blind, State School for Blind Negroes, State Penitentiary, Baton Rouge; Soldiers' Home of Louisiana, New Orleans, and Louisiana Training Institute (correctional), Monroe.

LEGISLATION The State Legislature met in regular session in January and was summoned together again in special session by Governor Long, convening on March 18. The course of legislative work was interrupted by a bitter political conflict between Governor Long and the majority of both houses In February, the Governor was authorized by the Legislature to borrow \$1,460,000 for the immediate evocation of certain State obligations The failure of revenue measures satisfactory to him occasioned his calling the special session of March His proposal of a tax on oil raised the ire of his opponents in the House

The House instituted impeachment proceedings The impeachment resolution introduced March 26 put forward 19 charges, these included intimidation, bribery, misappropriation, illegal destruction of the old governor's mansion and incitement to assassination. The House brought indictment on certain of these charges, including the bribe count The Senate opened the trial on May 14 On May 16, just in advance of the prosecution's presentation of its first witness, a supporter of the Governor introduced in the Senate a resolution to adjourn, sine die Those favoring the impeachment were unable to muster the convicting vote on this preliminary trial of strength, and the adjournment was taken, the trial thus coming to an end

POLITICAL AND OTHER EVENTS Strife between Governor Long and his antagonists in the State government interfered in divers ways with the course of State business The State Highway Advisory Board appointed by the Governor to supervise the expenditure of \$30,000,000 of funds to be raised for the creation of paved roads was called upon to state its plans and policy in March Its proposed functions clashed with those of the State Highway Commission Charges relating mainly to other than highway matters were brought against the Governor, and he was impeached and brought to trial (see *Legislation*) but no verdict was reached An organization known as the Constitutional League of Louisiana undertook in June to conduct a political fight against Long His partisans on their side sought to effect the recall in local elections of his opponents in the Legislature A committee of bankers and business leaders of the State appealed to Long in July to bring to an end the political disturbances that, it was alleged, were discouraging the intention of a chemical company to establish a \$20,000,000 plant in the State, as well as driving off prospective capital investments generally. The Governor undertook accordingly on July 21 to give up his project for imposing an occupational tax and to cease seeking the recall of his opponents The occupational tax had been regarded as likely, if enacted, to damage the interests maintaining petroleum refineries at Baton Rouge and New Orleans. The State Conservation Commissioner, V. K. Irion, was ousted by court order on December 2, after long litigation

A stubborn strike of street car employees in New Orleans caused trouble throughout the summer The New Orleans Public Service Company attempted to resume service on July 5 and offered its striking employees a new contract

Rioters put an end to the attempt to keep up service. Thereafter the traffic of the city sought jitney automobile transportation. The acting mayor and councilmen, however, determined to enforce a dormant ordinance against jitney traffic. Stickers took this as a hostile move. On August 13, a mob invaded the City Hall, under the pretext of presenting a petition on the subject, and beat and injured the mayor. Some of the councilmen were beaten and a police captain suffered serious injuries. Two weeks later the operation of jitneys was resumed by force of a court order. A plan for arbitration was signed on September 6.

The State severance-tax law, imposing a special tax on petroleum, was sustained in the United States Circuit Court of Appeals on August 9, in a suit of the Ohio Oil Company to have it declared unconstitutional. The law provided for taxes by the barrel, at different rates for divers sorts of oil. A number of test suits were brought against the Federal authorities in charge of work under Federal control, on the part of interests seeking to maintain claim to compensation for liability to the flooding of lands as a result of the works to be erected. An order of the Federal District Court, rendered in one such case on December 14, halted work in the LeBoeuf Basin.

OFFICIALS Governor, Huey P. Long, Lieutenant-Governor, Paul N. Cyr, Secretary of State, J. J. Bailey, Treasurer, H. B. Conner, Auditor, L. B. Bayard, Jr., Attorney-General, Percy Saint, Superintendent of Education, T. H. Harris.

JUDICIARY Supreme Court, Charles A. O'Neill, Chief Justice, Associate Justices, Ben C. Dawkins, Winston Overton, John St. Paul, Wynne G. Rogers, John R. Land, H. F. Brunot.

LOW, SIR A (LEROY) MAURICE A British journalist and writer on economic subjects, died in Washington, D. C., June 17, 1929. He was born in London in 1860. He was educated at King's College in London, in Austria, and after coming to America studied at Dartmouth College, where he received the M. A. degree. In 1896 he became chief American correspondent for the London *Morning Post*. During the Spanish-American War, he was a correspondent in Cuba. In 1900 he investigated for the U. S. Department of Labor certain phases of English labor legislation, and in 1903 English trade unions and industry. He was knighted in 1922. He was the author of *The Supreme Surrender* (1901), *Protection in the United States* (1904), *American Life in Town and Country* (1905), *A Short History of Labor Legislation in Great Britain* (1907), *The American People, a Study in National Psychology* (1909, vol. 1, 1911), *Woodrow Wilson, an Interpretation* (1918).

LUCAS, FREDERIC AUGUSTUS An American museum director, died Feb. 9, 1929, in Flushing, N. Y. He was born in Plymouth, Mass., Mar. 25, 1852. From 1871 to 1882, he was an assistant in Ward's Natural Science Establishment in Rochester, N. Y. He served in the U. S. National Museum as an osteologist from 1882 until 1887, then as assistant curator in the division of comparative anatomy until 1893, and, finally, as curator from 1893 to 1904. He was curator-in-chief of the museum of the Brooklyn Institute of Arts and Sciences from 1904 to 1911, and director of the American Museum of Natural History in New York from 1911 to 1923. In 1924 he was

made an honorary director there. He was at one time a member of a commission making fur-seal investigations in the Pribilof Islands. His writings include many papers on the anatomy of birds, on fossil vertebrates, and on museum methods. He also wrote *Animals of the Past* (1901), *Animals before Man in North America* (1902).

LUMBER PRODUCTION. See FORESTRY.

LUTHERAN CHURCH. A church made up of groups of religious bodies, acknowledging "the Holy Scriptures . . . as the only source and infallible norm of all church doctrine and practice" and declaring the Unaltered Augsburg Confession and Luther's Small Catechism to be "a pure exposition of the Word of God." Its membership is chiefly in central and northern Europe and in the United States and Canada. The following organizations in the United States bear the Lutheran name: United Lutheran Church in America, Evangelical Lutheran Joint Synod of Ohio, Evangelical Lutheran Synod of Iowa and Other States, Lutheran Synod of Buffalo, Evangelical Lutheran Augustana Synod, Norwegian Lutheran Church of America, Lutheran Free Church, Evangelical Lutheran Church (Evangelical Synod), Church of the Lutheran Brethren, United Danish Evangelical Lutheran Church in America, Danish Evangelical Lutheran Church in America, Icelandic Evangelical Lutheran Synod of North America, Finnish Evangelical Lutheran Church of America (Suomi Synod), Finnish Evangelical Lutheran National Church, Finnish Apostolic Lutheran Church of America, Evangelical Lutheran Synod of Missouri, Joint Evangelical Lutheran Synod of Wisconsin, Slovak Evangelical Lutheran Synod of America, Norwegian Synod of the American Church, Lutheran Church, and Negro Mission. A national Conference.

A trend toward consolidation of synods and general bodies was evident in the merger June 5, 1929, of three synods of the United Lutheran Church, the Evangelical Lutheran Ministerium of the State of New York, the Evangelical Lutheran Synod of New York and New England, and the Synod of New York, forming the United Lutheran Synod of New York, with 390 churches, 454 clergymen, and 208,008 baptized members. The merger of three independent general bodies, the Joint Synod of Ohio, the Synod of Iowa, and the Synod of Buffalo, was to be consummated in August, 1930, at Toledo, Ohio.

The outstanding event of the year was the Second World Convention of Lutherans held in Copenhagen, Denmark, June 26 to July 4. This convention was organized in 1923 at Eisenach, Germany, as an outgrowth of the relief work of American Lutheran churches following the World War, to effect greater cooperation among all Lutherans. Dr. John A. Morehead, executive director of the American National Lutheran Council, New York, was elected president of the executive committee of continuation work. There were 147 official representatives from 21 countries, the American delegation numbering 30. The main subject of discussion was Luther's Small Catechism, the quadricentennial of which was celebrated throughout the year. Important addresses included "The Lutheran Conception of the Relationship between Christianity and the World," by the Rev. G. M. Bruce, Lutheran Theological Seminary, St. Paul, Minn., "Luther as a Christian Personality and His Significance for

Northern Europe," by the Very Rev Nathan Soderblom, D.D., Archbishop of Upsala, Sweden, "The Origin and the Significance of Luther's Catechisms," by Prof. M. Reu, D.D., Wartburg Seminary, Dubuque, Iowa, "The Chief Problems of Lutheran Missionary Work That Arise from the Present Situation," by Dr. F. H. Knubel, president of the United Lutheran Church in America, "The Chief Problem of the Japan Lutheran Church and Its Solution," by the Rev. H. Inadomi, Kumanoto, Japan, "The Duty of the Present Generation to Transmit Its Heritage of Faith by Training the Next Generation," by the Rt. Rev. Dr. Marahrens, Bishop of Hanover, Germany, and "What Does Lutheranism Offer as Its Distinctive Gift to Christendom?" by the Rt. Rev. Sam. Stadenet, D.D., Bishop of Vaxjo, Sweden. The convention prepared the way for the celebration in 1930 of the four hundredth anniversary of the Augsburg Confession, the basis of doctrinal unity of Lutheran churches throughout the world.

The general growth of the church during the year in the United States and Canada is indicated in the following statistics from the Lutheran World Almanac for 1930: 31 Pastors, 11,626, congregations, 16,881, baptized members, 4,223,179, confirmed members, 2,811,282, and communing members, 2,241,706. Sunday schools numbered 11,785 with 128,203 officers and teachers and 1,252,138 pupils. Church property was valued at \$351,891,503, while congregational expenses amounted to \$46,275,760, congregational benevolences to \$13,061,809, and total expenditures to \$59,158,715. Outside of the United States and Canada, the American bodies listed 3867 congregations, 474 pastors, 314,511 baptized members, 203,119 confirmed members, 189,102 communing members, 3033 Sunday schools, 5581 Sunday-school officers and teachers, 154,451 Sunday-school pupils. The valuation of church property was \$3,886,787, congregational expenses, \$314,349, benevolences, \$137,544, and total \$4,118,680. It was estimated that throughout the world there were 70,000 Lutheran churches, with 49,000 pastors and a baptized membership of 81,023,180.

In 1929 the Lutheran organizations in the United States maintained 34 theological seminaries, 37 colleges, and 97 academies, with a total enrollment of 34,806 students, 7256 instructors, endowment amounting to \$13,701,213 and property value of \$39,589,497. Lutheran inner-mission institutions, such as deaconess motherhouses, hospices, hospitals, old-people's homes, orphanages, immigrant and seamen's homes, and homes for defectives numbered 373, with an endowment of \$4,466,180 and a property value of \$42,568,002, during the year they sheltered or ministered to 5337 children and 430,756 men and women. The work of the foreign missions boards was carried on in India, Africa, Japan, China, New Guinea, Argentina, and British Guiana, the foreign staff numbering 802 and the native staff, 5715. The income for foreign missions in 1927 (the latest year for which statistics were available) was \$2,039,374, while expenditures amounted to \$1,945,289. Baptized converts numbered 189,780, and 61,164 pupils were enrolled in 1448 mission schools of The total value of mission property, ... 5 hospitals and 42 dispensaries, was \$1,110,000.

Important cooperative groups of Lutheran laymen include the American Federation of

Lutheran Brotherhoods, the Lutheran Student Association of America, and the National Lutheran Educational Conference. Clerical inter-synodical organizations include the National Lutheran Inner Mission Conference, the American Lutheran Statistical Association, the Lutheran Foreign Missions Conference of America, the Lutheran Publishing House Managers' Association, the National Lutheran Editors' Association, and the Zion Society for Israel. Official periodicals are the *Lutheran* (United Lutheran Church), *Lutheran Standard* (Joint Ohio Synod), *Lutheran Companion* (Augustana Synod), *Lutheran Church Herald* (Norwegian Church), *Lutheran Herald* (Iowa Synod), *Lutheran Witness* (Missouri Synod), *Northwestern Lutheran* (Wisconsin Synod), and *Ansager Lutheran* (United Danish Church).

LUXEMBURG, lûks'em-bûrg. A small state of western Europe, bounded by Germany, France, and Belgium, neutralized by the Treaty of London, 1867, occupied by the Germans during the World War, restored to independence after the Armistice. Area, 999 square miles, population (in December, 1927), 285,524, as compared with 263,824, Dec. 1, 1916, and 260,767 in 1922. Capital, Luxembourg, with a population in 1927 of 52,440, ruler in 1929, Grand Duchess Charlotte.

The great majority of the population is Roman Catholic. Luxembourg is a country of small landowners and of farmers tilling their own holdings. The total area of land devoted to agriculture was about 394,000 acres in 1926. The principal foodstuffs raised in the grand duchy are potatoes and cereal grain rye, wheat, barley, and oats. The oats covers the largest area of land and is followed in importance by potatoes. The leading industry of the state, however, is mining and the production of iron and steel. The mineral resources of Luxembourg include comparatively extensive non-ore mines, as well as slate, lime, dolomite, quartzite, and stone beds. The production of pig iron which in 1913 was some 2,510,000 gross tons, in 1928 had reached 2,770,061 tons. In 1928 the production of steel, which had amounted to 2,231,000 tons in 1926, was 2,567,080 tons. Brick, printing, leather, and glove industries are also relatively important. Separate figures on foreign trade have not been available since the economic union in 1922 with Belgium. The budget estimates for 1928 were Revenue, 270,249,192 francs, expenditure, 261,335,689 francs. The public debt on Dec. 31, 1927, amounted to 492,649,255 francs. In 1928 there were 342 miles of railways.

Under the constitution as amended in 1919, sovereign power rests in the nation and the representatives are elected on the basis of universal suffrage and proportional representation. The Grand Duchess Charlotte Aldegonde, born Jan. 23, 1896, succeeded to the throne Jan. 9, 1919. The Minister of State and President of the Government in 1929 was M. Bech (appointed July, 1926). The other members of the cabinet were: Director-General of Justice and Home Affairs, M. Dumont; Public Works, Trade, and Industry, M. Clemang; Finance and Social Welfare, M. Dupong.

LYNCHINGS. At the close of the year, the National Association for the Advancement of Colored People reported that 12 lynchings had occurred in 1929 as compared with 11 in 1928. Four mob murders took place in Florida, 2 each

in Mississippi, North Carolina, and Texas, and 1 each in Kentucky and Tennessee. Of the 12 persons lynched, 4 were white, and of these 1 was a woman, Mrs. Ella May Wiggins, textile worker of Gastonia, North Carolina. In only 3 out of the 12 lynchings, were attacks upon women given as the causes, the other occasions leading to the mob murders were. A dispute over the price of blackberries, altercation about work followed by stabbing, associating with a white woman, and writing to a white woman. The record showed that not a single lyncher had been punished during the year. The North demonstrated that it did not have to go to school to Southern mobs when intent on lynching. In August, a North Platte, Nebraska, mob, seeking vengeance against a Negro slayer of a police officer, not only trapped the murderer and fired the building in which he was hiding, but turned against the whole Negro population of the city and drove some 200 persons out of their homes without giving them an opportunity to collect even their household goods.

LYNN, MASSACHUSETTS, ANNIVERSARY See CELEBRATIONS.

LYON, HENRY WARE. Rear admiral, U.S.N., Ret., died in Washington, D.C., Nov. 22, 1929. He was born Nov. 8, 1845, in Charlestown, Mass., and entered the U.S. Naval Academy in 1862. He was an executive officer on the flagship, *U.S.S. Trenton*, when on Mar. 16, 1889, that ship was sunk in a hurricane which destroyed the German and American fleets anchored in the Samoan Islands. After this catastrophe, he salvaged the *U.S.S. Albatross*, which he brought to Honolulu. He also served afloat in the Spanish-American War. In 1906 he was promoted to the rank of rear admiral and in 1907 he was retired.

MACAO, mak'ao. An island at the mouth of the Canton River, in China, which with the two adjacent islands of Taipa and Coloane, constitute a province of Portugal. Area, 4 square miles, population, according to the census of 1920, 83,084, of whom 3816 were Portuguese and the remainder for the most part, Chinese. The trade is chiefly in transit and is mainly in the hands of the Chinese. In 1926-27 the revenue was estimated at 3,029,210 escudos and the expenditure at 3,321,742 escudos (one escudo exchanged at \$0.05 in 1927). Imports in 1927 amounted to 24,831,894 patacas and exports to 10,226,008 patacas (one pataca equals approximately \$0.48). The city of Macao is divided into two parts, inhabited respectively by Chinese and non-Chinese, each under its own administration.

MACARA, SIR CHARLES WRIGHT. A British cotton manufacturer, died in Hale, Cheshire, Jan. 2, 1929. Born at Strathmiglo, Fifeshire, Jan. 11, 1845, he studied privately and at Edinburgh. Entering the cotton-manufacturing industry, Sir Charles served as chairman of the Manchester & District Cotton Employers' Association, 1892-1926, and was influential in preparing the Brooklands Agreement which ended the 20 weeks' cotton strike, begun in November, 1892. He subsequently presided over numerous labor conferences, formulating a plan to adjust wages according to the prosperity of the industry. He was also president of the English Federation of Master Cotton Spinners' Associations, 1894-1914, and first president of the Manchester Cotton Association and of the Cotton Employers' Parliamentary Association. He was chairman of a group of representatives of various organiza-

tions, formed in 1902, which effected relief from shipping rings and excessive railway rates on cotton shipping. Sir Charles was also chairman of the Committee of International Federation of Master Cotton Spinners' and Manufacturers' Associations, 1904-15. Having been partially responsible for the government's establishing an Industrial Council in 1911, he was made a member of that body. He was president of the Employers' Federation, Association, 1912-16, and chairman of the provisional emergency cotton committee formed in September, 1922, to deal with difficulties continually arising within the industry. Sir Charles was created a baronet in 1911, and was awarded membership in the French Legion of Honor, the Ordre de Léopold, the Gran Cruz del Merito Agrícola, the Order of the Red Eagle, and the Order of the Crown of Italy. Being associated with a number of life-saving organizations, Sir Charles wrote numerous articles on lifeboat work, as well as on commercial and philanthropic subjects. He also wrote *Social and Industrial Reform* (1918), *In Search of a Peaceful World and Recollections* (1921), *Getting the World to Work* (1922), *The New Industrial Era* (1923), *Trade Stability and How to Obtain It* (1925), and *Modern Industrial Tendencies* (1926).

MACDONALD, SIR HUGH JOHN. A Canadian lawyer and statesman, died Mar. 29, 1929, in Winnipeg, Canada. He was born Mar. 13, 1850, in Kingston, Ontario, and was educated at Queen's College and at the University of Toronto. He was called to the bar in 1872 and began the practice of law in Toronto (1872-82). Moving to Winnipeg, he became a member of the law firm Macdonald, Tupper & Co. He was a Conservative member of the House of Commons for Winnipeg (1891-93 and 1896-97), Minister of the Interior in the cabinet of Sir Charles Tupper in 1896, and Premier of Manitoba for ten months in 1900. He resigned as Premier to contest the Federal seat of Brandon and, on defeat, formed a new legal firm, Macdonald, Haggart & Co. He practiced law until appointed chief police magistrate in Winnipeg in 1911. He became Queen's Counsel in 1890 and was knighted in 1913. He served in the Canadian Army during the Fenian Raid (1866), the Red River Expedition (1870), and the Northwest Rebellion (1885).

MACDONALD, J. RAMSAY. See GREAT BRITAIN, under *History*, also UNITED STATES.

MCELROY, JOHN. An American editor, died in Washington, D.C., Oct. 12, 1929. He was born in Greenup Co., Ky., on Aug. 25, 1846, and very early learned the printing trade, working in St. Louis and Chicago. During the Civil War, he served as acting sergeant-major of the 16th Illinois Cavalry and was taken prisoner. After the war, from 1868 to 1874, he was a reporter on Chicago papers. In 1874 he became editor of the *Toledo Blade*, and in 1884, managing editor of the *National Tribune*, which he was editing at the time of his death. He was many times commander of the Kit Carson Post of the G.A.R., and three times commander of the Department of the Potomac, and senior vice commander-in-chief of the central organization. He was the author of a number of books about the Civil War, among them, *Andersonville* (1879), which recounts his experiences in that Southern prison.

MCGILL UNIVERSITY. A coeducational institution of higher learning in Montreal, Quebec, founded in 1821. The enrollment for the

autumn session of 1929 was 2909, distributed as follows: Arts, 1028; applied science, 340, medicine, 469; commerce, 248; graduate school, 174; music, 144; dentistry, 38; law, 93; physical education, 33; pharmacy, 22; social work, 29; graduate nursing, 36; library school, 18; music, 193; agriculture and household science, 149. The registration in the French Summer School of 1929 was 208. The number of members on the teaching staff was 505.

Among the appointments to the faculty during the year were: F. C. Harrison, dean of the faculty of graduate studies, F. M. G. Johnson, director of the department of chemistry, Douglas Clarke, director of the conservatorium, F. Clarke, professor of education in the faculty of arts, C. W. Hendel, Macdonald professor of moral philosophy, Georges Edouard Lemaitre, assistant professor of Romance languages; Justice Surveyer, professor of criminal law and procedure, O. S. Tyndale, professor of civil procedure, F. R. Scott, associate professor of Federal and constitutional law, T. W. L. MacDermot, assistant professor in the department of history, J. W. Scott, assistant professor of biochemistry, F. P. Chambers, assistant professor of architecture, Leslie K. Thomson, professor of fuel engineering. Among those lost by death were the Hon. Mr. Justice John Edward Martin, professor of commercial law, D. B. MacTaggart, professor of medical jurisprudence, Etienne S. Bieler, assistant professor of physics, A. Mackenzie Forbes, clinical professor of orthopedic surgery, the Hon. Sir Charles Davidson, emeritus professor of criminal law, J. Alexander Hutchison, emeritus professor of surgery, William de Montmolin Mailel, emeritus professor of civil law, the Hon. Mr. Justice J. Emery Robidoux, emeritus professor in law, Francis J. Shepherd, emeritus dean of the faculty of medicine and professor of anatomy.

The productive funds of the university amounted to \$18,193,720, and the income for the year was \$2,121,900. The library contained 300,000 volumes. During 1929 a library school was established with the requirement of one year of arts work for admission and afterwards a year of specialized work in library administration. The department of architecture was changed into the school of architecture, and a department of fuel engineering was established in the graduate school. Principal, Sir Arthur William Currie. (CUMG, KCB, LLD)

McGRATH, SIR PATRICK THOMAS Journalist and public official of Newfoundland, died June 14, 1929. He was born Dec. 16, 1868, in St. John's, Newfoundland, where he was educated at the Christian Brothers' Schools. In 1889 he became a reporter for the *St. John's Evening Herald*, becoming editor in 1894, and in 1912, when the *Herald* combined with the *Chronicle*, he was made president of the united company. In 1894 he became Newfoundland correspondent for the *London Times*, and he wrote extensively for British and American publications. Sir Patrick was also active in the political life of Newfoundland, being assistant clerk in the Newfoundland House of Assembly from 1897 to 1900, and chief clerk, 1900-11. He was president of the Legislative Council of Newfoundland during 1915-19, and again from 1925 to the time of his death. He often acted as Newfoundland's official representative, serving as the colony's secretary in connection with the visit of the Dominions Royal Commission to Newfoundland in 1914, assisting

in the preparation of the colony's case regarding French and American fishery disputes, and acting as agent for Newfoundland in the dispute with Canada respecting the boundary of Labrador in 1920. He was knighted in 1918.

MACLEAN, WILLIAM FINDLAY A Canadian journalist and legislator, died Dec. 7, 1929, in Toronto. He was born in Ancaster, Ontario, and was educated at University College, Toronto. In 1880 he founded and became editor-in-chief of the *Toronto World*, an Independent Conservative newspaper, and the first in Canada to be sold for one cent. The Sunday issue of this paper was also the first of its kind in Canada and was published in defiance of the Scotch Presbyterian Sabbath tradition. Mr. Maclean was an independent in politics. From 1892 to 1904, he was a Conservative member of the Canadian House of Commons, but then, being unrecognized by his party, he became an Independent Conservative. Among the measures which he advocated were public ownership of railways and hydroelectric services, a national reserve bank system for Canada, complete home rule for Canada, and reform of the Canadian Senate. In 1921 the *Toronto World* ceased to be published, and in 1926 Mr. Maclean retired from political life.

MCNARY-HAUGEN BILL. See AGRICULTURAL LEGISLATION.

MADAGASCAR. An island belonging to France lying off the southeast coast of Africa, from which it is separated by the Mozambique Channel, about 240 miles wide at its narrowest point. The island, whose area is estimated at 241,094 square miles, has over 3000 miles of coast, and is 980 miles long with a greatest breadth of 360 miles. The population, according to the census of 1926 (including the Mayotte and Comoro Islands), was 3,213,112, of whom 3,591,943 were Malagasy, 18,040 were French, and 11,359 foreigners. Capital, Tananarive, with a population in 1926 of 70,847.

The Hova, or Merina, is the most industrious and enterprising, as well as the largest, Malagasy tribe. Its language is the prevailing dialect. Other large towns with their populations in 1926 were Antsirabe, 19,130; Majunga, 16,570; Tamatave, 15,022, and Nosy Bé, 14,022. Tamatave is the principal port on the east coast. Education is compulsory from 8 to 14 years of age. On Sept. 15, 1925, there were 991 official schools for European and native children, with 90,833 pupils and 1739 teachers, and 517 private schools, with 49,750 pupils and 1144 teachers.

Production, etc. Cattle breeding and agriculture are the chief occupations of the natives of Madagascar. In 1926 there were 3,334,000 acres of land under cultivation. The forests contain valuable woods and gums, resins, dyewoods, and textile plants abound. In 1925 there were 7,659,000 cattle, 386,000 swine, 116,000 sheep, 63,000 goats, and 2900 horses. The acreage and production of the principal crops in 1927-28 were as follows: Corn, 201,000 acres, 5,166,000 bushels; rice, 1,483,000 acres, 51,440,000 bushels; potatoes, 54,000 acres, 4,078,000 bushels; tobacco 16,000 acres, 22,046,000 pounds; coffee, 45,000 acres, 9,250,000 pounds. Other products are rice, manioc, lima beans, vanilla beans, cacao, cloves, sugar cane, peanuts, and coconuts. Local manufacturing industries are relatively small, including rice milling, sugar grinding, meat packing, and the manufacture of straw hats, simple textiles, mats, lace, etc. The graphite mines are im-

portant and gold, mica, phosphates, and columbite are mined commercially. In addition some iron, copper, and other minerals have been found.

COMMERCE Provisional statistics for 1928 placed the imports at 686,445,000 francs (\$26,509,000) and exports at 483,596,000 francs (\$18,957,000). These figures represented an 18 per cent increase in the value of imports and a 28 per cent increase in exports over 1927. France's share of the total trade amounted to 77 per cent of the imports and 80 per cent of the exports. Cotton fabrics were the leading import and vanilla beans the leading export.

FINANCE The ordinary budget for 1929 balanced at 242,338,000 francs (\$9,500,000), the major items of expenditure being Railways, 38,513,000 francs, native medical assistance, 19,596,000 francs, and public works, 68,650,000 francs. Local revenue is derived chiefly from direct taxation, including a poll tax ranging from 10 to 30 francs on all persons from 16 to 60 years of age. Tax receipts in 1928 totaled 69,791,000 francs. The bonded debt, all of which was contracted for construction purposes, was reported at 78,113,000 francs at the end of 1928. The French franc, which is the unit of currency on the island, has a par value of \$0.0392.

COMMUNICATIONS The railways, which are government owned, included 430 miles of line in 1928 and in the same year carried 1,184,286 passengers and 270,000 metric tons of freight, the gross receipts amounting to 3,698,000 francs (\$1,360,000). A new line to Ft. Fianarantsoa and Manakara was being built in 1929. In 1927 the government-owned telegraph system, with 8710 miles of wire, earned gross receipts of 4,638,000 francs (\$181,800), and the telephone system, with 4032 miles of wire, earned gross receipts of 850,000 francs (\$33,320). A total of 5773 vessels of 2,521,000 net registered tons entered, and 6000 vessels of 2,545,000 net registered tons cleared, the ports of the island during 1926 (including those in the coastwise trade).

GOVERNMENT The colony is under a governor-general aided by a consultative council of administration. Governor-General in 1929, Marcel Olivier (appointed in 1924). Dependent upon Madagascar are the small islands of Nosse Bé, Diego Suarez, Ste Marie, and the Comoro group. See also ANTHROPOLOGY, under *Old-World*.

Ethnography

MAGMAS. See GEOLOGY.

MAGNETIC RESEARCHES. See CARNegie INSTITUTE OF WASHINGTON.

MAHER, NICHOLAS D. An American retired railroad president, died in Roanoke, Va., Sept. 24, 1920. He was born in Blairsville, Pa., Apr. 29, 1854, and educated at Mt. St. Mary's College, Emmitsburg, Md. In 1871 he began work as a surveyor for the Pittsburgh, Virginia & Charleston. In 1883 he was first connected with the Norfolk & Western Railroad as chief clerk to the general manager. With the exception of short periods, Mr. Maher remained with the Norfolk & Western until retirement in 1924, rising through the positions of general manager, second vice president, and first vice president to the presidency in 1918, from which he retired on May 1, 1924.

MAINE Population. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 768,014. The estimated population on July 1, 1928, was 795,000. The capital is Augusta.

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod. Bu.	Value
Potatoes	1929	172,000	47,644,000	\$57,173,000
	1928	181,000	39,820,000	15,928,000
Hay	1929	1,234,000	1,596,000 *	17,535,000
	1928	1,248,000	1,597,000 *	18,185,000
Oats	1929	122,000	4,880,000	3,416,000
	1928	120,000	4,200,000	2,940,000

* Tons

MINERAL PRODUCTION The production of stone, which contributes somewhat less than one-half of the yearly mineral product of the State, was active in 1927. There were produced 355,800 short tons of stone, as against 311,830 for 1926, in value, \$2,447,044 for 1927 and for 1926, \$2,390,593. Lame production rose from 116,566 short tons for 1927 to 122,000 (estimated) for 1928, in value, from \$1,230,356 to \$1,240,000 (estimated). The other chief mineral industries were manufacture of clay products, totaling \$680,739 for 1927, production of slate, \$551,242 for 1928, \$540,952 for 1927, feldspar, \$209,386 for 1927, and sand and gravel. The total value of the mineral products of the State for 1927 was \$5,475,695, for 1926, \$5,785,619.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 2198.46. There was built, in 1929, 0.73 mile of additional first track.

MANUFACTURES According to the biennial Census of Manufacturers, published by the U. S. Department of Commerce in 1929, there were in the State, in 1927, 1426 manufacturing establishments. These employed 68,142 wage earners, whose wages for the year totaled \$74,212,035. Materials and supplies used in manufacture were of the total value of \$208,865,679. The manufactured products attained the value of \$372,094,474.

EDUCATION An extension of the minimum length of the school year to 32 weeks, from 30 weeks, was placed in the front rank of the year's developments in education in Maine, by State Commissioner of Education Packard, writing in the *Journal of the National Education Association*. The compulsory membership of public school teachers in a contributory pension system was also effected. This institution, created by statute, was known as the Maine Teachers' Retirement Association System. The Retirement Association had previously functioned with an optional membership, but had, up to 1929, less than 100 members. The law of 1929 required all teachers who had entered service on or after July 1, 1924, to join on beginning the seventh year of teaching in the State. The age at which the older teachers might obtain pensions for disability under the previous law was reduced to 50 years, from 60. The number of persons of school age in the State in 1929 was estimated at 245,934. There were enrolled in the public schools, in the academic year 1928-29, 162,710 pupils. Of these, 135,866 were in the elementary and 26,844 in the high-school grades. The year's expenditures for education totaled \$11,215,198. Salaries of teachers averaged, in 1928, \$880 a year in the elementary grades and \$1518 in the secondary.

CHARITIES AND CORRECTIONS The State Department of Public Welfare, created by statute in 1913 and originally named the State Board of Charities and Corrections (renamed in 1927) held in 1929 the function of inspection of all charitable

and correctional institutions supported in any part by the State, it also administered the State law for the aid of mothers and acted as a board of children's guardians, with regard to neglected children. The State institutions of care and custody as to which it reported were, the three State hospitals for the insane, at Augusta, Bangor, and Pownal, sanatoria at Greenwood Mountain, Fairfield, and Presque Isle, Reformatory for Men, South Windham, Reformatory for Women, Skowhegan, State School for Boys, South Portland, State School for Girls, Hallowell, Maine School for the Deaf, Portland; Military and Naval Orphan Asylum, Bath; State Prison, Thomaston. The population of all these institutions in 1927 was slightly over 4000.

LEGISLATION The State Legislature met in regular biennial session in January. Its chief labor was the passage of measures to permit under strict limitations the exportation from the State of hydroelectric power, forbidden by the twenty-year-old Fernald Law. To this end was passed the Smith-Carlton Law, repealing the Fernald Law. It was submitted to the popular vote in a referendum on September 9, and was then defeated. An issue of \$15,000,000 of State bonds for purposes of highway and bridge construction was enacted, and was approved at the September referendum. The increase of the gasoline tax to five cents, from four, was proposed by the Legislature, but defeated by the popular vote. The method of filling vacancies in the Governor's council was altered, and the alteration received popular approval. Provision for a bond issue of \$1,200,000 for a highway or highway-and-railroad bridge over the Penobscot at Bucksport was made and was confirmed by popular vote. Less conspicuous than the power legislation but of permanent importance to the State was the remodeling of the judicial system, effected by two acts. One of these reduced the number of Supreme Court justices to five by process of leaving vacancies when they might occur and increased the number of the Superior Court bench to seven. The second act fixed trial terms for Superior Court. The general scheme of the change was to limit the Supreme Court to appellate and equity actions and relieve it of trial work.

POLITICAL AND OTHER EVENTS The act repealing the Fernald Law, the previous law to prohibit the export of power from the State (see *Legislation*, above) was passed subject to a referendum vote. The repealing act met with lively opposition from the former Governor Ralph O. Brewster in the popular campaign. The repeal was defeated at the polls on September 9 by 62,248 votes, approximately, to 54,249. A bond issue for highway and bridge construction was approved, an increase in the gasoline tax, defeated, a change in the method of appointment of the Governor's Council, approved. The second annual State Economic Conference met in Lewiston in November and gave considerable attention to the prospects of the State's recreation, trade, and fisheries. According to a member of the State Fisheries Commission, the yearly catch of lobsters had reached in 1929 a figure in excess of 12,000,000 and nearly 5000 licenses to lobster fishermen were issued. An addition of some three square miles to the Acadia National Park, on the Maine coast, was made by gift. The State Forest Commission reported in April that the white birches of the State were endangered by the saw-fly leaf miner. In a quarry at Albany was discovered a beryl deposit which

included three phenomenal crystals of pale green beryl, about 14 feet long and 4 feet thick, the largest known.

OFFICERS Governor, William Tudor Gardiner, Secretary of State, Edgar C. Smith, Treasurer, William S. Owen, Auditor, F. D. Hayford, Attorney-General, Clement F. Robinson, Commissioner of Education, Bertram E. Packard.

JUDICIARY Supreme Judicial Court: Chief Justice, Luere B. Deasy, Associate Justices, Guy H. Sturgis, Charles P. Barnes, Charles J. Dunn, Norman L. Bassett, William R. Partangall, Frank G. Farrington, Superior Court Justices, William H. Fisher, George H. Worcester, Arthur Chapman, Harry Manser, George L. Emery, James H. Hudson, Sidney St. F. Thaxter.

MAINE, UNIVERSITY OF A coeducational State institution of higher learning in Orono; founded in 1865. The enrollment for the college year 1929-30 was 1484 and for the summer session of 1929, 294. There were 224 members on the faculty in the autumn of 1929, divided as follows: Teaching and administration, 150, agricultural extension service, 48, and experiment station, 26. The productive funds of the university amounted to \$885,050 and the income for the year was \$980,679. The library contained 92,000 volumes. A new home economics building and a new dormitory for women, the first of a series of four units in the university's building programme, were under construction in 1929. President, Harold Sherburne Boardman, C.E., D. Eng., LL.D.

MAIZE. See CORN.

MALACCA. One of the STRAITS SETTLEMENTS. Consult that article.

MALAY STATES. See FEDERATED MALAY STATES.

MALDIVE ARCHIPELAGO. See CEYLON.

MALTA. An island in the Mediterranean Sea, forming, with the adjacent islands of Gozo and Comino, a British colony. It is situated 58 miles south of Italy and 180 miles from the African coast. Area of the island of Malta, 95 square miles, total area with Gozo and Comino, 122 square miles. Population, 1927, 1928, 1929, 1930, 1931, 1932, 227,440. Valletta is the chief town and port. There were 115 public schools with 24,496 pupils at the beginning of the school year 1927-28, a university with 164 students, a lyceum for boys with 360 students, two secondary schools, and 25 technical manual schools. Farming is the principal occupation. The chief products include wheat, potatoes, onions, barley, tomatoes, fudge, cotton, grapes, and other fruits. The value of agricultural produce in 1927-28 was £907,494. Stock raising and fisheries are important. The manufactures include lace, cotton, cigarettes, and filigree. The imports normally exceed exports, although invisible items of trade tend to balance the island's annual account. The imports in 1927 were valued at £4,285,436 and the exports at £1,006,881. Most of the imports come from Great Britain and British possessions. The revenue in 1927-28 was £823,138 and the expenditure, £887,523. Executive power is vested in the governor, who is also commander-in-chief, and legislative power in a Legislature of two Chambers, Governor and Commander-in-chief in 1929, Gen. Sir John Du Cane (appointed Mar. 16, 1927), Prime Minister, Police, and Posts, Lord G. Strickland, Health, R. V. Gales, Education, A. Bartolo, Justice, A. Parnis; Industry and Com-

merce, W. Salomone; Public Works, E. P. Vassallo; Treasury, Col. A. Samut.

HISTORY. The development of an agitation among the Italian population of the island for union with Italy led to a clash in 1929 between the Maltese Government and the Roman Catholic ecclesiastical authorities of the island, who were accused of supporting the effort to undermine British authority. An acrimonious correspondence ensued between Lord Strickland and Cardinal Gasparri, the Papal Secretary of State, after the Maltese Government had refused to issue a passport to a monk ordered to Sicily by the Italian Superior of his monastery. The Government contended that he was a British subject who was being sent away against his wishes and for political reasons. The matter was brought to the attention of the British Minister to the Vatican State and was aired in the British House of Commons. The British officials of Malta sought to check Italian propaganda by new press regulations and by providing severe penalties, up to three years' imprisonment, for those "who help the enemies of His Majesty in whatever way or against the Maltese Government." See ITALY and VATICAN CITY, under *History*.

MALTA FEVER. In a brief article which appeared in the *Health News*, published by the New York State Department of Health, for August 5, Dr. Theobald Smith presented a synopsis of present knowledge of Malta, otherwise known as undulant fever. Incidentally, he asked whether the recent appearance of the disease in the United States was genuine or only apparent. Has the bacterium which causes it appeared in North America *de novo* or have its effects been in some way masked or latent? The organism which is the cause of infectious abortion in cattle closely resembles the cause of Malta fever, but there are slight differences and the two cause quite different clinical pictures. When this cattle plague was first recognized in the United States the incidence was widely diffused, but in the meantime it was largely reduced by the activity of the Federal Government. In other words, it is far older than Malta fever in man, for it goes back something like forty years as against six years for the human disease. There is as yet no evidence that the latter was ever derived from the cattle disease. The European Malta fever is chiefly transmitted by goats' milk and infected goats have been seen in Utah and some of the Southwestern States, but the disease as such has occurred chiefly in the northern United States. It seemed certain that cattle do not cause Malta fever and the pig was under suspicion, or rather the porcine strain of the organism.

MAMMALS. See ZOOLOGY.

MAN, EARLY HISTORY OF. See ANTHROPOLOGY.

MANAGER PLAN. See MUNICIPAL GOVERNMENT.

MENT

MANCHURIA, man-chō'-rē-ā. A vast region comprising one of the Chinese Outer Territories, situated between the Province of Chihli in China proper and the Amur River and extending eastward from the Hingan Mountains to Korea and the Ussuri River. It is divided into the three provinces of Fengtien (now Liao-Ning by Nationalist decree), Kirin, and Heilung-kiang. The total area is estimated at about 363,610 square miles. A census completed by the research office of the South Manchuria Railway Company in 1927 reported the population of Manchuria at 27,490,000. This is probably as nearly correct a figure as can

be ascertained. The population at that time was increasing by about 1,000,000 annually through immigration from China proper. Capital, Mukden, with a population of about 250,000. Other important cities are Newchwang, 65,600; Yingkow, 60,000; An-tung, 74,600; and Chang-chun, 80,000. The soil of Manchuria generally is of great fertility and the region possesses immense potential agricultural, timber, and mineral wealth. The area under cultivation in 1928 was estimated at 81,718,945 acres, of which 19,193,765 acres were devoted to soy beans and 7,241,087 acres to wheat. The production of the principal crops in tons in 1929 was estimated as follows: Soy beans, 5,351,000; other beans, 415,000; kaoliang, 5,136,000; millet, 2,692,000; upland rice, 1,787,000; lowland rice, 161,000; corn, 1,776,000; wheat, 1,552,000; all other, 2,000,000 tons. The cultivation of sugar beets and the breeding of livestock are of growing importance. The forests of Manchuria were estimated at 45,000,000 acres in 1929. While industrially undeveloped, there are in the larger cities modern flour mills, bean-oil mills, soap works, sugar refineries, saw-mills, distilleries, breweries, glass factories, and tanneries. Manchuria was fairly prosperous in 1928, due to good harvests and the extension of the area under cultivation by new settlers. Railway mileage was extended, freight traffic increased, and an extensive building programme was undertaken in Mukden. In 1929 the dispute with Russia over the Chinese Eastern Railway hindered business throughout most of the year and many business failures were reported.

During the fiscal year ending Mar 31, 1928, the combined import and export trade of Manchuria amounted to 662,000,000 Haikwan taels, or an increase of 15,000,000 taels over the total for the previous year and double the value of the trade ten years ago (one Haikwan tael in 1928 was equivalent to \$0.71). Manchurian railways carried 2,000,000 tons more cargo than in the fiscal year ended Mar 31, 1927. In 1928 the South Manchuria Railway, which had 691 miles of line, carried 9,514,049 passengers and 19,323,514 tons of freight. The gross receipts totalled 118,639,089 yen and the net earning was 74,281,024 yen, as compared with 68,008,345 yen in the previous year. In 1927 the Chinese Eastern Railway had revenues totalling 59,974,512 rubles and expenses of 43,971,301 rubles, leaving a net earning of 16,003,301 rubles (one ruble was equivalent to \$0.515). Railroad construction under way in Manchuria in 1929 threatened to greatly reduce the importance of the Chinese Eastern Railway to that region. The Peiping-Mukden Railroad had been extended north to intersect the Chinese Eastern at Tsitsihar and Hailin, Chinese railroads financed by Japan were pushing through eastern Manchuria to a new Japanese port in northern Korea, which was intended to compete with Vladivostok and Dairen, and a Chinese railroad had been extended 150 miles north of Harbin.

HISTORY. The conflicting interests of China, Japan, and Russia in Manchuria were generally recognized as the gravest menace to peace in the Far East, at the Kyoto Conference of the Institute for Pacific Relations Observers in Manchuria late in the year reported that the Nationalist Government of China exercised only nominal control, that the power of the Mukden Government was disintegrating, with Kirin practically an independent province under its governor, Chang Tso-Hsiang, and that banditry and lawlessness in

outlying regions were growing more pronounced. For the Sino-Russian dispute over the Chinese Eastern Railway and other developments, see CHINA, under *History*. See also RUSSIA and JAPAN, under *History*. Consult *Diplomatic Events in Manchuria*, by Sir Harold Parlett, Oxford University Press (1929).

MANDATES. See LEAGUE OF NATIONS; IRAQ **MANGANESE.** A decline in the prices received for manganese ores which lasted throughout 1929 indicated the international competition that looms imminent in production of this steel alloy. Early in the year, Brazilian and Indian ores were sold in New York on the basis of 34 to 35 cents per unit of manganese content in ores of better than 47 per cent grade. At the close of the year, the prevailing quotations were 31 to 34 cents. In Russia, the most important producing nation, the Soviet government had taken over the Tchiatur deposits, relinquished by American interests, and planned to increase output from its present level of 1,200,000 tons annually to almost double that figure. India, which ranks after Russia, had piled up a tremendous surplus stock and at the close of the year mining was reported to have virtually ceased. In South Africa, a large, low-cost deposit was being prepared for an eventual production of 400,000 tons annually. And in the United States, where manganese producers were successful in the attempt to retain the tariff, three new plants were put in operation that had an annual capacity of more than 200,000 tons. Additional large low-grade deposits were developed, but research on metallurgical treatments was necessary to make exploitation profitable. World production in 1929 was about 3,500,000 tons annually, but the potential producing capacity would, within a year or two, greatly surpass this figure.

MANITOBA, mān'itō'ba. The most eastern of the Prairie Provinces of Canada, situated west of the Province of Ontario and Hudson Bay and east of the Province of Saskatchewan, extending from the American boundary north to latitude 60°. Area, 251,832 square miles, population, according to the census of 1921, 610,188, 1926, 639,056, 1929 estimate, 663,200. Capital, Winnipeg, with a population in 1926 of 191,998 (Greater Winnipeg, 280,000), Brandon, 16,443, St. Boniface, 14,187, Portage la Prairie, 6513. The movement of population in 1927 was Births, 11,129, deaths, 5294, marriages, 4712. In 1927-28 there were 4096 teachers and 148,763 pupils in the 3987 public class rooms. There are 43 high schools, 10 junior high schools, 12 collegiate departments, and 16 collegiate institutes. For higher education, there is the University of Manitoba at Winnipeg, with 2747 students enrolled for the full courses in 1927-28.

The estimated area of arable land in Manitoba is 25,000,000 acres, of which about 30 per cent is under cultivation. Mineral production, consisting mainly of building materials and gypsum, was valued at \$4,119,656 in 1928. Forestry and fisheries are other important resources. In 1929 the gross industrial production was estimated at \$165,000,000. Revenues in 1928 totalled \$10,741,076 and expenditures, \$11,243,693. The funded debt on April 30, 1928, was \$77,050,659. Railway mileage in 1928 totalled 4697 miles.

The government consists of a lieutenant-governor appointed by the Governor-General of Canada and the Legislative Assembly consisting of 55 members elected for five years. Manitoba is represented in the Dominion Parliament by six

members in the Senate and 17 in the House of Commons, Lieutenant-Governor in 1929, J. D. McGregor; Premier, President of the Council, Treasurer, John Bracken, Education, R. A. Hoey, Agriculture, Immigration, and Railways, A. Prefontaine, Lands Commissioner, Provincial Secretary, Mines and Natural Resources, Donald McKenzie; Health and Public Welfare, Edward W. Montgomery; Public Works, W. R. Clubb, Attorney-General and Minister of Telephones, W. J. Major, Municipal Commissioner, D. L. McLeod. As a result of the elections of August, 1927, the party grouping was as follows: Progressive (Government), 29, Conservative, 16, Liberal, 7; Labor, 3; Independent, 1.

For the transfer to Manitoba of its natural resources formerly held by the Dominion Government, see CANADA, under *History*.

MANUFACTURING. See BUSINESS REVIEW

MANURES. See FERTILIZERS.

MARATHON DAM. See DAMS

MARIA CHRISTINA. Queen Mother of Spain, died in Madrid, Feb. 6, 1929. She was born in Gross-Seelowitz, Austria, July 21, 1858, the daughter of Archduke Karl Ferdinand and Archduchess Elizabeth Francisca Maria. Entering a convent, Maria Christina became an abbess, but in 1879 she married Alphonse XII, King of Spain whose first wife, Queen Mercedes, had died without heir. At the death of the King, in 1885, she ruled for her infant daughter, Mercedes, who was succeeded in 1886 by a posthumous son, Alphonse XIII. Maria Christina remained Queen Regent until her son became of age, May 17, 1902. It was during her regency that the Spanish-American War took place, 1898. After Alphonse XIII reached his majority, the Queen Mother remained in seclusion with the royal family, occupied with the up-bringing of her grandchildren, and the affairs of the Roman Catholic Church.

MARIETTA COLLEGE. A nonsectarian, co-educational college in Marietta, Ohio, founded in 1835. The total registration for the autumn term of 1929 was 360 students, of whom 224 were men and 136 were women. The faculty numbered 38, eight new members having been added in 1929. The productive funds amounted to \$1,271,811, and the income for the year to \$155,752. The alumni contributed \$5633 to the current expenses of the college through the Marietta Fund. The library contained approximately 96,000 volumes. President, Edward Smith Parsons, L. H. D., LL.D.

MARINE CORPS, U. S. N. See NAVAL PROGRESS

MARINE DISASTERS. See SAFETY AT SEA.
MARINE ENGINES. See INTERNAL COMBUSTION ENGINES. SHIPBUILDING

MARION, N. C., LABOR DIFFICULTIES. See STRIKES AND LOCKOUTS

MARITIME PROVINCES. The name applied to the three Canadian provinces of Nova Scotia, New Brunswick, and Prince Edward Island. Consult those articles.

MARKETS, MARKETING. See AGRICULTURE, AGRICULTURE, UNITED STATES DEPARTMENT OF, COOPERATION, HORTICULTURE.

MARQUETTE UNIVERSITY. An institution of higher learning for men and women, under Roman Catholic direction, in Milwaukee, Wis., organized as a college in 1881 and chartered as a university in 1907. It comprises the following colleges and schools, for which registrations of regular students in the autumn of 1929 was as fol-

lows Graduate school, 226; liberal arts, 917; business administration, 299; dentistry, 182; applied science and engineering, 524; journalism, 138; law, 242; medicine, 324; music, 24; speech, 8 (with 870 students enrolled in speech courses from other schools and colleges of the university). In addition, there were 274 students in night courses in business administration, 11 in dental hygiene, 518 in high school, 139 in academic music, 63 in nursing, and 408 in teachers' courses, making a grand total of 4361 in the university. The registration for the 1929 summer session was 777. The faculty in the autumn numbered 355 members, excluding 25 high-school and 5 academic music instructors. Endowment funds amounted to \$5,480,201, including community endowment of \$1,800,000, being the amount required to yield a sum equal to the annual value of the services of the Jesuit instructors and administrative officers. The income for the year amounted to \$1,024,841, from the following

sources: Endowment income, \$187,808; tuition, \$678,174; private benefactions for increase of plant, \$67,131; for increase of endowment, \$62,969; miscellaneous, \$28,767. The university also had the services of Jesuit instructors and administrative officers who received no compensation other than maintenance, the value of their services over the cost of their maintenance in 1928-29 being estimated at \$93,000. The library contained 47,700 volumes. President, the Rev. William M. Magee, S.J., A.M., LL.D.

MARRIAGE AND DIVORCE. Preliminary figures issued by the United States Census Bureau for 1928 showed a decrease in the number of marriages over the previous year. There were 1,201,053 marriages performed in the country in 1927, as against 1,182,497 in 1928, thus making a decrease of 18,556, or 1.5 per cent. The number of marriages per 1000 of the population in 1927 was 10.12, in 1928 it was 9.85. In the latter year, there were 195,939 divorces granted

TABLE I—MARRIAGES IN THE UNITED STATES, 1927 AND 1928

Division and State	1928	1927	Marriages Per cent of in- crease *	Number per 1000 of the population 1928	1927	Number to 1 divorce
United States	1,182,497	1,201,053	- 1.5	9.85	10.12	6.0
New England						
Maine	6,178	6,279	- 1.8	7.8	7.9	4.7
New Hampshire	4,796	4,847	- 1.1	10.5	10.7	6.8
Vermont	2,897	2,766	8.4	8.5	7.8	7.6
Massachusetts	29,082	30,408	- 4.4	6.8	7.2	8.0
Rhode Island	5,111	5,461	- 6.4	7.1	7.8	7.2
Connecticut	11,650	12,068	- 3.4	7.0	7.4	9.1
Middle Atlantic						
New York	114,848	118,719	- 3.7	9.9	10.4	21.6
New Jersey	29,120	28,816	2.8	7.62	7.55	9.2
Pennsylvania	67,640	71,180	- 4.9	6.9	7.3	8.5
East North Central						
Ohio	59,339	59,296	0.1	8.7	8.8	4.1
Indiana	40,960	41,112	- 0.4	12.9	13.1	5.2
Illinois	79,725	80,222	- 0.6	10.8	11.0	5.1
Michigan	37,300	36,276	2.8	8.12	8.08	3.5
Wisconsin	15,927	16,818	- 5.2	5.4	5.8	6.0
West North Central						
Minnesota	28,249	23,328	- 0.8	8.5	8.7	8.2
Iowa	30,529	21,048	- 2.5	8.5	8.7	5.0
Missouri	37,058	37,298	- 0.6	12.5	10.6	3.7
North Dakota	4,269	3,973	7.5	6.7	6.2	9.3
South Dakota	6,738	6,004	12.2	9.6	8.6	9.0
Nebraska	9,932	9,800	1.3	7.05	7.02	6.5
Kansas	19,679	19,800	- 0.6	10.7	10.8	4.8
South Atlantic						
Delaware	1,153	1,154	- 0.1	4.73	4.75	6.2
Maryland	24,226	25,025	- 3.2	15.0	15.7	12.1
District of Columbia	5,298	5,548	- 4.4	9.6	10.3	52.5
Virginia	21,406	22,163	- 3.4	8.3	8.7	7.1
West Virginia	18,361	19,287	- 4.8	10.7	11.4	8.9
North Carolina	21,373	22,204	- 3.7	7.3	7.7	11.3
South Carolina	25,026	25,488	- 1.6	13.4	13.8	
Georgia	30,400	30,447	- 0.2	9.5	9.6	14.0
Florida	18,032	21,222	- 15.0	12.8	15.6	5.1
East South Central						
Kentucky	29,085	30,231	- 3.9	11.4	11.9	6.3
Tennessee	33,672	33,619	0.2	13.46	13.53	6.8
Alabama	28,858	29,655	- 2.7	11.2	11.6	7.6
Mississippi	30,263	29,641	2.1	16.9	16.6	10.1
West South Central						
Arkansas	27,485	26,716	2.9	14.1	13.9	6.1
Louisiana	18,427	19,941	- 7.6	9.4	10.1	9.6
Oklahoma	28,472	28,656	- 0.6	11.7	12.0	3.7
Texas	76,340	74,042	3.1	13.9	13.7	4.2
Mountain						
Montana	5,794	5,356	8.2	10.6	9.8	4.2
Idaho	4,696	4,501	3.0	8.49	8.43	4.5
Wyoming	1,808	1,818	- 0.6	7.3	7.5	2.4
Colorado	12,065	11,969	0.8	11.07	11.14	5.1
New Mexico	4,892	4,748	3.0	12.4	12.1	6.8
Arizona	6,400	4,959	29.1	13.5	10.8	6.0
Utah	5,944	5,717	2.2	11.01	10.95	5.7
Nevada	4,168	2,998	73.8	55.8	31.0	1.6
Pacific						
Washington	18,838	18,801	0.2	11.9	12.0	4.1
Oregon	7,325	7,362	3.6	8.5	8.3	2.5
California	46,945	53,487	- 12.2	10.8	12.1	3.3

* A minus sign denotes decrease.

in the country, making a rate of 1.63 per 1000 of the population, in 1927 the number of divorces totaled 192,037, making the rate 1.62. Divorces in the single year interval increased 3902, or 2 per cent. Decrease in the number of marriages performed showed a wide range throughout the country. In Florida, the number of marriages decreased 15 per cent; in California, 12.2 per cent, in Louisiana, 7.6 per cent, in Rhode Island, 6.4 per cent, in Massachusetts, 4.4 per cent, in New York, 3.7 per cent, in Pennsylvania, 4.9 per cent, in Wisconsin, 5.2 per cent, and in West Virginia, 4.8 per cent. On the other hand, certain States showed sizable increases. In Nevada, there was an increase of 73.8 per cent, largely due to the change in the California law which required three days' notice before the issuance of a license. The same law caused an increase of 29.1 per cent in Arizona. Other increases were the following: Vermont,

8.4 per cent, New Jersey, 2.8 per cent; Michigan, 2.8 per cent, North Dakota, 7.5 per cent, Texas, 3.1 per cent, Oregon, 3.6 per cent.

The rate of marriages per 1000 of the population ranged from 4.73 in Delaware and 5.4 in Wisconsin, to 1.69 in Mississippi and 53.8 in Nevada. The following were the rates for the more populous States of the country: Massachusetts, 6.8, New York, 9.9, Pennsylvania, 6.9, Ohio, 8.7, Illinois, 10.8; California, 10.3. In the country as a whole, there were six marriages to one divorce in 1928. The range was from 52.5 for the District of Columbia and 21.6 for New York State (in each of which there is only one cause for divorce) to 1.4 marriages for each divorce in Georgia down to 1.6 marriages for each divorce in Nevada.

Throughout the country, there was an increase of 2 per cent in the divorces in the one-year interval. The individual States showed wide ranges

TABLE 11—DIVORCES IN THE UNITED STATES IN 1927 AND 1928

Division and State	1928	1927	Divorces		Number per 1000 of population	
			Per cent of increase *		1928	1927
United States	195,989	192,037	2.0		1.63	1.62
New England						
Maine	1,315	1,311	0.3		1.654	1.653
New Hampshire	706	646	9.3		1.55	1.42
Vermont	396	357	54.1		1.12	0.78
Massachusetts	3,646	3,459	5.4		0.85	0.82
Rhode Island	707	722	— 2.1		0.94	1.03
Connecticut	1,276	1,425	— 10.5		0.77	0.87
Middle Atlantic						
New York	5,293	5,000	5.9		0.46	0.44
New Jersey	3,170	3,041	4.2		0.81	0.81
Pennsylvania	7,957	8,084	— 1.6		0.81	0.83
East North Central						
Ohio	14,641	14,646	(b)		2.15	2.18
Indiana	7,885	8,077	— 2.4		2.48	2.58
Illinois	15,701	14,984	4.8		2.12	2.05
Michigan	10,511	10,525	0.1		2.29	2.34
Wisconsin	2,673	2,442	9.5		0.91	0.84
West North Central						
Minnesota	2,841	2,822	0.8		1.04	1.05
Iowa	4,076	4,226	— 3.5		1.68	1.74
Missouri	10,009	9,651	4.5		2.86	2.75
North Dakota	461	506	— 8.9		0.72	0.79
South Dakota	750	685	12.8		1.07	0.96
Nebraska	1,518	1,620	— 5.1		1.09	1.16
Kansas	4,081	4,074	0.2		2.22	2.23
South Atlantic						
Delaware	185	168	13.5		0.76	0.67
Maryland	1,976	2,059	— 4.0		1.22	1.29
District of Columbia	101	146	— 30.8		0.18	0.27
Virginia	2,952	3,000	— 1.6		1.15	1.18
West Virginia	2,071	2,135	— 3.0		1.20	1.26
North Carolina	1,609	1,642	— 2.0		0.55	0.57
South Carolina	2,174	2,230	— 2.5		0.68	0.70
Georgia	3,516	4,011	— 12.3		2.49	2.94
East South Central						
Kentucky	4,610	4,614	— 0.1		1.81	1.82
Tennessee	4,985	4,878	2.2		1.99	1.96
Alabama	3,817	3,734	2.2		1.48	1.46
Mississippi	3,007	2,893	3.9		1.68	1.62
West South Central						
Arkansas	4,498	4,409	2.0		2.11	2.29
Louisiana	1,913	1,725	10.9		0.98	0.89
Oklahoma	7,762	7,642	1.6		3.20	3.21
Texas	18,071	17,290	4.5		3.29	3.20
Mountain						
Montana	1,376	1,316	4.6		2.51	2.40
Idaho	1,032	973	6.1		1.89	1.82
Wyoming	748	627	19.3		3.03	2.60
Colorado	2,362	2,370	— 0.3		2.17	2.21
New Mexico	715	646	10.7		1.81	1.65
Arizona	1,062	888	19.6		2.24	1.93
Utah	1,022	981	4.2		1.92	1.68
Nevada	2,595	1,953	32.9		33.52	25.23
Pacific						
Washington	4,554	4,277	6.5		2.87	2.74
Oregon	3,053	3,117	— 2.1		3.88	3.50
California	14,481	14,185	2.1		3.17	3.19

* A minus sign denotes decrease. (b) Less than one tenth of 1 per cent.

There were decreases of 30.8 and 12.3 per cent in the District of Columbia and Florida, respectively, as against increases of 32.9 and 54.1 per cent in Nevada and Vermont. Law changes are responsible for the figures cited in Nevada, the residence requirement was changed from six to three months, in Vermont, all divorces granted after July 1, 1927, were to be final only after the elapse of six months following the decree. Therefore, the figures for 1927 stand for the divorces of the first six months of the year. The decrease in the District of Columbia was due to the tying up of one of the courts in 1926 with the result that the 1927 total contains many of the suits of the previous year.

The tables on pages 486 and 487 present marriage and divorce data for the individual States for the years 1927 and 1928.

GREAT BRITAIN Figures issued by the Registrar General's Office show a great increase in divorces for the year 1928. The total number of decrees nisi made absolute for that year was 4018, a gain of 838 over 1927. In 1925 the number of divorces granted was 2673. Reasons advanced for the mounting total of divorces are the following: the regulation of publicity, lower costs, and declining living standards.

MARSHALL, LOUIS An American lawyer and Jewish leader, died in Zurich, Switzerland, on Sept. 11, 1929. He was born in Syracuse, N. Y., Dec. 14, 1856, was graduated from the law school of Columbia University, and in 1878 began the practice of law in Syracuse but later located in New York City becoming a member of the law firm Guggenheimer, Untermeyer & Marshall. In 1902 Mr. Marshall was instrumental in improving the housing conditions in the lower east side of New York City, and also succeeded in bringing about reforms in 1908, as chairman of the Immigration Commission. Acting as mediator of the cloakmaker's strike in 1910, he prepared a protocol of settlement which afterward was the basis of numerous strike adjustments. He led the movement for the abrogation in 1911 of the Treaty of 1832 with Russia, under which the Russian Government had been able to discriminate against Russian Jews who were naturalized citizens of the United States. In 1910 he was a member of the arbitration board which settled the strike of New York clothing workers. He served as a member of constitutional conventions in New York in 1890, 1894, and 1915. In 1920-21 he was president of the Jewish Relief Committee, which, with kindred organizations, collected \$75,000,000 for the relief of Jewish war sufferers. He was president of the committee which urged treaties with Poland, Rumania, Yugoslavia, Czechoslovakia, and other countries guaranteeing equal rights to all racial, religious, and linguistic minorities. On his seventieth birthday, he received a testimonial signed by 8000 persons in 348 cities in the United States and by officials and municipalities in many foreign countries, in recognition of his attainments and achievements. He founded the Jewish Protector and Aid Society, was director of the Educational Alliance and Dropsie College, Philadelphia, and was a trustee of Syracuse University after 1910. In addition to being an able lawyer, Mr. Marshall was a leader of the Jewish people and was prominent in adjusting the disputes between Henry Ford and the Jews, when Ford apologized for articles in his *Dearborn Independent*. At the time of his death, he had just attended the Zionist Congress in

Zurich, acting as chairman of the Jewish Agency Council meetings, in which the Zionists and non-Zionists united to carry on the work of establishing the Jewish national home in Palestine.

MARTINIQUE, mar'tinék. One of the Lesser Antilles group of the West Indies, forming a colony of France Area, 385 square miles, population, in 1927, 234,695. Capital and chief port, Fort-de-France, with a population of 43,338. Sugar, rum, cacao, coffee, tobacco, pineapples, and bananas are the chief products of the colony. Sugar production in 1928 was 39,035 metric tons. Imports in 1927 were valued at 212,594,604 francs and exports at 220,373,089 francs. Trade increased in 1928, according to preliminary figures. The export trade is confined to France and French colonies. Exports of sugar and rum constituted nearly 90 per cent of the value of all exports. The budget for 1927 balanced at 66,103,756 francs. In the same year, 550 vessels of 1,040,764 tons entered, and 560 vessels of 1,053,861 tons cleared, the ports of the island. The colony is administered by a governor, a general council, and an elected municipal council, it sends one senator and two deputies to the French Parliament. Governor in 1929, L. Gehlhus, appointed in 1927.

MARYLAND POPULATION According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,449,661. The estimated population on July 1, 1928, was 1,616,000. The capital is Annapolis.

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod.	Value
Corn	1929	525,000	19,162,000	\$16,867,000
	1928	530,000	19,345,000	17,024,000
Wheat	1929	541,000	9,468,000	11,172,000
	1928	530,000	8,745,000	11,106,000
Hay	1929	423,000	652,000	8,919,000
	1928	413,000	759,000	10,239,000
Tobacco	1929	32,000	25,800,000	6,018,000
	1928	31,000	20,460,000	5,586,000
Potatoes	1929	40,000	4,000,000	4,800,000
	1928	47,000	5,405,000	2,702,000
Sweet potatoes	1929	10,000	1,250,000	1,125,000
	1928	10,000	1,500,000	1,200,000

* Tons * Pounds

MINERAL PRODUCTION Coal continued in 1927 to hold the most important place in the list of the State's mineral products, and furnished over one-fourth of the entire value of yearly mineral production. The quantity of coal mined in 1928 was 2,686,979 short tons, to the value of \$4,954,000. In 1927 were mined 2,814,842 tons, having a value of \$5,817,000. Next in importance were the State's clay products. These reached, for 1927, the value of \$2,503,935, for 1928, \$6,073,247. The decline for 1927 was more apparent than actual, for the figures relating to 1927 did not include the value of pottery, which had been included in those for 1926. The production of pig iron, though secondary, was on the increase, attaining 845,564 long tons for 1927 and 971,832 for 1928. Stone production was 1,124,110 short tons for 1927, 1,432,290 for 1926, in value, \$2,039,243 for 1927 and for 1926, \$2,117,102. Sand and gravel contributed materially to the total value of minerals produced, which was \$20,460,294 for 1927 and \$24,066,966 for 1926.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was

1427 35 There was no reported construction of new line in 1929

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to operations of 1927, there were in the State, in 1927, 3205 manufacturing establishments. These employed 117,111 wage earners, whose wages for the year totaled \$141,902,797. Materials and supplies used in production cost \$564,120,437. Manufactured products attained the combined value of \$943,410,806.

EDUCATION The State made in 1929 what Superintendent of Schools Cook, in the *Journal of the National Education Association*, called its first adequate appropriation for the Maryland Teachers' Retirement Fund. The number of persons of school age (5 to 18 years) in the State, in the academic year 1928-29, was given as 425,114. There were enrolled in the public schools 273,532 pupils. Of these, 233,599 were in elementary, and 39,933 in high-school-grades. Expenditures for public-school education were current, \$17,777,827, total, including debt service and outlay, \$22,752,686. Salaries of teachers, by the year, averaged \$1470.

CHARITIES AND CORRECTIONS The Department of Charities and Corrections, the central organization of the State with regard to authority over institutions for the care and custody of individuals, supervises institutions, public and private, investigates applications for State aid, and administers certain of the laws covering the placement of children. Not to count State-aided institutions, there were in 1929 the following institutions supported entirely by State appropriations: Maryland Penitentiary, Baltimore; House of Correction, Jessups; Crownsville State Hospital, Crownsville; Eastern Shore State Hospital, Cambridge; Rosewood State Training School, Owings Mills; Spring Grove State Hospital, Catonsville; Springfield State Hospital, Sykesville; Maryland Tuberculosis Sanatorium, Henryton; and Mount Wilson (two branches). Maryland School for the Deaf, Frederick; Maryland Training School for Boys, Loch Raven; Montrose School for Girls, Woodensburg.

LEGISLATION The State Legislature convened in regular biennial session in January and adjourned April 1. There was enacted a bill authorizing the State to issue \$4,000,000 of its bonds to defray the cost of certain important pieces of contemplated road construction, including the widening of the Washington-Baltimore Boulevard. A measure for the recodification of the tax laws was passed. The State adopted a system of inheritance tax that concurred with the Federal system and thus came under the benefit of the Federal provision for the repayment of inheritance-tax receipts to the States, up to 80 per cent. Among measures affecting the State debt, additional to the main highway bond measure, were those authorizing \$1,500,000 of bonds for bridge construction, \$1,500,000 to match Federal contribution to post-road construction and \$3,761,000 as a general construction loan. It was prohibited by act to introduce evidence illegally obtained, in the prosecution of misdemeanors in the State courts. Provision was made for the vocational rehabilitation of the disabled. A tax of 2½ per cent on gross receipts was removed from the outright banking part of the business of trust companies.

A State waterfront commission was created,

with the duty to study means for preventing erosion and other deterioration of waterfront property in the State. The establishment of credit unions was permitted. Dealers in foods were enabled to take liens on the wages of non-paying purchasers, up to 10 per cent of such customers' wages. The city of Baltimore was authorized to reduce the tax on gross receipts of the United Railways, and borrowing authority sought by the city was granted, as to \$2,000,000 for building and maintenance of streets and \$1,500,000 to provide school facilities for handicapped children. A measure to put an end to the payment of informers' fees in all sorts of cases save for infraction of the fish and game laws was enacted, but vetoed. Vetoed also was a bill for the regulation of commission merchants dealing in farm products.

POLITICAL AND OTHER EVENTS Promise of an end to what had been known as "the oyster war" was brought by the attainment in July of an understanding between Maryland and Virginia on the subject of the respective rights of the two States in the oyster fisheries of adjacent waters. Governor Ritchie's budget provided a moderate sum for State aid to the projected construction of an \$11,000,000 bridge over Chesapeake Bay from Annapolis, by a private company. The projected bridge over the Potomac from Great Falls, Maryland, to a point in Fairfax County, Virginia, received the approval of the War Department in May. At Bethesda, in April, was unveiled the easternmost of the series of 12 statues, spanning the country, to the pioneer mothers of the days of migration by wagon.

At Baltimore was celebrated, September 12-15, the 200th anniversary of the founding of the city. The ceremonies included a military parade, a historic pageant and procession, and a concert at the Stadium. A new terminal of the Western Maryland Railway Company at McComas Street was opened in September. It was constructed by the Port Development Commission of Baltimore, at a cost of \$8,500,000, as part of its programme of \$50,000,000 of expenditure for port improvements, and was leased to the railroad. A plan was prepared in September, by which the Pennsylvania Railroad was to obtain a franchise needed for the execution of improvements connected with the electrification of its line and the construction of new tunnels, the plan included a new station.

OFFICERS Governor, Albert C. Ritchie, Secretary of State, David C. Winebrenner, 3d; Treasurer, J. M. Dennis, Auditor, Edmund R. Stewart, Comptroller, William S. Gordy, Jr., Attorney-General, T. H. Robinson, Superintendent of Schools, Albert S. Cook.

JUDICIARY Court of Appeals, Chief Judge, Carroll T. Bond, Associate Judges, John R. Pattison, T. Scott Offutt, William H. Askins, Francis N. Parke, Hammond Urner, W. M. Digges, D. Landley Sloan.

MARYLAND, UNIVERSITY OF. A coeducational, State institution of higher learning at College Park and Baltimore, Md., founded in 1867. The enrollment for the autumn term of 1929 was 2683, distributed as follows: Agriculture, 146, arts and sciences, 613, dentistry, 349, education, 132, engineering, 271, graduate school, 117, home economics, 73, pharmacy, 355; law, 104; medicine, 419; and nursing, 104. The enrollment for the 1929 summer session at College Park was 721. The faculty in 1929 num-

hered 524 The total income from appropriations and other receipts amounted to \$2,415,726. The library contained 56,821 volumes During 1929 a new dental and pharmacy building, costing with equipment more than \$500,000, was erected. President, Raymond A. Pearson, D. Agr., LL.D.

MASSACHUSETTS. POPULATION According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 3,852,356. The population by the State census of 1925 was 4,144,205 The estimated population on July 1, 1928, was 4,290,000 The capital is Boston

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929:

Crop	Year	Acreage	Prod Bu	Value
Hay	1929	478,000	705,000 *	\$13,442,000
	1928	472,000	782,000 *	13,889,000
Cranberries	1929	18,900	395,000 *	5,234,000
	1928	18,900	385,000 *	5,025,000
Tobacco	1929	7,400	10,730,000 *	4,764,000
	1928	7,600	9,469,000 *	3,227,000
Corn	1929	42,000	1,638,000	2,211,000
	1928	45,000	1,890,000	2,457,000
Potatoes	1929	14,000	1,862,000	3,352,000
	1928	15,000	1,620,000	1,458,000

* Tons * Barrels * Pounds

MINERAL PRODUCTION Stone continued the leading mineral product with regard to yearly value extracted There were produced in 1927 2,629,890 short tons of stone, in value \$7,291,969, for 1928 the quantity was 2,089,340 tons, the value, \$6,216,793 The lime production was 189,343 short tons for 1927, in value \$2,325,031 It declined to 163,000 tons (estimated) for 1928, valued at \$1,954,000 (estimated) Sand and gravel also were produced in considerable amounts and the needs of the large cities supported an important coking industry The clay products of the State attained for 1927 the value of \$2,398,474, for 1928, of \$3,971,586 The total value of the mineral product of the State was, for 1927, \$16,295,373; for 1928, \$16,786,577

FINANCE State expenditures in the year ended November 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$41,533,191 (of which \$2,519,981 was for local education), for conducting public-service enterprises, \$184,281, for interest on debt, \$1,466,824, for permanent improvements, \$8,585,695, total, \$51,769,991 (of which \$12,376,511 was for highways, \$6,570,751 being for maintenance and \$5,805,760 for construction). Revenues were \$59,348,470 Of these, property and special taxes formed 47.9 per cent, departmental earnings and remuneration for officers' services, 7.0, sale of licenses, 28.1 The State funded debt of November 30, 1928, was outstanding, \$36,190,313, net of sinking funds, \$20,439,543; it included \$8,346,000 of highway and harbor-improvement debt, but did not include the contingent debt resting directly on cities of the metropolitan district On a property valuation of \$7,161,309,871, there were levied in the year State taxes of \$8,500,000

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 2014.75 There was no reported construction of new line in 1929

MANUFACTURES According to the biennial Census of Manufactures published by the U. S. Department of Commerce in 1929, there were in the State, in 1927, 10,037 manufacturing establishments These employed 578,068 wage earners,

whose wages for the year totaled \$705,929,549. Materials and supplies used in manufacture cost \$1,678,812,411 The manufactured products attained the total value of \$3,317,851,888 For the year 1928, the Massachusetts Department of Labor and Industries reported that manufacturing establishments numbered 9971, wage earners employed by them, 540,927, that wages paid totaled \$670,003,291, that materials used cost \$1,663,155,564, and that the manufactured products attained \$3,224,227,651.

EDUCATION It was required by a regulation of the Board of Education that those seeking a diploma to teach in the State, by study in the State normal schools, must take at least a three years' course in order to qualify The maximum level of retirement pensions for public school teachers was raised by enactment There were enrolled in the public schools, in the academic year 1928-29, 744,246 pupils, and the average membership for the year was 699,071 pupils Of those enrolled, 521,868 were in elementary, 92,452 in junior high, and 129,926 in high-school grades Expenditure for public-school education totaled \$78,351,194. The yearly salaries of teachers, principals, and supervisors included averaged \$1878

CHARITIES AND CORRECTION Central authority over institutions for the care or custody of individuals was divided among four State bodies under the system that obtained in 1929. The Department of Public Welfare, headed by a commissioner, Richard K. Conant, and an advisory board of seven members, administered mothers' aid and relief to persons without legal settlement It had care of dependent, delinquent and neglected children Housing and town planning operations, private charitable corporations, infirmaries, homes for the aged, maternity hospitals and boarding homes for infants came under its supervision It expended during the year about \$5,000,000 in assistance of various sorts to some 70,000 persons, including 3208 mothers and 9534 children aided under the Mothers' Aid Law It had 6135 State minor wards in its custody on December 1, and exercised parole functions over 3152 children from the State training schools State institutions under its control, with their populations of Dec. 1, 1929, were State Infirmary, Tewksbury, 2696, Massachusetts Hospital School, Canton, 272, Lyman School for Boys, Westborough, 506, Industrial School for Girls, Lancaster, 293, Industrial School for Boys, Shirley, 295. Under the Department of Mental Diseases were insane hospitals at Worcester, Taunton, Northampton, Danvers, Westborough, Medfield, Palmer, and Boston, likewise State schools at Waltham, Wrentham, Grafton and Belchertown The Department of Public Health supervised State sanatoria at Rutland, North Reading, Lakesville, and Westfield and the Norfolk State Hospital The Commissioner of Correction had charge of the State Prison, Charlestown, Reformatory, Concord Junction, Reformatory for Women, Frammingham, State Farm, Bridgewater

LEGISLATION The Great and General Court of Massachusetts convened in its 146th session on January 2 and adjourned on June 8. Its prolonged session was largely taken up with the disposition of the municipal-railway problem of Boston and with other concerns of that city The Boston Elevated bill, passed in the closing hours of the session, created a metropolitan transportation district, composed of the com-

munities served by this railway system, including Chelsea and Revere. It provided as the ruling council of this district a body made up of mayors and of chairmen of boards of selectmen, and allowed each community one vote for every \$100,000,000 of valuation, administrative direction was to be by a board of 5 unpaid trustees. The district was to take over the Boston subways, subject to consent of the Mayor and Council of Boston, and to acquire from the State the Cambridge tunnel. The disposal of the Boston Elevated was left to determination by a referendum among the voters of the district, to be held in 1930, on the triple proposal of return to private control, extension of public control, or public ownership. Another act made provisions for an East Boston vehicular tunnel, to cost \$10,000,000. A city traffic commission and a Board of Port Authority for Boston were established. The expenditure of \$5,000,000 was authorized for addition to the Suffolk County Court House. The report of a special interim commission on the tax system was received, but the legislators took no conclusive tax action, as plans for a graded income tax, which was contemplated, were judged to require constitutional amendment, thus calling for preliminary passage of amendment proposals by two legislatures, whereas the same Legislature was to sit again in 1930 in any case. There was passed, over the Governor's veto, an increase of salaries of the members of the General Court to \$2000 a year, from \$1500. In the field of traffic regulation, there was passed a Right of Way Act giving the right of way at intersection to the vehicle first entering a prescribed intersection space, and thus varying from the general rule elsewhere giving right of way to the vehicle from the right. In the social field, an act rendered future assignments of wages invalid unless accepted in writing by employers. An attempt to enact a non-contributory old-age pension failed. Automobile drivers who had caused fatal accidents were debarred from obtaining operating licenses for ten years, and upon the occurrence of a second such accident, permanently. The pollution of beaches by the discharge of petroleum or other oil was rendered subject to a fine of \$500. A State industrial commission, with duty to promote industrial advancement, was created.

POLITICAL AND OTHER EVENTS In the municipal elections of November 5, James M. Curley, Democrat, was for the third time elected Mayor of Boston, defeating Daniel H. Coakley and the candidate of the Good Government Association, Frederick W. Mansfield. In Cambridge, Richard M. Russell was elected mayor, defeating Mayor Quinn, who had served seven terms. A movement was undertaken after the retirement of Calvin Coolidge from the Presidency to have him made United States Senator from Massachusetts, and Senator Gillett expressed his readiness to retire from his seat if Mr. Coolidge would become a candidate for it in 1930. Mr. Coolidge did not express himself as favoring the proposal. Opponents of the State prohibition law gathered signatures well in excess of the required 20,000, to a petition for Legislative action or, alternatively, a State referendum on its repeal in 1930. The petition was filed with the Secretary of State. The spirit of antagonism between the liberal and the stricter element in the population was evidenced on March 17, when Senator Heflin of Alabama, visiting Brockton to address a local

branch of the Ku Klux Klan, was jeered and pelted with mud.

Difficulties over the administration of the State law imposing compulsory automobile insurance took the form of increase in the insurance rates, imposed by the Insurance Commissioner. The insuring companies, though dissatisfied with the working of the law, opposed the effort of the Registrar of Motor Vehicles to obtain by petition a direct vote of the people on a plan to establish direct State insurance. A decision of the United States Supreme Court, rendered on May 27, found against Massachusetts, with regard to its method of reckoning corporations' income from tax-free securities, in computing their levies under the State's corporate excise tax. The Legislature's commission on taxation prepared a report summarized as altering the fiscal system in many respects and particularly as striving to extend the taxation of intangible property.

In Boston the activities of the Watch and Ward Society and of others favoring a strict repression of publications and plays deemed obscene continued. Voltaire's *Canide* was excluded as not a fit book for sale. The July issue of *Scribner's Magazine* was barred from sale. A production of the play *Strange Interlude* was forbidden and the production was removed to Quincy. A criminal conviction was imposed on a bookseller in December by an East Cambridge court for selling a book by D. H. Lawrence. Work on the tunnel under the towns of West Boylston, Holden, Rutland, and Oakham, to carry water to the Metropolitan District water system from the Ware and Swift rivers progressed, at the end of July, 9 miles of this tunnel were reported as having been dug and cement-lined. Connecticut, in its effort to prevent the diversion to this tunnel of water that would otherwise pass down the Connecticut River, sued for an injunction from the United States Supreme Court to prevent the board of Army Engineers from approving the diversion, but the Court refused, in April, to enjoin.

OFFICERS Governor, Frank G. Allen, Lieutenant-Governor, William S. Youngman, Secretary of the Commonwealth, Frederic W. Cook, Treasurer, John W. Haigns, Auditor, A. B. Cook, Attorney-General, Joseph E. Warner, Commissioner of Education, Payson Smith, Commissioner of Public Welfare, Richard K. Conant.

JUDICIARY Supreme Judicial Court Chief Justice, Arthur Prentice Rugg, Associate Justices, John Crawford Crosby, Edward Peter Pierce, James Bernard Carroll, William C. Waite, George A. Sanderson, Fred Tarbell Field.

MASSACHUSETTS AGRICULTURAL COLLEGE. A State institution for agricultural training in Amherst, Mass., founded in 1867. The enrollment for the summer session of 1929 was 152 students and for the autumn of 1929, 592 students, distributed as follows: Seniors, 115, juniors, 115, sophomores, 160, freshmen, 200, specials, 2. There were 190 faculty members, including 108 resident-teaching, 60 experiment-station, and 22 extension-service, members. The income for 1929 was received from the following sources: State appropriation, \$992,910, Federal appropriation, \$161,958, and endowment and trust funds, \$139,280. There were 90,000 volumes in the library. The curriculum was re-organized in 1929 on the basis of five major fields of specialization: Agriculture, horticulture, home

economics, physical and biological sciences, and social sciences. A new building was constructed as a laboratory for horticultural manufactures, and the alumni of the college conducted a campaign to raise \$350,000 with which to build a physical education building. President, Roscoe W. Thatcher, D Agr, LL D.

MASSACHUSETTS BAY TERCENTENARY. See CELEBRATIONS.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. A nonsectarian institution for technical education in Cambridge Mass, founded in 1861. The enrollment for the autumn of 1929 was 3006, including 445 graduate and eight unclassified students. For the summer session, the enrollment was 1571. There were 220 members of the faculty and 295 others on the staff of the institute. The productive funds amounted to \$30,100,000, and the income for the year was \$3,275,000 received from various sources, as follows: Funds, \$1,675,000, student fees, \$1,175,000; miscellaneous, \$425,000. The book value of land and buildings in Boston and Cambridge was \$13,863,000. The library contained 260,000 volumes. An aeronautical engineering laboratory was completed in 1929. President, Samuel Wesley Stratton, D Eng, D Sc, LL D, Ph D.

MATERNITY PROTECTION. It will be interesting to watch the progress of this work in each State of the United States, with the lapse of the Shepherd-Towner Act in 1929. These columns have reviewed annually the activities of local units in the protection of mothers and infants, made possible as a result of the Federal grants-in-aid. Under the Shepherd-Towner Act, 45 States and Hawaii were matching the appropriations of the Federal Government for the creation of health centres, visiting-nurse services, conferences, and demonstrations. The Children's Bureau, in reviewing the history of the act up to the close of the fiscal year 1928, sees the tendency increasing of putting the maternity and infancy work on a permanent, locally-supported county-wide basis. If this is an indication, it is possible to predict that the removal of Federal aid will not cause the abrupt cessation of one of the most important pieces of social work undertaken by public authority in recent years. The Children's Bureau finds that during the year 1927-28, 211 new counties inaugurated programmes and 171 counties in 23 States underwrote their programmes from their own local funds. During the period being reviewed, 29 States reported that nurses were working in counties, communities, or cities. As a result of the fiscal decentralization above referred to, the establishment of permanent centres for prenatal and child care in smaller communities has resulted. During the fiscal year 1927-28, 322 new permanent centres were established in which facilities for prenatal and child-health work were being provided. More than 313,000 infants and pre-school children and more than 20,000 expectant mothers were examined by physicians, dentists, or nurses at the various types of conferences held in the 45 States and the Territory of Hawaii, cooperating under the Maternity and Infancy Act.

In addition, the work performed included more than 700,000 visits of instruction to homes by nurses, the distribution of more than 6,000,000 pieces of health literature, the delivery of more than 23,000 talks on health subjects, and the creation of a large number of formal classes

for adults and young girls for instruction in subjects relating to maternal and infant care. In Pennsylvania, 19,219 children were examined at conferences, in New York, 13,841. In Alabama, Indiana, New Jersey, North Carolina, and Utah, more than 10,000 children were examined. In New York, 4324 expectant mothers were examined, while Georgia was second, with the examination of 2998. The work has enlisted a large roll of full-time paid and volunteer workers. In the 45 States and Hawaii cooperating under the act, the total number of workers was 1600, of whom 353 were full-time paid employees. Twenty States reported 7000 volunteer assistants, including physicians, nurses, dentists, and lay persons.

An interesting development under the programme has been the preoccupation by most of the States with the problems presented by special groups in the community. Michigan, New Jersey, New York, and Pennsylvania concerned themselves with the regulation and supervision of white midwives working among immigrant mothers. In Rhode Island, staff workers met incoming steamers and created contacts with newly arriving foreign mothers and babies. In the Southwest, special attention was being paid the problems presented by the growing Mexican populations. In Arizona, New Mexico, California, and Texas, by the dissemination of texts in Spanish and through visiting nurses, Mexican groups were being served in larger numbers. Certain States have done special work with Indian groups in cooperation with the United States Indian Service. In Hawaii, health conferences at the clinics that have been established have succeeded in reaching the following groups: Hawaiians, Filipinos, Japanese, Chinese, Portuguese, and Americans. Almost all of the States having Negro populations have inaugurated programmes for the improvement of the hygiene and care of Negro mothers and babies. Negro midwives have been instructed and supervised, and visiting Negro nursing services have aided greatly in the raising of the living, sanitation, and health standards among their own people.

SPAIN. In March, 1929, a decree was issued establishing a compulsory maternity insurance system in this country. Under it, women during confinement were to receive medical attention, maternity and welfare institutions for their service were to be maintained, and provision was included for the granting of allowances to women during the compulsory period of rest preceding and following confinement. The beneficiaries, under the decree, are all female wage earners who are subject to the compulsory old-age pension insurance act. The benefits include medical attention and cash benefits to be paid for six weeks before and six weeks after confinement (cash benefits are made only in the cases of those persons who have been insured for at least 18 months under the old-age-pension system). The maternity insurance system was to be built up from contributions made by each insured woman, by the employers, and by State subsidies.

MATTHEWS, math'uz (JAMES) BRANDER. American critic, author, and educator, died in New York City, Mar. 31, 1929. He was born in New Orleans, La., Feb. 21, 1852, and was graduated from Columbia College in 1871 and from the Columbia Law School in 1873. Admitted to the bar in 1873, he practiced law for two years before turning to writing. From 1892 to 1900, he

was professor of literature at Columbia University, and from 1900 to his retirement in 1924, professor of dramatic literature. It was in this field that Professor Matthews later was best known. At Columbia University, there is the Brander Matthews Dramatic Museum, a collection made by him of model stage sets showing the history and progress of the drama. He spent much time in London and Paris, being as familiar with the drama of these cities as with that of his own New York. He was considered an authority on French drama and wrote *French Dramatists of the Nineteenth Century* (1881) and *The Theatres of Paris* (1880). Professor Matthews did much of his writing in the late Victorian period, having as friends William Dean Howells, Rudyard Kipling, Mark Twain, and others of that day. His name is associated with a number of literary movements. He was one of the founders of the Authors Club and of the Players Club, and an organizer of the American Copyright League. During 1922-24 he was chancellor of the American Academy of Arts and Letters and in 1906, first chairman of the Simplified Spelling Board. The French Government bestowed upon him the ribbon of the Legion of Honor in 1907 and made him an officer in 1922. His works include *Americans and Briticisms* (1892); *Aspects of Fiction* (1896, rev. in 1902); *An Introduction to the Study of American Literature* (1896); *His Father's Son*, a novel (1895); *Vignettes of Manhattan* (1894); *Studies in Local Color* (1898); *A Confident To-morrow* (1900); *Margery's Lovers* (1884); *In the Vestibule Invited* (1892) and *The Decision of the Court* (1893), comedies, *Parts of Speech, Essays on English*, *The Philosophy of the Short Story* (1901), *Actors and Actresses of the United States and Great Britain* (5 vols., 1886), with Laurence Hutton, *The Development of the Drama* (1903), *The Short Story* (1907), *Americans of the Future and Other Essays* (1909), *Moliere His Life and Works* (1910), *Shakespeare as a Playwright* (1913), *On Acting* (1914), *The Oxford Book of American Essays* (1914), *These Many Years* (1917), *Playwrights on Playmaking* (1923).

MAURITANIA. A French colony in French West Africa, consisting of eight districts; having the status of a colony since Jan. 1, 1921. Area, 347,400 square miles, native population, 289,184, mostly Moorish Mohammedans, European population, about 800. The budget for 1927 was 11,725,800 francs. The colony is under a lieutenant-governor, subject to the Governor-General of the French West Africa. Lieutenant-Governor in 1929, M. Choteau, appointed in 1928. See FRENCH WEST AFRICA.

MAURITIUS, mar-ree'zhus. An island possession of Great Britain in the Indian Ocean situated 500 miles east of Madagascar. With its dependencies of Rodrigues, Diego Garcia, the St. Brandon group of six islands, and other small islands, it forms a colony of the British Crown. Area of Mauritius, about 720 square miles, population, according to the census of 1921, 385,074. The estimated population in 1927 was 401,693. Capital, Port Louis, with a population of 54,114 in 1927 (including suburbs). In recent years the greater part of Port Louis has passed from the hands of the Europeans to Asiatic or Chinese hands. The movement of population in 1927 was Birth rate, 36.7 per thousand (exclusive of Indians), death-rate, 23.6 per thousand (also ex-

clusive of Indians). Primary education is free but not compulsory. At the end of 1927 there were 57 government schools, 94 aided schools, and 3 technical schools. The average attendance in government schools in 1927 was 9861, in aided schools, 13,370, more than three-fourths of whom were in Roman Catholic schools. In 1927 the exports were valued at £3,774,203 and the imports at £3,679,042. The staple exports are sugar, copra, aloe fibre, and coconut oil. The principal participants in the foreign trade are the United Kingdom, India, and Burma. Revenue in 1926-27, 14,682,907 rupees, expenditure, 16,461,062 rupees (one rupee exchanged at \$0.363 in 1927). Vessels entered in 1927, 224 of 622,936 tons, vessels cleared, 226 of 625,524 tons. Railway mileage, 144, of which 24 miles are narrow gauge. There is cable connection with Australia, South Africa, and the islands of Madagascar, Zanzibar, and Réunion. The colony is under a governor aided by an executive council and a council of government, the latter having a minority of elected members. The Governor in 1929 was Sir Herbert James Read.

MAX, maks, PRINCE OF BADEN. A German statesman, died in Constance, Germany, Nov. 5, 1929. He was born in Baden-Baden in 1867, studied law and entered the army, from which he retired without active service. From 1907 to 1918, he was president of the First Chamber of the Baden Diet. In October, 1918, with collapse threatening the country, he was called to be Chancellor of Germany, a post which he held for five weeks. He it was who signed the request for the Armistice and proclaimed the Kaiser's abdication. He was bitterly attacked by Nationalists for having acted with undue haste. In his *Reminiscences and Documents* (1927, Eng. trans., 1928), he sought to defend himself against the charges made by Ludendorff and other monarchists.

MAXWELL, ANNA CAROLINE. An American superintendent of nurses and hospital organizer, died Jun. 2, 1929, in New York City, and buried with military honors in Arlington National Cemetery in Washington. She was born in Bristol, N. Y., Mar. 14, 1851, and entered the nursing profession about 10 years after the Civil War. She had her first training in the matron's course at the New England Hospital in Boston, and later studied at the Boston City Hospital. In 1881 she assumed charge of the training school for nurses at the Massachusetts General Hospital, remaining there for eight years. She established in 1892 the Presbyterian Hospital School of Nursing in New York City, and was at its head until her resignation in 1921. During the Spanish-American War, Miss Maxwell received the title "The American Florence Nightingale" because of her work in connection with epidemics in the war camps. She was herself director of the staff of nurses at Chickamauga Park, Ga. When the American Red Cross was re-organized shortly after this, she was active in securing the inclusion of nurses in the work of the society. At the time of the World War, she was in charge of the Presbyterian Hospital overseas unit and went twice to France to aid in organizing the nursing service of the A. E. F., for which she was decorated with the Médaille d'Hygiène Publique by the French government. The nurses home of the Medical Center, opened in New York City in 1928, was named the Anna C. Maxwell Hall as a tribute to her service.

MAXWELL, GEN., THE RT. HON. SIR JOHN GREENFEL English army officer, died Feb. 21, 1929, in Cape Town, South Africa. He was born July 12, 1859, was educated at Cheltenham College, and in 1879 joined the 42d Highlanders. He served in the Egyptian War of 1882 and was staff captain in the Nile Expedition in 1884-85. With the Egyptian Field Force in 1885-86, he was present at the engagement at Gmisa, where he won the D. S. O. He commanded the 14th Brigade in South Africa in 1900-01, where he was also Military Governor of Pretoria. For this service, he was twice mentioned in despatches, won the King's and Queen's medals, and was made Knight Commander of the Bath and Commander of St. Michael and St. George. In 1908-12 he commanded the English Forces in Egypt, and again in 1914-15, the opening years of the World War, for which he was made Knight Commander of St. Michael and St. George. On his return to England in 1916, Sir John was made commander-in-chief of the Forces in Ireland, with full powers as a military governor, to put down the Sinn Féin Rebellion. His fearless and severe methods restored order in Dublin within a week and he was made Knight of the Grand Cross of the Bath. From 1916 to 1919, he was commander-in-chief of the Northern Command, and in 1920 he was a member of Lord Milner's mission to Egypt. In 1922 he was promoted to the rank of general and retired. His long and successful career as a soldier brought him honors and decorations from several European countries.

MAYBACH, MI'BAO, WILHELM A German engineer and inventor, died Dec. 29, 1920, in Stuttgart. He was born Feb. 9, 1846, in Heilbronn. From 1872 to 1882, he was at the head of the construction department of the Deutz Gas Engine Works. Associated there with the inventor Daimler, he made several contributions to internal-combustion-engine and motor-car development, among them a design for a benzine-driven engine (1874). Taking over the technical management of the Daimler Motor Company at Daimler's death in 1900, he built the Mercedes car (1901), in which he made a number of improvements. He retired from the motor-car industry in 1907. Associated later with Count Zeppelin in the building of airships, Maybach made an important contribution in the 12-cylinder airship motor constructed with the aid of his son Karl. The Maybach engines were used in airships during the World War. It was the engine used in the Graf Zeppelin in its round-the-world flight in 1929.

MAYNARD, CHARLES JOHNSON American ornithologist, died Oct. 15, 1929, in West Newton, Mass., where he was born May 6, 1845. He was educated at the common schools and began the study of nature on his mother's farm when a child. In 1875 he was elected vice president of the Nuttall Ornithological Club of Cambridge, Mass., and was the founder and editor of the *Nuttall Bulletin*, an ornithological paper. From 1910 to 1919, he was instructor of economic bird study in the Massachusetts Agricultural College. Mr. Maynard's special field of investigation was the vocal organs of birds, the discovery of the vocal organs of the American bittern being attributed to him. He was the author of a number of books growing out of his work, among them *Naturalists' Guide, Birds of Eastern North America, Butterflies of New England, Field Directory of the Birds of Eastern North America,*

Atlas to the Directory of the Birds of Eastern North America; Records of Walks and Talks with Nature (12 vols.).

MAYOTTE (ma-yô't') AND COM'ORO ISLANDS. An archipelago midway between Africa and the northern end of Madagascar, belonging to France and administered by the Governor-General of Madagascar. Total area, about 790 square miles, population in 1921, 109,860, in 1925, 119,305. The area of Mayotte is 140 square miles, and the population (1925) about 12,674. Vanilla is one of the chief products, others are sugar, cacao, aloes, and perfumes. The chief imports are cotton fabrics, metals, and rice; the principal exports, hides, sugar, copra, and vanilla.

MEASLES. Professor Fischl of Prague having expressed the opinion that the disease, measles, may have undergone some changes in its type, a number of distinguished pediatricians were interviewed and their opinions were published in the *Deutsche medizinische Wochenschrift* for September 20. Fischl believes the disease to be milder than formerly and sometimes without rash, contagion is less marked, there are more abortive cases. Most of the opinions are adverse, no such changes in type having been observed while others partially support Fischl's claims. Klotz of Lubeck no longer sees a 3- to 5-year recurrence of measles incidence such as formerly obtained, but otherwise notes no differences. Fischl sums up the change of type in the words, "Measles has changed from a facultative to an obligate disease," but none of his colleagues will go so far. The individual variations of incidence may be explained without such a sweeping generalization. The change, if any, may be only transitory and only an observation period of many years could decide so momentous a question. Fischl's views might lead to the abolition of compulsory notification, and he moreover seems opposed to the use of convalescent serum on economic grounds at a time when health officers throughout the world are seeking how to obtain sufficient supplies for control of the disease. The subject of measles pneumonia does not appear to have been included in the discussion.

MEAT. See LIVESTOCK.

MECHANICAL ENGINEERS, THE AMERICAN SOCIETY OF. An organization founded in April, 1880, to promote the art and science of mechanical engineering and the allied arts and sciences. It includes 16 professional divisions organized on the basis of a common interest in a branch of engineering within the scope of the society. Aeronautics, applied mechanics, fuels, hydraulic, iron and steel, machine-shop practice, management, materials handling, national defense, oil and gas power, petroleum, power, printing industries, railroad, textile, wood industries. In 1929, 70 local sections had been established in industrial centres throughout the United States, and 96 student branches had been formed in engineering colleges and technical schools. At the beginning of its new fiscal year on Oct. 1, 1929, the total membership of the society was 19,437.

The fiftieth annual meeting was held in New York City Dec. 2-6, 1929. The discussions at this meeting centred around such topics as hydraulic power, applied mechanics, machine-shop practice, fuels, materials handling, cutting metals, economics of delivery vehicles, mechanical springs, lubrication, steam-tables research, production management, central-station power, railroads, oil and gas power, boiler-feedwater studies, acro-

nautics, textiles, rail-motor cars, refrigeration, furniture production, education and training for the industries of non-college type. The celebration of the fiftieth anniversary of the founding of the society was to be held April 5-8, 1930, in New York City at the headquarters of the society and at the offices of the *American Machinist*, in Hoboken, N. J., at the Stevens Institute of Technology, its birthplace, and in Washington.

In association with representatives of many other organizations, a large number of members of the society have contributed to the advancement of the profession through the work of the technical committees on power test codes, boiler codes, standardization, safety, and research, all of which cover the field of mechanical engineering in its broadest aspects. During 1929 eight standards and codes were completed and issued in pamphlet form. Other publications of the society were *Mechanical Engineering*, the monthly journal, *Transactions*, containing the year's papers of specialized interest and issued yearly in 36 sections, the annual *Record and Index*, containing annual reports, necrology, and an index to all publications of the society for the year, the *Engineering Index*, a comprehensive index to the engineering literature of the world, *Mechanical Catalogue*, formerly the Condensed Catalogues of Mechanical Equipment, and the *A S M E News*, the semi-monthly newspaper. Among the books published under the auspices of the society during 1929 were *Hydraulic Laboratory Practice*, edited by John R. Freeman, *Dictionary of Aeronautical Terms, Biography of Robert Henry Thurston*, by W. F. Durand, and the *Lincoln Arc-Welding Prize Papers*.

The officers and council members elected for 1930-31 were: President, Charles Piez, past presidents, W. F. Durand, W. L. Abbott, Charles M. Schwab, Alex. Dow, Elmer A. Sperry, vice presidents, Robert L. Daugherty, William Elmer, Charles E. Gorton, Paul Doty, Earnest L. Jahneke, Conrad N. Lauer, Ralph E. Flanders, managers, Frederick H. Dozier, William A. Hanley, Harvey N. Davis, Charles M. Allen, Robert M. Gates, Ely C. Hutchinson, James D. Cunningham, Clarence F. Hirschfeld, Harold V. Coes, treasurer, Erik Oberig, secretary, Calvin W. Rice. Headquarters are at the Engineering Societies Building, 29 West 39th Street, New York City.

MEDARY, MITTON BENNETT. American architect, died in Bala, Pa., Aug. 7, 1929. He was born in Philadelphia, Feb. 6, 1874, and in 1890-91 was a student at the University of Pennsylvania. From 1895 to 1905, he was associated with Field & Medary, architects. During 1905-10 he practiced alone, and in 1910 entered the firm of Zantzeiger, Borie & Medary. He was appointed a member of the National Commission of Fine Arts by President Harding in 1922, and a member of the National Capital Park and Planning Commission by President Coolidge in 1926. Secretary Mellon appointed him a member of the Board of Architectural Consultants of the United States Treasury Department in 1927. He was also consulting architect for Cornell University, Mount Vernon on the Potomac, and the Roosevelt Memorial Association. Mr. Medary was a member of the American Institute of Architects, of which he was president in 1926-28. In March, 1929, he was presented with the gold medal of the Institute.

MEDFLY (MEDITERRANEAN FRUIT FLA.) See ENTOMOLOGY, ECONOMIC, HORTICULTURE.

MEDIAEVAL LANGUAGE AND LITERATURE. See PHILOLOGY, MODERN

MEDICAL ASSOCIATION, AMERICAN. A union of the constituent, or State and Territorial, medical associations, founded in 1847 "to promote the science and art of medicine and the betterment of public health." The legislative powers of the association are vested in a house of delegates which is empowered to transact all business not provided for in the by-laws and elects the general officers and the board of nine trustees. Members of the association must be members of constituent associations, and these members, in good standing, constitute the scientific assembly of the American Medical Association, which meets annually to present and discuss subjects pertaining to the science and art of medicine. This assembly is divided into 16 sections, each having its own officers who serve for a year. Some of the sections are practice of medicine, surgery, general and abdominal, preventive and industrial medicine and public health, radiology; nervous and mental diseases, pathology and physiology, obstetrics, gynecology and abdominal surgery, orthopedic surgery, urology, diseases of children, ophthalmology, pharmacology and therapeutics, dermatology and syphilology, and gastro-enterology and proctology.

The 1929 annual convention met in Portland, Oreg., July 8 to 12, with an attendance of about 4000. At this meeting 15 sections of the scientific assembly were in session, and leading authorities and investigators in the field of medical science announced and discussed the latest discoveries and methods in treating the sick. The 1930 annual convention was scheduled to meet in Detroit, Mich., June 23 to 27. The membership of the association in 1929 totaled 96,490. The officers for 1929-30 were: President, Malcolm L. Harris, (Chicago); president-elect, William Gerry Morgan, (Washington); vice president, Ernst A. Sommer, (Portland, Oreg.); secretary and general manager, Olin West, (Chicago); treasurer, Austin A. Hayden, (Chicago); and editor, Morris Fishbein, (Chicago). The publication is the *Journal of the American Medical Association*. The headquarters of the association are at 535 North Dearborn Street, Chicago, Ill.

MEDICINE, PROGRESS OF. The choice of subjects discussed in the present volume is practically the same as in recent years. With a few exceptions, they are diseases, notably those which present problems of public health and organized private benevolence. Subjects outside the domain of disease which receive attention comprise vitamins and internal secretions (see INSULIN, SECRETIONS, INTERNAL, and VITAMINS).

Two articles on surgical subjects are SURGERY AND WOUNDS. Discussions of acute transmissible diseases will be found in articles on BOTULISM, ERYSIPELAS, INFECTION PARATYPHOID, MALT FEVER, MEASLES, MENINGITIS, PNEUMONIA, SMALLPOX, TYPHUS, TYPHOID, TYPHUS, and YELLOW FEVER, while corresponding articles on chronic communicable diseases are LEPROSY, SYPHILIS, TRICHINOSIS, and TUBERCULOSIS. Of chronic diathetic diseases, the following are represented: ANEMIA, PERNICIOUS, CANCER, DIABETES, and RICKETS. There are separate articles on ANGINA PECTORIS, ARTERIOSCLEROSIS, and HEART, DISEASE OF—all of which have to do with the circulatory system, while the nervous system is represented by EPILEPSY and INSANITY.

APPENDICITIS, GALLSTONE DISEASE, and GOITER are typical surgical affections. The article on **BERI BERI** throws doubt on the position of this affection as a deficiency disease.

MEDITERRANEAN FRUIT FLY. See ENTOMOLOGY, ECONOMIC, HORTICULTURE

MEISSEN, ANNIVERSARY OF FOUNDING See CELEBRATIONS

MELBOURNE, ARCHBISHOP OF See LEES, THE MOST REV HARRINGTON CLARE.

MELCHETT, LORD See TRADE UNIONS

MELONS. See HORTICULTURE

MENINGITIS, EPIDEMIC. According to editorials in the *Journal of the American Medical Association* for June 15 and August 10, there was an increasing incidence of epidemic cerebrospinal fever on the Pacific coast which may be due to infected passengers on the Pacific steamers. Thus, an outbreak occurred among incoming Filipino steamer passengers although this importation was being prevented by preventive measures by health officers and the steamship companies. The outbreak among the Filipinos could probably be traced to the Shanghai epidemic of the winter and spring of 1928-29. As a result of the steamer outbreak, the steamer capacity of the steamships was reduced 75 per cent, effective in July. Money was needed for increased quarantine facilities in San Francisco and Seattle. Thus far, only American shipping companies were concerned and it remained to be seen what other nations would do in this particular. So rapid are the developments of modern sanitation that it is impossible for private institutions to keep pace with them, especially since it often means more or less hardship and expense.

MENTAL DEFECTIVES. See CRIME

MENTAL HYGIENE. See PSYCHOLOGY

MENTAL TESTS. See PSYCHOLOGY

MENUHIN, YEHUDI See MUSIC, under Artists.

MERCURY. See QUICKSILVER

MERCURY-ABC RECTIFIERS. See DYNAMO-ELECTRIC MACHINERY

MERRILL, GEORGE PERKINS American geologist, died in Auburn, Me., Aug. 15, 1929. He was born in that city on May 31, 1854, and was graduated from the University of Maine in 1879. He studied in 1879-80 at Wesleyan University, where he was also assistant chemist, and at The Johns Hopkins University in 1886-87. In 1881 he was assistant in the geological department of the U. S. National Museum in Washington, D. C., becoming head curator of geology in 1897. From 1893 to 1915, he was professor of geology and mineralogy at George Washington (formerly Columbian) University. He was expert special agent of the Twelfth Census in stonequarry statistics. His works include *Stones for Building and Decoration* (1891, 3d ed., 1903), *A Treatise on Rocks, Rock-Weathering, and Soils* (1897; 2d ed., 1906), *The Non-Metallic Minerals* (1904, 2d ed., 1910), *The Fossil Forests of Arizona* (1911), *The First 100 Years of American Geology* (1924), contributions to dictionaries and encyclopedias, and scientific papers dealing more particularly with meteorites and petrography.

MERSEY, FIRST VISCOUNT OF See BIGHAM, JOHN CHARLES

MESOPOTAMIA. See ARCHAEOLOGY, IRAQ

MESSAGE, ANDRÉ. A distinguished French composer and conductor, died in Paris, Feb. 24, 1929. He was born in Montluçon, Allier, Dec.

30, 1853. After graduating from the Ecole Niedermeyer in Paris, he continued to study under Saint-Saëns. In 1874 he became organist at St-Sulpice, then was conductor at Brussels for some time, returning to Paris as organist at St-Paul-St-Louis. The success of several light operas led to his appointment in 1898 as conductor at the Opéra Comique. During 1901-07 he was artistic director at Covent Garden, and from 1908 to 1914, first conductor and, with Broussan, director of the Grand Opéra. In 1908 he also was elected Marty's successor as conductor of the famous Concerts du Conservatoire, with which organization he made a most successful tour of the United States (50 concerts) in 1918-19. On his return to Paris, he resigned the conductorship of this orchestra, was conductor again at the Opéra Comique for one season (1919-20), and then became musical director at the Casino in Cannes. In 1907 he was made an officer, and in 1927, a commander, of the Legion of Honor. As a composer, he cultivated almost exclusively the opera and ballet. His principal operas (premieres at Paris, unless specially noted) are *La Fauvette du Temple* (1885), *La Boernasse* (1885), *Le Bourgeois de Calais* (1887), *Isoline* (1888), *Le Mari de la Reine* (1889), *La Basoche* (1890), *Miss Dollar* (1893), *Madame Chrysanthème* (1893, Chicago, 1920), *Mirette* (London, 1894), *Le Chevalier d'Hamentel* (1896); *La Fiancée en Loterie* (1896), *Les petites Michu* (1897), *Comique* (1898), *Les Dragons de l'Impératrice* (1905), *Fortunio* (1907), *Béatrice* (Monte Carlo, 1914), *Monsieur Beaucaire* (Birmingham, April, 1919, New York, December, 1919), *La petite Fonctionnaire* (1921), *L'Amour masqué* (1923).

METABOLISM STUDIES. See FOOD AND NUTRITION.

METALLURGY. Of chief interest to metallurgists during the year 1929 was the pronounced advance made in the development of new alloys and their adaptation to industry, the wider application of chromium and cadmium plating, and the increasing production and use of zinc of a purity not heretofore attained commercially, a purity that makes possible its use in die casting and for other purposes for which zinc was not hitherto acceptable. The technology of ore dressing, concentration, hydrometallurgy and pyrometallurgy remained substantially unchanged, though numerous advances in the refinements of practice continued to be made.

ORE DRESSING. Common practice in primary breaking is divided between the use of jaw crushers and gyrators, with cone crushers or rolls used for reduction from 8 or 10 inches down to less than an inch. Cone crushers are ordinarily used in new installations. For primary grinding, rolls may be used as one stage in the process, though the finely crushed ore is usually next treated in ball or rod mills. For fine grinding, the ball or tube mill has no competitors. Classifiers are ordinarily used in closed circuit with the grinding mills, and screens with the crushing machinery. No new principles have been evolved in the construction of any of these types of machinery, though new attainments in respect of size were reached. For instance, a 54-inch gyratory, weighing 350 tons and with a capacity of crushing 10,000 tons a day to 6 inches was built, the same company also undertaking to build a 56 x 72-inch jaw crusher, next to the largest jaw-type breaker yet constructed. Vibrating screens

with electric vibrating equipment four times as powerful as any hitherto used in mining work were built, and a double-deck screen, with the deck movements opposed and balanced, was put on the market. Heavier wire cloth for screening was developed, both in the finer meshes and for severe service on trommels. Following experimental installations of ball mills 10 feet in diameter, several additional mills of this extreme size were put into operation, and improvements were made in more efficient linings and discharge media. The advantages of bowl classifiers in close sizing of ball mill products were generally realized and their installation was much more common than formerly. The tendency to an increased amount of stage grinding, with classification at each stage, continued, with three stages common in large flotation plants.

Added refinements were made in selective flotation through the use of new reagents, new types of machines, more closely regulated feed, and increased knowledge of the mineralogical composition of the ore to be treated. As reagents, the xanthates of the higher alcohols were coming into use and sulphiding was often resorted to where some of the valuable mineral was oxidized. Or the oxide may first be reduced to metallic copper by heating with salt and charcoal, a process that has been evolved for African use, and flotation subsequently applied. The various patents covering cells in which the air is admitted freely from submerged pipes were combined and the so-called matless cell further developed by one manufacturer with excellent results, though flotation cells with mechanical impellers and with porous canvas mats were still favored by many, even for new installations. In determining the proper flotation treatment of an ore, the microscope was being increasingly used, especially at the larger plants that maintain research staffs. Exceedingly valuable knowledge as to the degree of oxidation necessary is also thereby gained. A more general use of flotation pulp, through determination of the so-called pH factor was also becoming general in well-run flotation plants.

HYDROMETALLURGY The cyanide process is so well standardized for the treatment of gold and silver ores that little change is registered from year to year. Some amalgamation was still used on free-milling ores, but by far the greater tonnage was leached in cyanide solution and precipitated with zinc dust. Sometimes flotation concentration preceded cyanide treatment, either the concentrate being cyanided or the tailing, in which latter case the concentrate was sent to a smelter. The recovery of cyanide in usable form from waste solutions containing simple alkaline cyanides and alkaline-zinc cyanides was done at several plants, and its recovery from more complex compounds with sulphur and base metals other than zinc was a promising avenue of research already partially explored. Thus may the effect of cyanicides be partially overcome.

Of chief interest in the leaching of copper ores is the decision of the Inspiration Company to segregate the sand and slime for separate treatment. Leaching by percolation of the acid through the ore bed will be greatly improved, so far as the sand is concerned, and methods more appropriate to slime treatment, including agitation, can be applied to the other constituent of the ground ore.

Considerable advance was made in treatment

of zinc concentrates, both by hydrometallurgical and pyrometallurgical methods. A new electrolytic plant using the Tainton process was completed at East St. Louis, Ill., during the year, and all refineries brought their commercial product up to a purity of 99.98 per cent or better.

The copper refining capacity of the world further was increased by the building of the Nichols plant at El Paso, Tex., which went into service at the end of 1929, with a capacity of 100,000 tons a year. A new refinery with a capacity of 120,000 tons a year was under construction at Copper Cliff, in Ontario. Both of these plants use the multiple process, a distinguishing feature of the construction being the use of lead-lined reinforced concrete tanks for the electrolytic cells. The tanks at El Paso are built en bloc, while those at Copper Cliff are of sectional construction. Concrete tanks were also finding increasing favor in the new construction at the older refineries.

PYROMETALLURGY Reverberatory practice in copper smelting continued to be divided between side and centre charging, though the Carson litigation was at an end and operators were privileged to use either method. Where exceedingly fine material is fed, centre charging is perhaps in better favor than side, owing to the difficulty of keeping such fine material banked along the side walls for their protection. Also, the centre-charged furnace, using a deep bath, results in a somewhat lower copper content in the slag, if properly run. On the other hand, more care must be exercised in the operation of a centre-charged furnace and the side walls of the furnace are of more expensive construction. One company standardized on walls of magnesite brick, with water-cooling. A new furnace at the Calumet & Hecla smelter, for melting native copper ore and concentrate, was 70 x 22 feet inside dimensions, and was charged along the centre line for the entire length, whereas most centre charging was done over only about one-third of the furnace length, as measured from the firing end.

Natural gas has received additional attention as a fuel, inasmuch as it is being piped to smelting and refining centres that formerly depended upon coal or oil for fuel. The Great Falls, Mont., copper refinery succeeded in establishing a successful technique using gas for fuel in the anode and wirebar furnaces, and the El Paso Smelting Works went over to natural gas during the year, for firing its reverberatory furnaces and roasters. The principal problem lay in developing a satisfactory burner suitable for the large volumes of gas that must be used, but this has been solved. A luminous flame is apparently not necessary.

Progress continued to be made in the technique of casting anodes at the copper smelters, rather than melting up cakes of blister at the refineries. One process developed by the Phelps Dodge organization is a continuous process, in which the converter copper is transferred to a heat-insulated vessel, blown and poled to eliminate impurities, and cast into anodes. Other smelters in that district perfected a somewhat different type of procedure. It was the expectation that nothing but anodes would be received at the new El Paso refinery.

One other feature of the furnace work at this refinery is worthy of note, the plan to preheat the air used for combustion. To do so, a portion of the hot exit gases going to the waste-heat boilers were to be bled off to carbonadium pre-

heaters. An appreciable saving of the fuel required per ton of copper melted was expected.

Lead smelting developed little that is new, though a better understanding of what goes on in a lead furnace was brought about by the researches of the staff at the U. S. Bureau of Mines station at Salt Lake City. Several detailed studies of lead blast-furnace practice were issued by that station.

Zinc smelters have learned how to handle fine concentrate with little trouble. It is first roasted in multiple-hearth furnaces, then sintered in straight-line Dwight-Lloyd machines, usually by the Baclen process. Dust losses are taken care of, usually, by Cottrell electrostatic precipitation equipment. Retorts are made either of carborundum, clay, or silica flour, each being in favor for certain classes of work. The new vertical continuously operating retorts, known as the Singmaster, Breyer & Bunce furnace, have proved a commercial success, a product of 99.96 per cent purity having been put on the market, produced by the use of this equipment. These retorts are high and of large diameter, built up like a chimney out of carborundum brick. Coke is added to the charge by mixing with the roasted ore, which is then briquetted.

In the realm of iron and steel metallurgy, progress was made in the separation of manganese from iron by the Bradley process, working siliceous manganiferous iron ores, and in concentrating the laterite ores of Cuba. The application of sintering to ore and concentrates continued to increase. The European practice of firing coke ovens with blast-furnace gas alone, thus economizing on the coke-oven gas, was applied commercially at the Chicago plant of the Youngtown Sheet & Tube Co. The trend in blast furnaces toward the large hearth continues, unit furnaces now usually having a capacity of 1000 tons in 24 hours. This is accomplished by providing a capacity of about 30,000 cubic feet between the centre line of the tuyeres and 2 feet below the stock line. Blast-furnace gas has found increasing uses and more attention has been paid to its proper cleaning, involving an increased use of disintegrators. Stove design has improved, with the result that periodical cleaning has virtually been eliminated and automatically controlled high blast temperatures, up to 1600° F., have become usual.

Electric furnaces have not been used to any extent for smelting, except for certain specialized purposes, such as aluminum reduction, but for melting metals and the manufacture of alloys, their use was increasing. In steel metallurgy, an electrode furnace with a capacity of 90 tons was built during 1929, and several induction furnaces. High-frequency induction furnaces are of increasing use in making high-grade alloy steels, and promise to make a better product than the best crucible steel.

Of outstanding interest among the new uses of metals was the attention being paid to rustless or stainless irons and steels. Few industries do not have a corrosion problem, so these new alloys have an exceptionally wide appeal. Most of the stainless steel about which so much has been heard differs from that used in cutlery in its content of nickel, the former well-known stainless steel being merely a high chrome steel. The Krupp Nirossta steel, however, which is made under licensing agreements by several American steel companies, contains about 8 per cent nickel and

18 per cent chromium, which gives it increased resistance to corrosion, greater toughness and adaptability to cold drawing and rolling. It cannot, however, be tempered. This type of steel received considerable advertising toward the end of the year through its adoption by the Ford company for trim on the new models of its automobiles. It was also being commercially manufactured in the form of cooking utensils. Steels of this type promised to afford a considerable and increasing outlet for both nickel and chromium, the latter being used ordinarily in the form of ferro-chrome, though one company is making chrome irons and steels direct from chromite. Fortunately, ample supplies of both nickel and chrome ores exist to take care of any reasonable demand.

Chromium plating also came to the fore, first for the polished parts of automobiles and more recently for jewelry, specialties, household utensils, and such articles, formerly made of other metals or nickel plated. Chromium plate is somewhat darker than nickel or silver but is extremely hard and is virtually unscratchable.

Cadmium, like chromium, found increasing use as a plating material where rust prevention was advisable, as in bolts and nuts used in automobile construction and other exposed iron surfaces. It is obtained as a by-product in the hydrometallurgy of zinc, and there was some doubt, early in the year, as to whether enough could be produced to supply the demand. Added production of electrolytic zinc, however, apparently met the situation without a price advance that would have limited the popularity of cadmium.

The popularity of non-corrodible metals extended to aluminum, which has been used for exterior ornamentation to a considerable extent on one of the new New York skyscrapers, the Chrysler building, this structure also calling for a large amount of stainless steel. Aluminum paint and aluminum foil have been used to a large extent in the petroleum industry, where its reflective property toward light and heat is valuable, and also its resistance to hydrogen sulphide. The lightness of the metal is an exceedingly valuable quality for many purposes and this quality of lightness is now being combined with high tensile strength in alloys of the Duralumin type, containing about 90 per cent of aluminum. In this form, it provides a valuable structural metal for the aviation industry and for use in various moving parts where great weight is undesirable but where strength is required. Spot welding of aluminum and further knowledge of its heat treatment have widened its economical applications.

Another light metal, heretofore little more than a chemical curiosity, is beryllium. Outstanding among its qualities is its extreme elasticity. Its cost—about \$200 a pound in 1929—can be lowered to a tenth of that or less in all probability, when its uses are developed to take a considerable amount. During the year about a ton was made in Germany and a Cleveland plant was reported to have attained a productive capacity of about 50 pounds per month.

Other minor metals whose uses were expanding were tungsten, molybdenum, titanium, barium, tantalum, and selenium. Tungsten was principally used in alloys replacing tool steels, in association with carbon and cobalt, these tungsten carbide compounds are finding a rapidly increasing acceptance. Molybdenum production

from the world's principal source of supply in Colorado has increased considerably; it is used in nitriding steels, in alloy steels of low molybdenum content for a variety of purposes, and in some of the corrosion-resisting steels. Titanium is finding its most important use in the form of oxide as a white-paint pigment. Domestic production of metallic barium of 99.95 per cent grade began last year, it is used in the terminals of spark plugs and as a deoxidizer in the manufacture of radio tubes. Tantalum now has a few accepted uses in laboratories and in the electrical industry, and selenium is of increasing importance in the vulcanizing of rubber. Replacing sulphur. Strontium and lithium, in metallic form, have recently been made available and are awaiting the discovery of commercial uses. Cesium and rubidium are two other metals a supply of which has only recently been assured should an important industrial outlet be found.

Certainly the metallurgists have provided the research workers, at the end of the third decade of the century, with a wide variety of metallic elements and alloys. Great progress has been made in their applications, but the vast possibilities that still exist will be evident.

METAPHYSICS See PHILOSOPHY

METEOROLOGY. It is well known that all except a negligible fraction of the energy involved in weather phenomena is derived ultimately from the solar radiation that is intercepted by the earth. The atmosphere acts like a great heat engine, transforming radiant energy from the sun into the energy of weather processes, and the primary agency actuating all meteorological phenomena is this continual supply of solar energy. In the long run, the total amount of heat lost by the earth as a whole through outgoing terrestrial radiation must be just equal to the total heat gained through the absorption of incoming solar radiation, since no part of the earth is growing steadily warmer or colder. At any one place, however, or for short intervals of time, this is not true in general, the difference between the intensity of terrestrial radiation and that of the effective solar radiation then represents the rate of temporary accumulation or loss of heat, and is a very important meteorological factor, for upon it depends nearly every dynamical process that takes place in the atmosphere.

The amount of outgoing radiation depends upon the surface temperature, the temperature of the upper clouds and of the stratosphere, and the amount of cloudiness. From the available data concerning these factors, Simpson has calculated, on the basis of certain simplifying assumptions, the mean intensity of outgoing long-wave earth radiation in different seasons for 10-degree squares over the globe. The most striking feature of the results is the remarkable uniformity they display from season to season and from place to place, for all seasons and over practically the whole earth, the values nearly all lie between 0.26 and 0.30 calory per square centimeter per minute. The central equatorial regions, with their high temperatures, radiate only slightly more than the cold polar regions, for, because of the greater cloudiness in the tropics, the region of effective outward radiation is there transferred to the stratosphere, which is colder than it is over higher latitudes. The most intense terrestrial radiation comes from desert areas.

The effective solar radiation, or quantity of solar energy absorbed by the earth and the at-

mosphere, may be computed from the solar constant, the geographical distribution of insolation, the amount of reflection by the albedos of the earth, the atmosphere, and the clouds. For the entire year, the computed effective solar radiation falls 2 per cent short of the computed terrestrial radiation, an amount well within the possible errors of the data used. For the earth as a whole, the gain of energy from effective solar radiation exceeds the loss by terrestrial radiation from October to April, and is less from May to September, because of the varying distance of the sun. The whole of the summer hemisphere to beyond latitude 60° receives more heat than it radiates. Areas of maximum excess of incoming over outgoing radiation, to the amount of 0.15 calory or more per square centimeter per minute, are found in South America, Africa, and Australia in January, and at 30° north latitude in July.

The atmospheric and oceanic circulations are generated by the temperature inequalities brought about through the geographical distribution of incoming and outgoing radiation. The transport of heat by these circulations tends to eliminate the temperature contrasts and compensates for the local differences between gain and loss of heat by radiation. Under the simultaneous influences of the opposing factors, the earth's atmosphere, as a whole, has reached a state which is not far removed from one of dynamic equilibrium.

The simplifying assumptions used by Simpson seem to be justified by the results to which they lead. Abbot, employing different assumptions and different methods, has carried out similar computations with the independently derived data accumulated by the Smithsonian Astrophysical Observatory and has obtained results which differ very little from those of Simpson.

DYNAMICAL METEOROLOGY. The long-standing problem of the meteorological structure and dynamical development of barometric highs and lows has been the subject of several recent investigations of importance. In early theories, the cyclone was regarded as simply a column of warm, moist, rotating air, the warmth and moisture providing the low surface pressure, and the convective ascent of air the precipitation. These ideas are probably essentially correct in the case of tropical cyclones, but have long been known to be inadequate for those of temperate latitudes. It was found that the air movements in extratropical cyclones did not consist, to any great extent, of rotation about a centre, and the investigation of temperature conditions in the free air showed that the explanation of the low pressure could not be so simple as had been supposed.

In particular, Dines found that, at least in England, the air in a barometric depression, from a short distance above the surface to a height of about 10 kilometers, was on the average not warm but cold, and he attributed the low pressure at the surface to the presence of a column of warm air in the stratosphere above the cyclone. Similarly, the troposphere in the anticyclone was found to be warm, not cold, and the high pressure due to a cold stratosphere. Dines's ideas are substantially correct, not only as regards average conditions in a large number of depressions investigated in England by sounding balloons but also for many individual formations occurring both in England and elsewhere, but many cyclones have been observed in which the low

pressure is actually due to warm air in the lower atmosphere, while the rapidly moving anticyclones which separate successive depressions frequently consist of great outbreaks of cold polar air, and Dines's results do not represent even average conditions in some parts of the world.

It seems necessary to recognize the existence of two types of cyclones and of anticyclones—warm and cold, in each case. The warm lows and cold highs may be termed thermal formations, they are comparatively shallow and are not in dynamic equilibrium. The cold lows and warm highs, or dynamical formations, are in a steady state and reach to great altitudes. Formations sometimes have been observed apparently to change from the former type to the latter, though the mechanism by which such a development might take place is not at present clear. Investigations of the phenomena in cyclones and anticyclones, on the basis of the preceding classification, recently have been made by Haurwitz and by Rossby. Haurwitz has discussed the 24-hour changes of temperature and pressure observed at each kilometer level in a large number of balloon ascents over Europe, and so far as possible has classified the surface pressure changes according as the temperature changes causing them took place in the troposphere or the stratosphere. Through a mathematical theory of the effects of advectional movements in the free air, Rossby has devised methods for analyzing aerological observations to disentangle the various factors operating to produce the pressure changes at each level.

The Norwegian polar front theory of the cyclone gives the latter a warm centre, contrary to Dines's findings, it has been suggested, however, that the Dines depression is a late stage of the Bjerknes type which has been reached by the majority of cyclones when they got to the British Isles. C. K. M. Douglas has suggested a process of development in harmony with the German and Austrian conceptions, which explain cyclones and anticyclones largely by advectional movements that ultimately come to involve the stratosphere. Douglas points out that a very favorable condition for the deepening of a barometric depression is the occurrence of a pronounced polar current behind it. At the surface, such a current may be traveling from due north to south, but, because of the general fall of temperature from low to high latitudes, there is always a tendency for air at high levels to move from westerly toward easterly points. This tendency is especially strong at the upper boundary of the warm cyclonic sector, at a height of about nine kilometers, hence at about this level, the polar current will have a large component toward the east and will overrun the centre of the depression, bringing with it part of the low warm stratosphere belonging to the polar air.

In the lower troposphere, warm air is being slowly eliminated, with a consequent tendency for pressure to rise, but at the same time the stratosphere is becoming much warmer, with a tendency for pressure to fall, when the latter tendency predominates, the depression continues to deepen and develop, in spite of being occluded, and changes from a shallow thermal formation to an extensive dynamical cyclone that involves the stratospheric levels. Similarly, the rise in pressure in a developing anticyclone is due to a spreading over of tropical air, including cold

stratospheric air, at high levels, thus, the high pressure of the great slow-moving anticyclones of long duration, which wander into temperate latitudes from subtropical regions, is due to overlying portions of the high, cold stratosphere of the tropics. In the dynamical highs, the air is slowly descending beneath the stratosphere, probably at the rate of about one kilometer per day at the three-kilometer level, and is being warmed by compression.

Thus, the existence of developing cyclones and anticyclones in the troposphere, generated by conditions in the lower levels, apparently causes further formations to be brought in over their tops in the substratosphere, these latter are the upper high-level formations of the Austrian theories. The changes of surface pressure in developing formations are mainly due to large-scale horizontal advectional movements at high levels, but the requisite energy is probably supplied in the lower levels through the juxtaposition of warm and cold currents. The primary cause of "fronts" is to be found in the bringing together of masses of air of widely different origin by the large-scale horizontal currents involved in highs and lows, the transition zones may be anywhere from a few kilometers to hundreds of kilometers in width.

METEOROLOGICAL PHYSICS. In a study of the daily temperature variation near the ground, N. K. Johnson and D. Brunt have confirmed Chapman's recent conclusion that this variation is greatly influenced by long-wave radiation, and is not due mainly to eddy conductivity as previously assumed by Taylor. Stömer's investigations of the high auroral rays that are situated in the sunlit region of the atmosphere have indicated that possibly the radiation pressure of sunlight drives the upper air away from the earth tangentially, and that, when corpuscular rays from the sun strike the tail thus formed, they produce the auroras. The lowest points of the sunlit auroras lie near the line between the dark and the illuminated portions of the atmosphere, some rays consist of two illuminated parts, one in sunlight and the other in shadow, with an invisible part between. The green auroral line is much weaker in the sunlit rays than it is in the other rays.

MISCELLANEOUS. A West Indian hurricane that appeared in the latter part of September, 1929, exhibited unusual behavior and moved in an erratic path. It hovered almost stationary off the Florida coast for several days. Considerable damage was caused in the Bahamas and disastrous floods occurred in Georgia and the Carolinas, as a result of this storm. The unusual path was probably due to erratic upper winds.

NECROLOGY. Harry C. Frankenfield, of the U. S. Weather Bureau, died July 29.

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METEORS. See ASTRONOMY.

METHODIST CONNECTION (OR CHURCH) OF AMERICA, WESLEYAN. A branch of the Methodist Episcopal Church, organized May 31, 1843,

in Utica, N. Y., the outgrowth of controversy over what was termed "liberty of testimony and freedom of discussion" and also a protest against the exercise of ecclesiastical authority. The purpose of the new organization was a church that should be anti-slavery and non-episcopal. In doctrine, the church is in accord with the Methodist bodies generally. In 1919 the branch comprised 25 annual conferences, including a mission conference in India and Africa. Its general conference meets quadrennially, the last convocation being in June, 1927, at which time the use of tobacco in any form, its growth, sale, or manufacture was made a test of full membership. In 1929 there were 602 churches, 769 ministers, and 21,980 members, the Sunday schools numbered 582, with 6218 teachers and officers, 35,578 pupils, and 7214 persons enrolled in the home department and on the cradle roll. Among the colleges maintained by the church are Central College, Central, S. C., Houghton College, Houghton N. Y., Marion College, Marion, Ind., and Miltonvale College, Miltonvale, Kans. *The Wesleyan Methodist*, published weekly in Syracuse, N. Y., is the official organ of the church. A large printing plant is maintained in Syracuse and all the literature of the church is printed there. Headquarters are at 330 East Onondaga Street, Syracuse, N. Y.

METHODIST EPISCOPAL CHURCH.

Methodism in its widest signification and intention was a "revival of Christian earnestness, simplicity, and power." John Wesley (1703-91) had no intention of establishing a new church, his effort was to revive pure and undefiled religion. He taught the doctrines of the Church of England and "faithfully urged the people to attend its ordinances to be present at its public assemblies, and to be interested in its prosperity." Had the authorities of the Church of England accepted some of Wesley's plans, in place of driving him away from them, the future of Methodism might have been quite different. Richard Boardman and Joseph Pilmoor, two of Wesley's workers, came to America in 1769 and were followed in 1771 by Francis Asbury who was destined to be the great leader of the infant church. At the first conference held in Philadelphia in 1773, there were present 10 preachers who reported 1170 members. The Methodist Episcopal Church was organized at a "Christmas conference" held in Baltimore in 1784.

The governing body is the general conference, composed of an equal number of ministerial and lay delegates who meet once in four years and make all the rules and regulations. The last quadrennial session of the general conference convened in Kansas City, Mo., in May, 1928. The general conference commissions in 1929 were Courses of study, interdenominational relations, social service activities, world peace, central conference, worship and music, ministers' reserve pension plan, evangelism, revision of ritual, judicial procedure, sequentennial of organization of the Methodist Episcopal Church, adequate support and equitable apportionment, federation in Korea, federation in Mexico, Near East relief, revision of the hymnal and psalter; church union, relations with other than Methodist churches, relations with other Methodist churches, Federal Council of Churches and like bodies, Lausanne and Stockholm conferences and like groups. An annual conference, presided over by the bishop of each area, meets once a year at

which all pastoral changes are considered and reports of the local churches are gathered and compiled. There is also a local quarterly conference that administers all matters pertaining to the work of the local church. In 1929 there were in the United States and affiliated countries in Europe 153 annual conferences and missions, 28,929 churches; 19,339 ordained ministers, 14,141 lay preachers, 5,255,506 church members, 33,889 Sunday schools, 405,805 Sunday-school officers and teachers, 4,561,099 Sunday-school pupils, and 583,107 Epworth League members. Church property was valued at \$438,427,134 and parsonages, at \$65,040,604.

The administration of the missionary, educational, and philanthropic work of the Methodist Episcopal Church is committed to six general benevolence boards. Foreign missions, home missions and church extension, education; hospitals, homes, and deaconess work, pensions and relief; and temperance, prohibition, and public morals. These boards cooperate in the world service movement, their budgets being fixed and their work correlated in the interest of cooperation, economy, and efficiency by the world service commission. On May 31, 1929, this commission reported total receipts of \$7,961,898. The board of foreign missions administers the missions of the church in Mexico, South America, Europe, Africa, southern and eastern Asia, the Philippines, and the islands of many seas, it received during 1929 a total of \$2,579,265. The board of home missions and church extension looks after weak churches in new and growing communities in the United States, where church buildings are needed and ministers have to be supported, and cares for the religious work among many foreign groups. During 1929 a total of \$2,763,265 was expended on this work. There are also two women's missionary societies, the foreign and the home, which reported receipts in 1929 amounting to \$5,057,760.

The educational system of the church, administered by the board of education, included, in 1929, 46 colleges and universities, 25 secondary or preparatory schools, 62 professional and graduate schools; and 20 institutions for colored people, 13 of which were colleges. The enrollment in these schools (not including professional and graduate) was 68,738, the faculty numbered 4000, property was valued at \$82,210,182, and the endowment amounted to approximately \$74,000,000. The board of hospitals, homes, and deaconess work administered, in 1929, 77 hospitals, 45 homes for the aged, 43 homes for children, 45 deaconesses' homes, and 27 homes for young business men and women. The value of this property was estimated at \$67,458,651. The board of pensions and relief reported in 1928 a gross income of \$3,545,114 and estimated capital resources of \$21,446,503; \$3,119,690 was paid during the year as annuity to a total of 8513 claimants. The board of temperance, prohibition, and public morals, which is supported through the world service commission, is representative to the general conference, its purpose is "to make more effective the efforts of the church to create a Christian public sentiment which will relate the experiences of the Gospel of Christ to the economic, political, industrial, and social relations of life and which will crystallize opposition to all public violations of the moral law and to all attempts to undermine and destroy civil and religious liberties."

The official publications of the church are the *California Christian Advocate* (San Francisco), the *Central Christian Advocate* (Kansas City, Mo.), the *Christian Advocate* (New York), the *Epworth Herald* (Cincinnati), the *Southeastern Christian Advocate* (Atlanta), the *Northwestern Christian Advocate* (Chicago), the *Pacific Christian Advocate* (Portland, Ore.); the *Pittsburgh Christian Advocate* (Pittsburgh), the *Southwestern Christian Advocate* (New Orleans); the *Western Christian Advocate* (Cincinnati), and *Der Christliche Apologete* (Cincinnati). In 1929 the secretary of the general conference was the Rev John M Arters, 700 Hammond Street, Bangor, Me

520, for Sunday schools, more than \$300,000; and for salaries of pastors, 10 bishops, and general officers, \$1,532,526. The denominational periodicals are the *Christian Index*, *Western Index*, *Index Herald*, and *Colored Methodist*. The last quadrennial general conference was held in Kansas City, Mo. in May 1926. Headquarters are in Jackson, Tenn.

METHODIST EPISCOPAL CHURCH, SOUTH A separate branch of the Methodist Episcopal Church formed in 1845 over the question of slavery. Statistics for 1929 showed that there were 55 conferences and missions, of which 42 were in the United States and 13 in foreign countries; 8310 traveling preachers and 4769

GENERAL STATISTICS OF METHODISM, 1929

[The following table is from the Methodist Publishing House of London, N. B.—These statistics are the latest procurable. The members in Junior Classes are not reckoned.]

DENOMINATION	Min- isters	Lay Preach- ers	Church Members and Probationers	Sunday Schools	Officers and Teachers	Sunday School Scholars	Churches, Etc
WESLEYAN METHODISTS							
Great Britain	2,557	18,992	517,780	7,328	118,184	800,292	8,629*
Ireland	247	619	30,000	335	2,199	28,037	412
Foreign Missions	755	11,892	112,420	3,098	11,219	170,997	5,663
French Conference	21	73	1,731	25	81	589	102
South African Conference	328	5,762	227,235	1,089	3,418	48,607	4,705
PRIMITIVE METHODISTS	1,092	13,110	223,915	3,943	53,769	378,581	4,515
UNITED METHODIST CHURCH	708	4,691	145,320	2,067	37,502	231,420	2,209
WYFYLAN REFORM UNION	72	496	11,104	230	2,539	22,555	227
INDEPENDENT METHODIST CHURCHES	395		10,973	163	3,174	24,249	185
AUSTRALASIAN METHODIST CHURCH	1,058	8,223	173,105	8,435	27,032	207,088	5,867
NEW ZEALAND METHODIST CHURCH	195	1,014	30,274	444	8,213	32,948	998
UNITED STATES							
Methodist Episcopal	19,339	14,141	5,255,506	38,889	405,865	4,561,099	28,929
Methodist Episcopal, South	8,348	5,001	2,650,538	16,385	179,891	2,028,311	17,585
Methodist Protestant	1,125	885	195,400	1,850	17,851	181,373	2,211
African Methodist Episcopal (Col'd)	7,315		731,692	7,200		320,000	7,390
African Methodist Epis Zion (Col'd)	3,460		500,000			193,000	3,442
Colored Methodist Episcopal	2,633		383,771	2,543		192,800	3,579
Free Methodist	1,399		40,827				1,279
Wesleyan Methodist	769	481	21,980	582	6,218	42,002	602
Primitive Methodist	87	81	11,806	88	1,600	14,781	89
Congregational Methodist	487		21,050				867
New Congregational Methodist	25		1,229	27	143	1,298	26
Union American Meth Epis (Col'd)	324		22,259				307
African Union Meth Prot (Col'd)	200		4,086	42	273	2,851	43
Ref Zion Union Apostolic (Col'd)	44		4,578	36	212	1,508	48
Ref Meth Union Epis (Col'd)	51		1,371	18	204	1,793	28
Colored Methodist Protestant	31		1,967	24	125	1,016	26
African Methodist Protestant	675		27,000				670
African American Meth Epis	45		5,311	25		994	37
UNITED CHURCH OF CANADA	3,986		647,154	5,922	62,675	551,124	7,617
JAPAN METHODIST CHURCH	158	140	29,420	554		42,570	162
Totals	57,876	85,101	12,221,374	91,282	936,923	10,079,822	107,369

* Seating accommodation, 2,486,803

* These figures include the Solomon Islands with three native ministers, 198 lay preachers, 5519 members, three Sunday schools 253 scholars, 98 churches

* Methodism also is represented in several European countries by Conferences and Missions affiliated to the Methodist Episcopal Church of America, and their membership is included in the figures given above. The latest returns available are Austria, 714 members, Bulgaria, 698, Denmark, 3756, Finland, 1809, France, 904, Germany (North), 17,254, Germany (South), 25,898, Hungary, 468, Italy, 3536, Jugoslavia, 775, Norway, 7258, Russia (and Baltic Mission), 3326, Sweden, 15,593, Switzerland, 11,220

METHODIST EPISCOPAL CHURCH, COLORADO This denomination was organized in Jackson, Tenn., in 1870 and was composed of the colored membership of the Methodist Episcopal Church, South. In 1929 it reported 4300 churches with 474,526 members, 3621 traveling preachers and 2140 local preachers, 3122 Sunday schools, with an enrollment of 281,560 pupils, and 1812 Epworth Leagues, with a membership of 44,210. In cooperation with the Methodist Episcopal Church, South, the denomination maintained "Bethlehem Houses" (social service centres) in Birmingham, Ala., Chattanooga, Tenn., Augusta, Ga., and Nashville, Tenn. It also sponsored 14 schools and a hospital in Memphis, Tenn., and maintained missions in Trinidad and the British West Indies. The amount raised during the year for educational purposes was \$312,-

local preachers, 2,646,517 members, 17,249 churches which had a valuation of more than \$180,000,000, 6653 parsonages with a valuation of \$29,171,000; 15,795 Sunday schools, 1,939,740 Sunday-school pupils, 9181 Epworth Leagues, and 256,713 Epworth League members. The contributions for all purposes for 1929 amounted to \$40,611,961. The denomination sponsored 248 educational institutions, including 32 universities and colleges, 21 academies, and 46 mission schools. The important periodicals of the denomination are the *Methodist Quarterly Review* and the *Christian Advocate*. The executive body is the College of Bishops, which in 1929 had 13 members who hold office for life. Headquarters of the church are in Nashville, Tenn. A general conference was arranged to be held in Dallas, Tex., in May, 1930.

METHODISTS. **WESLEYAN METHODIST CHURCH.** The principal branch of the Methodist denomination in Great Britain and Ireland, founded at the University of Oxford in 1730 by John and Charles Wesley and holding its first conference in London in 1744. This is the mother church of the denomination and is composed of five divisions: Great Britain, Ireland, Foreign Missions, French Conference, and South African Conference. The Wesleyans are governed by the conference, by the synods, and by quarterly meetings of the ministers and lay officers of each circuit, the latter being subordinate to the conference which has the supreme legislative and judicial power. Statistics for all the divisions in 1929 were: Ministers, 39,008; lay preachers, 37,338; church members, 1,089,116; Sunday schools, 11,875; Sunday-school pupils, 1,033,522; churches, 19,511. In Great Britain alone, the churches numbered 8629, members, 517,730, ministers, 2557, lay preachers, 18,992; Sunday schools, 7328; Sunday-school pupils, 800,292. The church maintains a publishing house at 25-35 City Road, London, E. C. 1. See **METHODIST CONNECTION (OR CHURCH) OF AMERICA, WESLEYAN**.

PRIMITIVE METHODIST CHURCH. Commonly known as the "Camp Meeting Methodist," organized in Staffordshire in 1810. Next to the Wesleyan, this is the most numerous and most democratic of the denominations which have arisen out of the Methodist movement. In 1929 it had 4515 churches, 223,915 members, 1092 ministers, 13,110 lay preachers, 3943 Sunday schools, and 378,581 Sunday-school pupils. A publishing house is maintained at Holborn Hall, Clerkenwell Road, London, E. C. 1. The church was organized in the United States in 1844 by Hugh Bourne, one of the founders of the movement in England. In 1929 it reported 99 churches, 11,905 members, 87 ministers, 81 lay preachers, 88 Sunday schools, and 14,781 Sunday-school pupils.

UNITED METHODIST CHURCH. Formed in England in 1907 by the union of three denominations of Methodists which had hitherto been separate from and independent of each other: The Methodist New Connection, the Bible Christians, and the United Methodist Free Church. In 1929 there were 2209 churches, 115,323 members, 703 ministers, 4691 lay preachers, 2067 Sunday schools, and 231,420 Sunday-school pupils. The church maintains a publishing house at 12 Farringdon Avenue, London, E. C. 4.

WESLEYAN REFORM UNION. One of the smaller divisions of the Methodist movement, which separated in 1850 from the Wesleyans and organized as a separate body in 1859. Its adherents are mostly in the Midland counties of England. In 1929 there were 227 chapels, 11,104 members, 32 ministers, 496 lay preachers, 230 Sunday schools, and 25,555 Sunday-school pupils.

INDEPENDENT METHODIST CHURCHES. Founded in 1796 in England and united with other societies in 1806. The title was changed twice, but in 1898 the old name was resumed. In 1929 there were 165 churches, 10,973 members, 395 ministers, 163 Sunday schools, and 24,249 Sunday-school pupils.

AUSTRALASIAN METHODIST CHURCH. Methodism in Australia dates from 1812, the first conference was held in 1855. In 1929 there were 5367 churches, 173,105 members, 1058 ministers, 8223 lay preachers, 3425 Sunday schools, and 207,088

Sunday school pupils. Publishing houses are maintained in Sidney, Melbourne, Adelaide, Brisbane and Perth.

Other branches of the denomination include the New Zealand Methodist Church and the Japan Methodist Church, for statistics of which see **METHODIST EPISCOPAL CHURCH**. Also see **CANADA, THE UNITED CHURCH OF**.

In Great Britain, a scheme for the reunion of the Wesleyan, the Primitive, and the United Methodist churches, after having been approved by all three conferences, was submitted to Parliament. In May, 1929, Parliament gave its unanimous consent to the passage of an Enabling Bill which provided that the three churches might unite as "The Methodist Church" on such terms as they should mutually approve, the final vote on union to be taken at the conference of 1931, a majority of 75 per cent being requisite both in the representative and the pastoral sessions.

METROPOLITAN MUSEUM OF ART. See **ARCHAEOLOGY, ART EXHIBITIONS, ART MUSEUMS**.

MEUX, ADMIRAL OF THE FLEET, SIR HEDWORTH. British naval officer, died Sept. 20, 1929, at Danebury, near Stockbridge, Hampshire. He was born July 5, 1856, and entered the navy in 1870, being promoted to the rank of captain in 1889. He served with distinction in the Egyptian War of 1882, and in 1894-97 was private secretary to the First Lord of Admiralty. During the South African War (1899-1902) he was in command of a naval brigade in Ladysmith and was credited with an important part in rescuing that town from the Boers. He was in command of the Royal Yacht (1901-03), second in command of the Channel Fleet (1903-04), and in command of the Cruiser Division of the Mediterranean Fleet (1904-06). He was commander-in-chief of the China Station (1908-10) and at Portsmouth (1912-16). He was in command at Portsmouth during the early years of the World War, in 1915 was made Admiral of the Fleet, and in 1921 was retired. He was a Unionist member of Parliament from Portsmouth (1916-18), where he served as successfully as in the navy. Sir Hedworth was born Hedworth Lambton, but in 1911 changed his name to Meux, which was the condition under which he inherited the fortune of the wealthy Lady Meux. He was knighted in 1906 and was a grand officer of the Legion of Honor.

MEXICAN BEAN BEETLE. See **ENTOMOLOGY, ECONOMIC**.

MEXICAN FRUIT FLY. See **ENTOMOLOGY, ECONOMIC**.

MEXICAN LABOR. See **IMMIGRATION**.

MEXICO. A federal republic lying between the United States and Central America. Capital Mexico City.

AREA AND POPULATION. The area of the republic, which is divided into 28 states, one Federal district, and three territories is 767,198 square miles. The population, according to the census of 1921, was 14,234,799, of whom 6,974,213 were males and 7,287,586, females, estimated in 1928, 15,048,448. In December, 1928, the Indian population was estimated at 4,179,472, of whom 1,791,000 still conversed their native tongue. Americans residing in Mexico in 1929 totaled 14,607. The prevailing religion is Roman Catholic, but according to the new constitution of 1917, the Church is separated from the State, and there is toleration of all other religions. No ecclesiastical

body can acquire landed property. Mexico City, the capital of the Republic, had a population of 615,367, of whom 23,668 were foreigners, at the census of 1921. Other large cities are Guadalajara, 143,376, Monterey, 88,458; San Luis Potosi, 57,353 and Merida, 79,225.

The reported immigration in 1927 was 67,970 and the emigration 56,534, but there is a considerable movement across the northern boundary which is not fully reported.

EDUCATION Education is free, compulsory, and secular. In 1928 there were 1,311,000 students in state and Federal schools and in the previous year the number enrolled in private schools was 17,928. Students in the three universities—the National University of Mexico, the National University of the Southeast, and the University of Guadalajara—totalled 9379 on July 31, 1928. In addition there were 70,901 schools maintained by ranches, mills, mines, and other concerns as provided by the constitution, also 65 normal schools, 20 law schools, 31 medical schools, 12 engineering schools, and 107 technical schools, with 78,103 students and 7247 teachers.

AGRICULTURE Mexico has great agricultural possibilities, the fertile soil of the tropical regions, the mountain valleys, and the great central plateau being only partially exploited, and for the most part by antiquated farming methods. In 1928 about 6 per cent of the total area, or 30,028,000 acres, were under cultivation, 120,444,000 acres were devoted to pasture, and 43,993,000 acres to forests. Production of the principal crops in 1928 was as follows: Wheat, 11,492,000 bushels, corn, 83,917,000 bushels, tomatoes, 72,000 metric tons, coffee, 75,080,000 pounds; cotton, 133,103,000 pounds, sugar, 392,000,000 pounds, chick-peas, 2,363,000 bushels. Production of other leading crops for which the 1928 figures were not available, was as follows in 1927: Barley, 4,487,000 bushels; rice, 3,615,000 bushels, beans, 7,153,000 bushels, tobacco, 10,912,000 pounds, cacao, 3,521,000 pounds, henequen, 133,000 metric tons, alfalfa, 1,703,000 metric tons. Other crops are winter vegetables, bananas, garbanzos, vanilla beans, chicle, and rubber.

In 1929 the agricultural production was still insufficient for local needs, due to revolutionary disturbances and inadequate transportation facilities which resulted in a tendency on the part of the rural population to produce only enough for its own needs. In 1928 imports of agricultural products and equipment amounted in value to 34,319,848 pesos, the largest item being 15,464,680 pesos for laid (one peso was equivalent to \$0.4810 in 1928). The government was actively encouraging the expansion of agricultural production. In 1929, 5,700,000 acres were under irrigation in Mexico, three large projects which would add 260,000 acres to the total were nearing completion, and the National Irrigation Commission had selected sites for eight other large projects. Stock raising is an important industry. In 1926 there were 5,585,000 cattle, 2,903,000 swine, 2,698,000 sheep, 5,424,000 goats, 1,036,000 horses, 686,000 mules, and 850 asses in the communes reporting (about 96 per cent of the total). Up to Jan. 1, 1928, public and confiscated lands totaling about 10,680,000 acres had been distributed among 500,000 families in accordance with the agrarian laws.

MINING AND PETROLEUM Mineral production declined in 1928, the value of the total output be-

ing \$207,547,000 (431,401,000 pesos), as compared with \$233,552,000 (494,814,000 pesos) in 1927. Of the 1928 total, petroleum was valued at \$49,046,000, gold, \$14,012,000, silver, \$63,089,000, lead, 32,216,000; zinc, \$22,674,000; copper, \$20,581,000. The output of minerals and petroleum in 1928 with comparative figures for 1927, is shown in the accompanying table.

MINERAL PRODUCTION IN MEXICO

Product	1927	1928
Gold 1000 troy oz	725	702
Silver do	104,576	108,477
Copper * metric tons	58,794	65,103
Lead * do	243,846	284,727
Zinc * do	136,478	162,023
Antimony * do	1,924	1,342
Arsenic (white) do	9,018	8,670
Graphite do	5,837	4,972
Mercury * do	81	85
Coal 1000 metric tons	1,031	1,025
Petroleum 1000 barrels	64,121	50,150

* Metallic content of ore extracted

Petroleum production declined in 1928 for the seventh consecutive year, being only one-fourth as large as in the peak year of 1921. A total of 148 wells with an initial daily producing capacity of 110,438 barrels were brought in, as compared with 204 wells producing 383,702 barrels in 1927. Advanced government estimates placed the 1929 production at between 44,000,000 and 45,000,000 barrels. The National Chamber of Mining, in recommending a revision of the laws, presented figures to the Ministry of Finance, Commerce, and Labor during 1929 which placed the total operating costs of the industry for 1928 at 244,461,628 pesos, as compared with a fiscal valuation of the mineral production for the year amounting to 231,272,927 pesos. In 1929 metal production increased over 1928 as follows: copper, 32 per cent, zinc, 7, lead, 5, silver 0.15. Gold and mercury production declined 12 and 5 per cent respectively.

MANUFACTURING While manufacturing is relatively unimportant, the production of textiles (mostly cotton), shoes, iron and steel, tobacco products, pharmaceuticals, beer, flour, paper, cement, pottery, and various other products has developed to some extent. A depression in the textile industry, which is the most important in the country, continued from 1925 to 1929.

Capital investments by foreigners in the chief Mexican industries was given in 1929 as follows: Mexican, 23.78 per cent, Canadian, 20.72 per cent, American (United States), 17.34 per cent; English, 6.71 per cent, French, 5.67 per cent. Total American investments in Mexico were estimated at \$1,325,000,000, compared with \$800,000,000 in 1912.

COMMERCE Mexican exports decreased to \$285,000,000 in 1928, or 4 per cent less than the 1927 figure of \$296,173,000, while the imports increased to \$172,166,000, 5 per cent more than in 1927 (\$163,495,000). Decreased shipments of minerals, and particularly of petroleum, accounted for the export decrease. Chief exports in 1928 included crude petroleum, fuel oil, and gasoline, lead, copper, henequen, coffee, raw cotton, tomatoes, zinc, and other agricultural and mineral products. Leading imports were machinery, iron and steel, automobiles, lard, mineral oils, wood for building purposes, wheat, corn, chemicals, and gold and silver bullion and specie. While exports to the United States totaled \$194,500,000, or 10 per cent less than in 1927, imports



from that country increased by 6 per cent to \$115,700,000. Imports into Mexico were supplied principally by the United States, 68.2 per cent, Germany, 8.6 per cent, United Kingdom, 7.6 per cent, and France, 4.5 per cent. Exports were consigned as follows: United States, 69.7 per cent, United Kingdom, 8.1 per cent, Germany, 6.3 per cent, France, 3.2 per cent. In 1929 trade with the United States continued the trend of the previous year, exports to that country declining slightly to \$117,706,722, due entirely to a decrease of some \$5,000,000 in petroleum shipments, while imports from the United States increased to \$133,900,912 (1929 figures are preliminary).

FINANCE The budget for 1929 estimated expenditures at 288,473,000 pesos (\$143,754,000), receipts at 34,000,000 pesos for the service of the debt, and receipts at 288,428,600 pesos. At the end of the year, the cash surplus of the Government was 19,000,000 pesos, or about \$9,500,000, as compared with a surplus a year earlier of less than 3,000,000 pesos. Preliminary figures for 1928 placed actual revenue collections at 300,507,000 pesos (\$149,803,000), or more than the estimates, while expenditures were also believed to have exceeded the budget figure of 291,118,000 pesos (\$145,122,000). The final figures were not available. The budget for 1930 submitted to Congress by the Minister of Finance called for expenditures of 293,773,787 pesos (about \$146,903,475). The appropriations were increased by the budget committee, however, to a total of 293,092,489 pesos (about \$146,546,242). The estimated income for the year was 293,125,651 pesos, which left an estimated surplus of 33,162 pesos. On Aug. 31, 1928, the internal funded and floating debt, exclusive of claims of foreigners arising from revolutionary disturbances totaled 773,113,000 pesos (\$385,397,000). On Jan. 1, 1928, the total funded debt, which had been in default since 1914, stood at 1,091,485,429 pesos, including 263,435,903 pesos owed by the National Railways and guaranteed by the government. An allowance of 26,000,000 pesos was made for debt payments in the 1930 budget.

COMMUNICATIONS In 1929 there were 12,359 miles of main railway line in Mexico, operated by 39 different companies. The principal system was the National Railways of Mexico, with 7460 miles of line. In 1927-1928 the National Railways handled 22,696,014 passengers and 16,772,357 metric tons of freight, the operating revenues totaling \$81,369,361, the operating expenses, \$79,056,915, and the net revenues, \$2,312,446. In 1929 a new line between Mexico City and Laredo, Texas, was approaching completion. Of the 66,000 miles of highway in Mexico in 1929, only about 30,000 miles were usable the year round and only about one-third of the total was suitable for motor traffic. The National Highway Commission established in 1925 is carrying out the construction of a nation-wide system, primarily thoroughfares, in connection with which 310 miles of new highway were scheduled for completion in 1929. The programme called for the construction of 15,600 miles, 950 miles of which had been completed by 1929.

Air lines operating in the country were considerably extended in 1929. Lines between Mexico City and Brownsville, Texas, between Vera Cruz and Guatemala City, Guatemala, and between Los Angeles, Mexico City, and Guatemala City, were inaugurated during the year. A new air-mail

service between Mexico City and New York reduced the traveling time between those two points to 50 hours.

In 1927 the government and privately owned telegraph and telephone systems had 85,371 and 304,016 miles of wire, respectively. The state telegraph system in 1929 had 23,396 miles of line.

GOVERNMENT Under the constitution of 1917, executive power is vested in the President, elected by direct popular vote for four years and ineligible for reelection, legislative power in the Congress consisting of the House of Representatives elected for two years by universal suffrage, and the Senate, comprising two members from each State, elected in the same manner. Provisional President in 1929, Emilio Portes Gil, elected by the Senate and Chamber on Sept. 25, 1928, in place of President-elect Obregon, who was assassinated. For the presidential election in 1929, see below.

HISTORY

Three events marked the further evolution of the government in Mexico in 1929—the crushing of a serious revolution in April, the signing on June 21 of an agreement between President Portes Gil and Archbishop Ruiz, acting Papal delegate, which healed the open breach between the State and the Roman Catholic Church, and the election of Pascual Ortiz Rubio as President of the Republic on November 18.

THE REVOLUTION Gen. Jesus Maria Aguirre, military commander of the State of Vera Cruz, on March 3 proclaimed a military revolution which received the support of Gen. Fausto Topete of the State of Sonora, Gen. Francisco Manzo, military commander of Sonora, and Gen. Gonzalo Escobar, military commander of the State of Coahuila. The revolutionists made a bid for the support of the Church by a promise of noninterference in religious affairs but made it plain that their chief aim was the overthrow of the Portes Gil administration, which had the powerful support of former President Plutarco Elias Calles, and to prevent the election of Pascual Ortiz Rubio, who, with the support of Calles, was a candidate for President. The insurrection made considerable headway in northern Mexico and General Calles was appointed Secretary of War to direct the government's campaign. The United States government gave moral and material support to the Mexican government by continuing in force the embargo on the export of arms and munitions to parties in Mexico other than the government and by adding civil airplanes to the embargo list. Personally taking the field early in April, General Calles defeated the rebels after a remarkable series of strategic maneuvers and announced to President Portes Gil on April 28 that the revolt was ended. Gen. Jesus Aguirre, Gen. Simon Aguirre, and a number of officers of their staffs were captured and executed. Other leading rebels escaped to the United States. A number of Americans in Naco, Ariz., and El Paso, Tex., were wounded, one fatally, from stray bullets or bombs dropped by rebel planes during the course of fighting on the Mexican side of the border, and American airplanes and troops were ordered to these points.

RELIGIOUS SETTLEMENT The Roman Catholic Church gave no support to the rebel cause, but during the government's campaign against the insurgents, the "Christeros," or rebellious Cath-

olics in the States of Jalisco and Guanajuato, who had been resisting the government for two years, increased their activities and a large force of Federal troops was sent against them. During March more than 1700 priests throughout the country were forced to register their addresses with the government. The religious controversy developed a particularly bitter tone following the execution of José Leon Toral on February 9 for the assassination of General Obregon the preceding July. On February 10, an unsuccessful attempt was made to assassinate President Portes Gil. The President asserted that investigations which followed the dynamiting of his special train had convinced the government that his assassination undoubtedly was planned by "elements who undoubtedly obeyed exalted fanatical Catholics."

On May 1, the government made the first move toward a reconciliation when President Portes Gil announced that "the Catholic clergy, when they wish, may renew the exercise of their rites with only one obligation, that they respect the laws of the land as the ministers of other denominations are doing." The statement was received as "an evidence of good will" by Catholic spokesmen and negotiations were inaugurated which resulted in the agreement of June 21. In brief, the Mexican government agreed to allow the Catholic hierarchy to designate those priests who were to register in compliance with Mexican laws, thus giving the bishop control over the clergy, and religious instruction was made permissible within the churches. The government also reserved to the Catholic prelates the right to apply for modification of the constitution at any time in the future. In return, the Church agreed to participate in "the great task of national reconstruction" and to comply with the provisions of the Mexican Constitution until such time as it was revised. Announcement of the rapprochement was followed by the release of all women held in the penal colony of Tres Marias for violation of religious laws and by the cessation of activities by the religious rebels in several states.

PRESIDENTIAL ELECTION. The chief opponents in the Presidential election were Pascual Ortiz Rubio of the National Revolutionary party and José Vasconcelos of the Anti-Reelectionist party. The latter, a prominent educator and philosopher, attacked the administration candidate on the ground that he stood for a continuation of existing relations with the United States in which Vasconcelos declared Mexico "had less liberty than an imperial colony." He favored the elimination of alleged corruption in the government, greater religious liberty for the Catholic Church, the reduction of the army to a minimum, and complete freedom of organization among workmen. Rubio pledged himself to continue the government's agrarian policy, and favored indemnification for lands expropriated in connection with this policy, the protection of foreign capital, and the enforcement of the law with regard to the Catholic Church. The campaign was marked by a number of minor disturbances and on election day 19 deaths occurred as a result of political brawls. Ortiz Rubio was elected by an overwhelming majority (1,825,761 to 110,279 votes) on the face of returns. The fairness of the election as an index to popular opinion was questionable, however Vasconcelos issued a statement declaring that in no part of the republic had genuine elections been held.

"Everywhere voting has been prevented except by public employees," he said. "It is the most glaring imposition of a candidate in Mexican history."

The Mexican election law provides that the first nine citizens to appear at a voting booth shall constitute themselves an election board for that precinct. According to the Vasconcelos Opposition, the Rubio political machine, apparently backed by the government, rushed the election booths as soon as they were opened and in many cases established control, turning away many Opposition voters. On the other hand, gains in the practice of constitutional government were evidenced by the fact that the election was for the first time conducted as an appeal to the people from public platforms. Newspapers were outspoken in their presentation of the issues, President Portes Gil maintained an impartial attitude, and the Opposition candidate exhibited an aggressive and independent attitude throughout the campaign.

After the election Vasconcelos made his way to the United States, where he issued a call for a revolution. No revolution followed, but on December 22 the government announced that, in a raid on the Vasconcelos headquarters in Tampico, a plot for an uprising was uncovered and fifty persons arrested. Other Vasconcelos adherents were arrested at Guadalaajara and Nogales, charged with plotting revolution. About the same time a conspiracy to assassinate former President Calles was discovered by government authorities and thirty persons were arrested. Twenty others, alleged to be foreign anarchists who had planned a terrorist campaign, were rounded up and deported.

OTHER EVENTS. Previous to his inauguration, President-elect Ortiz Rubio made an extended visit to the United States, where his reception reflected the increased cordiality of the relations between the two countries. President Hoover broke a precedent by calling upon the visitor at the Mexican Embassy in Washington. In a radio address delivered in New York, Ortiz Rubio said he believed it "indispensable for the prosperity of both countries to strengthen more and more the ties of friendship which unite us on a basis of mutual respect."

An incident which disturbed somewhat the development of friendly relations with the United States occurred in December, when the District Attorney John Valls of Laredo, Texas, threatened to arrest General Calles, who was scheduled to pass through Laredo on his return to Mexico from a visit to Europe and the United States. Valls charged Calles with complicity in an alleged political murder on the Texas side of the Rio Grande several years previous. General Calles passed through Laredo accompanied by a United States military guard to prevent the threatened violation of his diplomatic immunity. On December 17, the Mexican Ministry of Foreign Affairs closed the Mexican Consulate at Laredo, rescinded the permission granted the Laredo Chamber of Commerce to issue tourists cards into Mexico, and announced that no goods purchased in Webb County would be allowed entry into Mexico. At the same time the Mexican Consul General in San Antonio declared that the consulate would be reopened only after the resignation of Mr. Valls, who was charged with displaying enmity toward Mexico on former occasions.

Despite the demands of Laredo merchants, whose business was badly curtailed, Governor Moody of Texas refused to remove Valls, appealing instead to Secretary of State Stimson to attempt to secure the reopening of the Consulate. The Secretary of State, after pointing out to the Governor that the source of the difficulty lay in the latter's failure "to ameliorate the conduct of the legal officers of the (Webb) County," finally consented to intervene with the Mexican Foreign Office. Two Americans seized for ransom were killed by Mexican bandits on February 22. On February 28, the military governor of Guanajuato reported that ten members of the bandit group had been killed in a battle with Federal troops.

A two-year extension of the General and Special Claims Commissions engaged in adjudicating the claims of American and Mexican citizens against the Mexican and United States governments, respectively, was authorized by a convention signed in Mexico City in August and September. The General Claims Commission then had on file claims of 2781 American citizens aggregating \$513,694,257 and claims of 836 Mexican citizens totaling \$245,158,395. The Special Claims Commission appointed to dispose of claims of American citizens for damages and losses arising from revolutions in Mexico between 1910 and 1920 had on file 3148 claims involving \$420,435,256.

The temperance movement gained considerable headway in Mexico during the year under the active encouragement of President Portes Gil. In May, the President announced the formation of a committee to discuss with the national and state governments the gradual introduction of temperance measures. The governors of most of the states pledged their cooperation.

On December 15, a new and radical law code, abolishing the jury system and the death sentence, went into effect. See UNITED STATES, under History, and PETROLEUM. Consult Frank Tannenbaum, *The Mexican Agrarian Revolution* (New York, 1929).

MEYER, HANS A German explorer and editor, died July 6, 1929, in Leipzig. He was born Mar. 22, 1858, in Hildburghausen and studied science and political economy at the universities of Leipzig, Berlin, and Strassburg. In 1884 he entered the Bibliographische Institut in Leipzig, founded by his grandfather, and on the death of his father in 1885 became one of the directors of that publishing house, holding the office until 1914. From 1915 to 1928, he was professor of colonial geography in the University of Leipzig. He was also a world traveler and explorer, beginning his travels as early as 1882. During 1887-89 he made three expeditions into East Africa to explore the Kilimanjaro. In 1889 he reached the top of Kilbo, the higher peak of this mountain, where he found a crater. The results of a study of this mountain he published in *Der Kilimandscharo* (1900). His other writings include *Die Strassburger Goldschmiedezunft von ihrem Entstehen bis 1681* (1881), *Eine Weltreise* (1884), *Zum Schneedom der Kilimandscharo* (1888), *Ostafrikanische Gletscherfahrten* (1890), *Die Insel Teneriffe* (1896), *Die Eisenbahnen im tropische Afrika* (1902), *In den Hochanden von Ecuador* (1907), *Das Deutsche Kolonialreich* (1909-10), *Die Barundi* (1916), *Das portugiesische Kolonialreich* (1918).

MIAMI UNIVERSITY. A coeducational institution in Oxford, Ohio, founded in 1809. The enrollment for the autumn of 1929 was 2044, dis-

tributed as follows. College of liberal arts, 722; school of education (four-year course), 695, (two-year course), 198, business administration, 405; fine arts, 24. The faculty numbered 150, of whom 13 were new appointees. The income from the State of Ohio for maintenance, from gifts, fees, and income on investments for 1929-30 was \$1,104,880. There were 105,000 bound volumes in the library. The school of fine arts was opened in the autumn of 1929 with a dean and faculty of 13 members. The curriculum as arranged covered only the freshman year, but courses for the other three years were to be added as needed, leading to degrees in architecture, music, and art. The most important gift of the year was that of \$65,000 from the Daughters of the American Revolution and known as the Caroline Scott Harrison Memorial Gift. This was used in remodeling as a women's dormitory the building formerly occupied by Oxford College for Women, which was merged with the university in 1928. The Ohio Legislature appropriated funds for the erection of a new gymnasium and a new chemistry building costing approximately \$600,000 and for the purchase of Lewis Place, under lease since 1909, as the home of the president. The university received as a gift the homestead built in 1829 by the first president of the institution, Robert Hamilton Bishop, to be used as a faculty centre. President, Alfred H. Upham, Ph D.

MICHETTI, mè-kèt'ti, FRANCESCO PAOLO An Italian genre painter, died Mar. 5, 1929, in Francavilla Al Mare. He was born in 1851 at Tocco da Casauria in the Abruzzi, and studied under Morelli, an Italian historical painter, at the Naples Academy. A member of the modern realistic school of Italian painters, he chose subjects from peasant life in southern Italy, painting them with dramatic insight and versatility of style, and in rich, dazzling colors. His works include *Corpus Domini* (1877), *Palm Sunday* (1879), *The Shepherdess of the Abruzzi* (Modern Gallery, Rome), *Peasant Girl* (Pennsylvania Academy), and *The Vow* (1883, Modern Gallery Rome).

MICHIGAN. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 3,668,412. The estimated population on July 1, 1928, was 4,591,000. The capital is Lansing.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod. Bu.	Value
Hay	1928	3,029,000	5,085,000 *	\$54,207,000
	1929	2,870,000	4,327,000 *	50,013,000
Corn	1929	1,344,000	32,928,000	29,806,000
	1928	1,461,000	48,944,000	41,113,000
Oats	1929	1,372,000	40,886,000	19,625,000
	1928	1,633,000	58,461,000	25,138,000
Wheat	1929	904,000	16,810,000	18,994,000
	1928	887,000	14,202,000	18,164,000
Dry beans	1929	694,000	5,691,000	21,087,000
	1928	538,000	5,918,000	26,385,000
Potatoes	1929	263,000	18,410,000	23,012,000
	1928	306,000	35,402,000	14,321,000
Sugar beets	1929	50,000	287,000 *	
	1928	71,000	452,000 *	3,268,000
Barley	1929	243,000	5,592,000	3,856,000
	1928	270,000	5,100,000	5,670,000
Rye	1929	166,000	2,241,000	1,972,000
	1928	182,000	2,366,000	2,200,000

* Tons

MINERAL PRODUCTION. The mining of iron ore, the foremost of the mineral industries of Michigan, again fell off somewhat in 1928, in contrast

to increasing production in the neighboring State of Minnesota. The iron mines of Michigan produced in 1928, 14,241,102 long tons of ore; they had yielded in 1927, 14,534,831 tons. The value of ore mined was 1928, \$37,039,044, 1927, \$37,135,364. Though the iron-mining industry of the State was small, yield of short tons, valued at \$2,631,000, in 1928 and in 1927, 756,763 tons, in value, \$3,262,000, coking and the smelting of iron were active. There were produced in 1928, 2,399,656 short tons of coke, in value, \$13,461,466, in 1927, 1,920,394 tons or \$12,227,241. Blast furnaces of the State shipped 797,776 long tons of pig iron, in value, \$15,157,535, in 1928; in 1927, 626,532 tons and \$12,527,993. Copper mining was slightly more productive in 1928. The mine production of copper was 1928, 178,442,701 pounds, in value, \$25,697,749; 1927, 177,537,775 pounds and \$23,257,449. There were shipped from mills 14,044,230 barrels of cement in 1928 and in 1927, 13,708,259, the values of shipments were, for 1928, \$19,628,495 and for 1927, \$20,858,202. The salt production increased to 2,405,240 short tons for 1928, from 2,271,460 for 1927, its value, to \$8,249,437 for 1928, from \$7,551,552 for 1927. Clay products attained \$6,772,283 for 1927 and \$7,362,007 for 1926, stone production, \$6,560,946 for 1927, \$6,715,249 for 1926. The value of all mineral products totaled for 1927, \$124,029,572, for 1926, \$130,860,609.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 8208.46. There were built, in 1929, 21.93 miles of first and 6.61 of second track.

MANUFACTURES. According to the biennial Census of Manufactures published by the U. S. Department of Commerce in 1929, there were in the State, in 1927, 5800 manufacturing establishments. These employed 488,856 wage earners, whose wages for 1927 totaled \$760,602,319. Materials and supplies used in manufacture cost \$2,346,078,396. The manufactured products attained the combined value of \$1,244,941,132.

EDUCATION. The school-aged population for 1928 was placed at 1,274,478. There were enrolled in the public schools of the State 848,741 pupils, and in the parochial and private schools, 136,445 pupils. The enrollment in elementary schools was 707,205, in high schools, 141,536. Expenditures of the year for education totaled \$87,151,126. Salaries of teachers averaged \$202 a month for men and \$153 a month for women.

The Michigan law as to the certification of public school teachers was modified so as to remove the power of certification from the county superintendents and vest it specifically in the department of public instruction. An appropriation of \$2,000,000 from the general funds of the State was made for distribution among the poorer school districts. This step was characterized by a commentator in the *Journal* of the National Education Association as carrying the State forward a long way in the acceptance of responsibility in the equalization of educational opportunity.

CHARITIES AND CORRECTIONS. Within the State Welfare Department in 1929 were the State Welfare Commission, which had parole power over the inmates of a number of institutions and duty of inspection of jails, maternity hospitals, and children's boarding homes, and control over probation officers and county agents, the State Prison Commission, in charge of the prison, the State Hospital Commission, in charge of hos-

pitals, and two other institutional commissions. There were, in September, 1929, 20,159 inmates distributed as listed among the following State institutions for the care or custody of individuals: Kalamazoo State Hospital, 2574; Pontiac State Hospital, 1689; Traverse City State Hospital, 2079; Newberry State Hospital, 1138; Ionia State Hospital, 664; Farm Colony for Epileptics, 776; Michigan Home and Training School, 2784; State Prison, Jackson, 4113; Michigan Reformatory, Ionia, 1593; Branch Prison, Marquette, 882; Boys' Vocational School, 665; Girls' Training School, 308; State Public School, 304; School for the Deaf, 371; School for the Blind, 102; Employment Institute for the Blind, 57.

LEGISLATION. The regular biennial session of the Fifty-fifth State Legislature convened on January 2 and adjourned on May 8. The effort was made to alter two features of the State's penal law that had drawn much criticism. One of these features, the life imprisonment of fourth offenders convicted of a minor infraction of the Prohibition law, was abolished by an act limiting life sentences upon fourth offenders to cases where the fourth offense would of itself carry a normal penalty of five years. The other feature, the absence of the death penalty from the penal laws, which had been criticized as responsible for frequency of homicides, led to the passage of the Wood-Lennon bill, providing death by the electric chair for murder in the first degree, but Governor Green vetoed the measure. A bill for the rehabilitation of the State institutions was enacted, authorizing the expenditure of some \$28,000,000 for building purposes. The Lower House having defeated a proposal to issue \$20,000,000 of State bonds for the institutional programme, an increase in the direct tax was voted, to defray the cost. There was created, also, a State tax of one cent on every ten cigarettes sold in the State. Likewise a sale tax was placed on malt, despite the common impression that this substance was purchased extensively for the manufacture of beverages forbidden by the State Prohibition law. The Prohibition law was itself amended, and in some respects rendered more stringent, chiefly by the classification of liquor violations. A commission was created to inquire into the tax system of Michigan, with a view to the enlightenment of the next subsequent Legislature, and a crime commission was brought into being. To correct an error in the school code of 1927 that had inadvertently repealed the enactment of that year for a teachers'-retirement-pension fund, provision for this fund was reenacted. The terms of a new dairy law applied the milk standards of Detroit to the entire State. Two years of college credits were made requisite to the study of the law. By an amendment of the corporation tax, the intangible property, located in Michigan, of foreign corporations was rendered taxable. Airplane gasoline was subjected to the 3-cent gasoline tax.

POLITICAL AND OTHER EVENTS. The repeal of the life sentence for fourth offenders as applying to small infractions of the Prohibition law was followed by the issue of pardons to some of those previously sent to prison under this act. The number of fourth offenders sentenced to life for Prohibition infractions up to the time of the amendment of the penal law on this point was stated to have been 15. A movement was started in the spring to bring about a referendum on the act of 1929 placing a tax on cigarettes. A petition for the referendum obtained some 120,000 signa-

tutes, and Attorney-General Brucker in an opinion rendered July 16 ruled that, subject to the checking of the petitioners' names, a referendum should be held in November of 1930, and that the tax should not previously be effective. By a decision of the State Supreme Court rendered March 20, the Michigan Bell Telephone Company was prevented from the diversion of part of its profits to the parent corporation, the American Telephone and Telegraph Company, under a contract held not to indicate that the Michigan company received any compensating consideration. The telephone rates, a subject of conflict, were not directly affected.

The need of reforesting the State's waste lands was agitated by the *Detroit News*, which proposed a plan of general action toward replanting. A benevolent fund, the Children's Fund of Michigan, was created by Senator James Couzens, with a gift of \$10,000,000. The terms of the trust required that the money be employed to promote the welfare and particularly the health of children of the State and that it be all expended within 25 years. What was declared likely to be the last great lumber drive in the State took place on the Manistigue River and Driggs River late in July, about 2,500,000 board feet of pine, hemlock, and hardwoods being run.

The city of Detroit in an election held April 1 rejected a proposal to create a great municipal subway by the expenditure of \$91,000,000, of which \$54,600,000 would have been furnished by an immediate issue of bonds. The Ambassador Bridge, characterized as the greatest suspension span in existence, was completed and was formally upon on November 11. It bridges the Detroit River, connecting the city with the Canadian shore. Preliminary work was undertaken on a proposed third bridge over the river, to be known as the Grosse Isle and Amherstburg Bridge. By the gift of Mr. and Mrs. Charles T. Fisher of \$750,000 to the Sisters of St. Vincent de Paul, a hospital was provided, which was to be built to replace that destroyed by fire in November, 1928. A new Woman's Hospital building was dedicated on June 1. Ground was broken in October for a new Naval Reserve Armory.

OFFICERS Governor, Fred W. Green, Lieutenant-Governor, Luren D. Dickinson, Secretary of State, John S. Haggerty, Treasurer, Frank J. McKay, Auditor, Oramel B. Fuller, Attorney-General, Wilbur M. Brucker, Superintendent of Public Instruction, Webster H. Pearce.

JUDICIARY Supreme Court Chief Justice, Howard West, Associate Justices, Louis H. Ford, Nelson Sharpe, William W. Potter, John S. McDonald, George M. Clark, Henry M. Butzel, Walter H. North.

MICHIGAN, UNIVERSITY of A State institution for the higher education of men and women in Ann Arbor, founded in 1817. In 1928-29 the enrollment was 13,769, of whom approximately 34 per cent were women, 65 per cent were inhabitants of the State of Michigan, and the remaining 35 per cent, with the exception of 351 foreign students, were from all parts of the United States. Of the total enrollment, in the summer sessions, 5717 were in the college of letters, science, and arts, 1570 in the college of engineering, 392 in the college of architecture, 979 in the medical school, 107 in the school of business administration, 253 in the nurses' training school; 723 in the law school, 130 in the college of pharmacy, 359 in the school

of dentistry; 1002 in the school of education; 32 in the school of forestry and conservation; and 2290 in the graduate school. The registration in the 1929 summer session was 3485. The teaching staff was composed of 819 members. The university libraries contained 718,425 volumes. For current expenses, the State appropriated \$4,923,000, while approximately \$4,000,000 was derived from other sources. During 1928-29 the new Intramural Sports Building and the Michigan League, a club house for women students, were opened, and the construction of an elementary model school was begun. The gift of the Legal Research Building, to include the law library, and of a new dormitory known as the John P. Cook Building, both to form part of the new law quadrangle was announced. Alexander Grant Ruthven, Ph.D., succeeded Clarence Cook Little as president in 1929.

MIDDLEBURY COLLEGE A coeducational, nonsectarian college in Middlebury, Vt., founded in 1800. For the autumn term of 1929, 616 students were registered as undergraduates and 19 as graduates, of these, 350 were men and 265, women. The enrollment in the special summer schools of French, Spanish, and English, conducted by the college, amounted to 593. There were 61 members on the faculty, including administrative officers and those on leave of absence. The productive funds of the college in 1928-29 amounted to \$3,411,553, and the income for the year was \$330,741. The library contained 60,000 volumes. Gifts to the college amounted to \$103,939. President, Paul D. Moody, D.D.

MIDDLE CONGO SEE FRENCH EQUATORIAL AFRICA

MIHALOVICH, EDMUND VON An Hungarian composer, died in Budapest, in August, 1929. He was born in Ferencsava, Sept. 13, 1842. He began his musical education under Mosonyi in Pest, then went to Hauptmann in Leipzig and finished under Bulow in Munich. Almost his entire life was spent in Pest, where for many years he was director of the Landes-Schauspielakademie. In 1887 he was chosen to succeed List as president of the Landesmusikakademie, which post he held till 1919, when he was pensioned. He wrote the operas *Hagbarth* and *Sigurd* (Dresden, 1882), *Toldi* (Pest, 1893), *Phana* (Pest, 1908), and *Wieland der Schmied* (after Wagner's sketch, not produced); four ballads for orchestra *Das Gespenstschiff*, *Hero und Lander*, *La Ronde du Sabbat*, and *Die Nix*, four symphonies, and a piano concerto.

MILITARY PROGRESS Any discussion of military progress among the nations of the world during the year 1929 must include something on the subject of the Kellogg Pact, the Covenant of the League, the Pacific Treaty, the Locarno Treaty and the optional clause of the Permanent Court of International Justice. The disarmament parley called for January, 1930 was bound to consider all these instruments in all their phases and hearings upon national security, and disarmament must include consideration of land forces and land reserves. Only time and the results of the parley will disclose to what extent the nations of the world will limit their armament, or how they will disarm.

The French idea seemed to be that disarmament should be carried out through the League of Nations, while Great Britain apparently was pinning her faith to the Kellogg Pact. Great Britain assumed that this Pact was the reason

d'être for the success of the conference and as a refutation of the French thesis. It was apparent that, unless disarmament would begin now, a tendency toward expansion in arms would develop and once more nations would be taught to trust only to military preparation for their security.

In an address by Prof. Harry Elmer Barnes of Smith College at the Rand School Forum, New York City, he stated that there were more potential causes of war in Europe than there were in 1914. If a situation like that in 1914 arose, there would be no important new force to hold Europe from war that did not exist in 1914, for diplomacy would find a loop hole in the Kellogg Pact. The League of Nations would not dare to interfere and progress in disarmament since the War, he said, had been "little but rhetoric."

With that view, the reviewer is inclined to agree, as one must who seriously contemplates the potential causes of war. Among those listed by Professor Barnes were Italian ambitions in Dalmatia and Albania, Albania and Italo-Franco friction in Africa, the Polish corridor, resentment and desire for revenge in Hungary and Bulgaria and the unsettled problem of the Dardanelles and Bosphorus. Many of these were discussed in the 1928 YEAR BOOK. The cancellation of all war debts and reparations was advocated as a basis of economic recovery, although, as far as moral questions are concerned, American financial generosity in debt settlement has been unparalleled in history.

The Franco-German negotiations for solution of the Saar problem did not achieve anything. There could be no doubt in the minds of the Germans as to what French demands are, if what Carlisle MacDonald cabled to the New York Times was correct, viz. 1.—The unconditional purchase by Germany of the mines of the Saar which were given to France by the Treaty of Versailles. 2.—Continuation of the present highly advantageous relationship between Saar provinces and France, both as to delivery of coal for the French steel industry and as to the present favorable tariff arrangements between the district and France. A new director for the Saar mines effective Jan. 1, 1930, does not seem to indicate an early return of the mines to Germany. Either Germany must meet the French demands in full or else France must maintain her present privileged position until 1935, the time limit fixed by the Treaty.

As to relations, the whole difficulty . . . possibility of war elsewhere according to Philip Kerr in *Foreign Affairs*, October, 1929. Great Britain could not ignore the possibility of being involved in war in the north Atlantic and the Mediterranean arising out of the discords of Europe and the Near East. The United States could not ignore the possibility of being involved in war in the Pacific arising out of the discords of Asia.

The World War proved that all earlier codifications of maritime law, e.g., the Declaration of Paris (1856) or the Declaration of London (1909), break down under the stress of world war, and that under modern conditions of the *guerre totale*, it is impossible to distinguish between contraband and non-contraband, or between public and private property at sea. Everything except ostrich feathers is used for war purposes. The whole idea of codifying neutral and belligerent rights is incompatible with the Kellogg-

Briand Pact, and in some measures with the Covenant of the League of Nations and the Locarno Treaties. It is quite illogical, as well as a confession of lack of faith, to draw up rules for warfare if the use of war itself is to be forbidden and renounced.

There is only one solution and that is that England and the United States should use all their efforts to prevent the settlement of international disputes by war, i.e., to make the Briand-Kellogg Pact effective. The alternatives are inexorable. Either war is prevented, or every war is liable to develop into an Anglo-American War.

If war is to be ended, nations not only must cease to use their armaments as the instruments of national policy; they also must agree to use them solely as the instruments for preventing successful resort to violence. They must be used either for military or for police purposes. *It is not possible to keep naval and land armaments in separate compartments.* Large armaments anywhere threaten war.

It will be almost impossible to prevent the military hegemony of France and her allies in Europe from developing into a new balance of power ending in another world war, unless adequate international securities for the prevention of war can be created. How is that to be done?

Are the Polish corridor, the Anschluss, the outlet for surplus populations, economic opportunity for all nations, the relations between East and West, between Russia and her neighbors, the giving of security against international wrong and aggression and other problems to be settled by patient consideration of them in all their aspects and a willingness to do what reason and justice eventually prescribe, or are they to be settled by war?

As to France and Italy, an between them is essential to the The patriotic hysteria prevailing in Italy is not without its dangers. The failure of Mussolini to find an outlet for Italian emotions in Sicily, in Abyssinia, in Albania, along with pressure on Italian finance which was increasing in spite of the efforts of his government to reduce the strain, was making for a perilous atmosphere gathering around the abandonment of a policy of rejecting the status quo for something that promises more grand adventure. Napoleon III showed us what such things cost. So did the Kaiser. (Henry di Jouvean, *Foreign Affairs*.)

Under date of October 8, Voroshilov, Soviet Minister of Defense declared that military discipline was necessary not only for the Red Army but the Soviet plants as well. He pointed out that the coming fight in which the fate not only of Soviet Russia, but of World revolution is finally decided will be mass war, and that Soviet armed power ought to be strengthened by militarily organized plants and factories. While stating that the Red Army, so far as aviation, artillery, and deadly poisons were concerned was already strong enough to defeat "all our supposed enemies," the fact must be considered that these enemies are supported by superior industries. He emphasized that the utmost must be done to improve their army's present equipment, quality and quantity. He expressed the opinion that the next war would be decided by the workers in the plants and by the professors in laboratories and students in technical universities.

China was engaged in warlike activities most of the year, her break with Soviet Russia on account

of the Chinese Eastern Railway came as "a bolt from the blues." It was almost inevitable that the two countries should have been brought to the brink of war—with serious hostilities and armies engaged in serious conflict. The parley pending between the Chinese and Russian delegates was not expected to solve finally the vexed question. As to the warfare going on by rebels or dissatisfied province or army commanders against the Nationalist government conclusions may not yet be definitely stated.

ARMIES OF THE WORLD The authorized peace strength of the armies of leading nations were as follows

United States	119,112
Great Britain (exclusive of India)	212,044
France	626,488
Italy	249,429
Japan	306,400
Russia	562,000
Germany	100,635

The active and reserve totals were

United States	426,153 or	32 to 1000 of population
British Empire	974,993 or	25 do
France	5,676,945 or	5 1/2 do
Italy	3,342,236 or	7 1/2 do
Japan	2,248,000 or	2 1/2 do
Russia	6,083,000 or	4 1/2 do
Germany	100,500 or	16 do

GREAT BRITAIN In the War Office exercises in September army training was carried on with night operations of an infantry-brigade group having as then object the testing of the idea that a small force under cover of darkness may sometimes succeed where in daylight a larger force has failed. In the division maneuvers, the question arose as to the best use of divisional cavalry, cooperating with infantry, as compared with the tanks allotted to cavalry acting independently. More maneuvers will have to be made to determine the question. Also, affecting light tanks, when it is a race for time, whether it is best to send horsemen or light tanks forward to make good important ground on ahead. It seems that light tanks in suitable country are likely to forestall cavalry and should be sent in front of them when such a mission has to be carried out.

In the House of Lords on November 14, the Government was warned that the British Army had fallen below the point of safety when her increased responsibilities in controlled territories, mandated territories, and frontiers were taken into account. Lord Middleton declared the army had fallen below its strength of 1895 when it had 148,000 in England and 73,000 in India, since there were in 1929, 140,000 in England and 60,000 in India. Lord Allenby said "British armed forces have been a great universal police force and we must keep them at such strength that we can, when required, safeguard and uphold the mandates with which Britain has been entrusted." A matter of policy seeming to emphasize this danger of lessening safeguards.

The Indian Central Committee, cooperating with the Parliamentary Committee, had before it the very serious future condition of the Indian Army. According to the policy laid down by the Government of India Act of 1919, the Indian Army must be brought under control of the Indian Parliament. The throwing open of the ranks of commissioned officers was a part of the move

in that direction. British officers cannot serve as mere mercenaries under the pay of the future government of India and the Indian Army must be Indianized if it is to be handed over to Indian Control. The functions of the Indian Army have been—one of defense from external dangers and one of keeping internal peace. A solution appears to be that these two functions be given to different groups (1) the central Indian Army, which should remain partly under British control as at present and (2) the provincial armies, to preserve internal peace, under the control of the provincial governments, which should be recruited, manned, and paid for by the provincial governments.

The evacuation of Weisbaden by the British troops beginning September 26, by the departure of the band of a Dorsetshire infantry regiment and a small detachment from its barracks in the famous resort of Bad Schwalbach, playing "John Brown's Body," lends an interesting note in Rhineland rule. For eleven years the British Army has contributed varying numbers of troops of all arms to the Allied Armies of Occupation in Rhineland territory. The Watch on the Rhine could be inscribed in the annals of such units as a phase in British Military history and will in the course of time become a tradition of which all ranks may be justly proud.

The Director of Mechanization of the British Forces, Maj-Gen S C Peck, stated their expectation on mechanization overcoming the dominant power of the defensive and restoring decisive maneuver in battle as follows: "We are in a purely experimental stage, feeling our way, but, personally, I feel that mechanization has come to stay. It is the pivot around which future armies must organize." The British Tank Corps had enjoyed a continuous existence since its creation as a new combat branch during the World War and had given continuous study to the organization, equipment, training, and tactical employment of mechanized units.

As has been noted Tank Corps units are not normally included in corps or division but are considered part of G H Q reserve and at present include 4 tank battalions and 11 armored-car companies.

The real problem of mechanization was to work fighting machines into the tactical thought and practice of the army.

Extensive tests were made with wheeled and half-track tractors, trailers, armored caterpillar tractors and self-propelled mounts. All mobile anti-aircraft artillery had become motorized, the guns being mounted on trailers which are towed by 6-wheeled tractors. Anti-aircraft equipment included machine guns and anti-aircraft guns mounted on special cross-country carriers. The carriers provide armored protection for engine driver and for members of gun crews except when operating their weapons. The 37 howitzer batteries, for close support of cavalry experimentally were provided with caterpillar trailers.

The "dragons" were apparently in good standing, because they do the work and fit into the mechanized force. They weigh about 9 tons, have a speed of 16 miles per hour, and capacity for 11 men and 128 rounds of field ammunition and a 3.3-inch gun in tow, engine is air cooled.

In the infantry, the 1929 experiments involved the partial mobilization of two infantry brigades. The infantry battalions of these were not motorized. The tractor is comparatively slow, but in-

conspicuous, light, simple, and cheap, provides partial armored protection for driver and gunner and carried either a 303 machine gun and 3500 rounds of ammunition or a 3-inch mortar with range of 2000 yards. The 0.8-inch anti-tank gun on its mount is towed by the tractor, the 0.5-inch anti-tank gun can be mounted on a tractor. All of these weapons were intended for close support of infantry.

For close reconnaissance the British considered the horse soldier indispensable and irreplaceable. Two cavalry regiments, however, had their horses replaced by armored cars. All of the horse cavalry regiments were supplied with light 6-wheeled trucks for their first-line transport. It was all experimental, however, and no conclusions definite or determined were reached.

Remarkable progress was made in the development and use of bridging equipment including pontoons, for mechanized forces. Pontoons are light, collapsible, and can be conveniently nested. Roadway made of duck boards can be placed in position quickly.

Experiments with smoke-producing devices were not satisfactory. An armored vehicle with a weapon that can fire smoke shells either when in motion or stationary was considered more useful than a smoke-producing machine (*Field Artillery Journal*, November and December, 1929).

The exercise involving the armored cars of the mounted regiment was the first of its nature since the machine took the place of the horse in the regiment. The time from the assumed frontier to the river crossings, compared with that which horsemen would have taken, was significant. The experience gained showed generally that the principles which govern mounted troops employed on such missions apply equally to armored cars, which range more widely and do the work more rapidly. Difficulties arose over control. They can be solved by keeping pace with scientific progress in radio telephony.

It appears that while the substitution of a battalion of light tanks for a battalion of infantry was ideal in a brigade upon a special mission, it is not a sound policy to embody permanently in an infantry brigade so mobile a unit as a battalion of tanks. The embodiment of small mortars for a close support was worth considering. The question of the best methods of carrying infantry machine guns and gunners and that of machine-gun platoons in companies instead of machine-gun companies in battalions must be studied further.

FRANCE. The World War completely changed the old-time methods of erecting defensive fortifications and such famous forts as Walther, defending Antwerp, Loncin at Liège, Vaux and Beaumont at Verdun were being replaced by subterranean trenches, covered over and as far as possible made invisible to airplanes. Disappearing guns lifted by mechanical apparatus can be made to disappear under ground when the enemy has found the range or planes are dropping bombs. Machine-gun defense was receiving special attention.

No work of any account was being done along the northern frontier separating Belgium and France. The feeling was deeply engrained in the French military mind that should Germany ever attack again it would not be through Belgium. The strengthening of the fortifications along the Rhine and north of Lorraine started in 1927 was

expected to be finished before November of 1930.

The Chamber of Deputies on Dec 28, 1929, appropriated 2,900,000,000 francs (\$116,000,000) to fortify the positions and to increase the navy. More than one-third of the appropriation was to be available in 1930. The programme of defense for which funds were voted as above was in continuation of the plans laid previously. The land defenses were made necessary in part by new frontiers given by the Treaty of Versailles. Just what was planned of course was not made public. The evacuation of the Rhineland makes execution of the plans urgent.

Actual evacuation of Coblenz began Oct 15, 1929, with the departure of 151st Infantry Regiment for its new post at Metz. The shifting of troops in the third Rhineland zone during September and October was due to economical reasons rather than otherwise, because under the Young Reparation Plan the expense of maintaining Allied troops in the Rhineland after Sept 1, 1929, must be borne by the government concerned instead of by Germany. The most strategic posts were maintained and it may be assumed that all French troops in the third zone would remain there until final ratification of the Young Plan by Germany.

Twelve hours after the French tricolor had been hauled down, Nov 30, 1929, the flag of the German Republic was hoisted at midnight over the famed fortress of Ehrenbreitstein which crowns the heights of the Rhine opposite Coblenz, signaling the end of foreign military control of the Second Zone of the Rhineland. What a memory to the Americans who served with the Army of Occupation! Here was a worthwhile ceremony, for thousands of happy Germans celebrated the reunion with the Reich of the 2,000,000 German citizens who had been under the supervision of Allied troops since the American doughboys marched into the city eleven years before.

The hauling down of the French flag marked the complete evacuation of the Second Zone as a similar ceremony took place at Aix-la-Chapelle (Aachen), when the Belgian troops retired over the frontier to their own territory. It is interesting to note that during the Belgian occupation 4000 rooms were sequestered, 23 persons were killed and 34 officials and civil-service employees were expelled from Aachen, all costing about \$7,400,000 for an average contingent of 4000 soldiers during the last year and 9000 at the beginning. And what of the future? General Poullet, commanding Belgium troops said "The Germans are executing works here which can only be explained by military reasons. According to Von-Seckt's theory, motorized German shock troops leaving Aix-la-Chapelle at 8 p.m. could be in Brussels at 5 A.M. the next day without having met Belgian troops."

The Third Zone, centering at the Mannheim bridgehead was the only one left under allied control at the end of the year.

According to the Treaty of Versailles, Article 43, the Allies were to occupy the Rhineland for 16 years, when, provided Germany had fulfilled her obligations under the treaty, they were to withdraw, it being stipulated that the bridgehead of Cologne and nearby territory should be evacuated after five years, the bridgehead of Coblenz in ten years, and the remainder of the Rhineland in fifteen years, provided the guaranties against aggression by Germany were

considered sufficient and she was observing the conditions concerning reparations.

France's demand for the inclusion of "sanctions" or military guarantees in the protocol of The Hague conferences would be vigorously opposed by the German Foreign Minister probably because the United States has accepted Germany's good faith as the sole guaranty of payment. It was believed that a guaranty must be given conforming to Article 430 of the Treaty of Versailles, which provides a right of reoccupation of the Rhineland in case of default by the Reich.

The new law reducing compulsory military service in France to one year will provide adequate defensive forces and bring great economic and social benefits. An important feature of the new law was the possibility of convoking, without mobilization, every one eligible for military service in the first three classes of reserves. Each eligible man will resume his place in the ranks among his former comrades of army days. This convocation will require less than three days. If mobilization is ordered thereafter, it will be accomplished much quicker than it was in 1914. There is a legal obligation to forward to the League of Nations news of intention to convoke men eligible for military service. With the one year's military service, France had begun cutting down the number of soldiers under the colors. There were to be 400,000 men in the new French Army, as against 540,000. Due to science and organization, it was believed it would be as formidable as the larger army with two years' service requirement. It will cost more, however, there will be 106,000 professional soldiers, officers, and non-commissioned officers, and 35,000 civilians.

Modern subterranean fortifications, machine guns, motorized artillery, mass automobile transportation, the army of the air, and other sources of science and invention were counted on to counteract the lessened man power.

The "blues," as conscripts are called, were to be put through intensive training during their twelve months, learning the principles of war. Domestic policing, riot duty, and the like would be taken care of by an enlarged force of 15,000 gendarmes. In the colonies, native troops would be used, but officered by officers from France.

For 1930, it was estimated the actual cost would be \$242,000,000, about $\frac{1}{20}$ more than in 1929. France was to spend 2,500,000,000 francs, about \$100,000,000, during five years on defensive fortifications of her post-war frontiers, north, east, and the Alps. It was to be especially noted that this was the first time in her history that France was devoting nearly as much time and money to strengthen the Alps as the line of the Rhine—a reversal in form when one thinks of Italy as an ally and Germany her traditional enemy.

The war budget of France for 1930 was to amount to 4,305,992 francs or about \$170,000,000—an increase of \$9,000,000 over the expenditures of 1929. There was another appropriation of roughly \$72,000,000 for maintenance of troops in Algeria, Tunisia, Syria, and China, bringing the total for 1930 to \$242,000,000.

AUSTRALIA The new Labor Prime Minister, J. H. Scullin, announced Oct. 31, 1929, that compulsory military training in Australia had been suspended and that the whole matter would be reviewed with military officials with a view to adopting "a more satisfactory and more efficient system in place of compulsory training. Military

training is now given between the ages of 17 and 21 and consists of a couple of hours weekly drill with an annual camp of 7 days during the later stages of training.

ITALY. Notwithstanding disarmament discussion in many countries, Italy apparently intended to look out for national defense. The War office and Ministry of National Education agreed that students at all universities throughout the kingdom should receive special instruction and training in duties as army officers. During the university year weekly courses were to be undertaken by the officers of the staff college in military tactics, and similar courses were to be given for the officers of the regular army. These lectures form part of the curriculum which all students, without exception, were to be compelled to attend. Added to this, they would have drilling at stated periods, and also pass part of their holidays in camp. When their course, which was supposed to coincide with their taking a degree was finished, they would follow a seven months' practical course in the army and receive a commission in the officers' army reserve corps. They were to be liable to be called up under certain conditions, to continue their practical study of war tactics. The project was put in force at the opening of the university year in November.

RUSSIA. Press dispatches from Moscow November 6 stated that 30 war tanks built in Soviet factories with money raised from a fund known as "Our Answer to Chamberlain" were presented to the Red Army as part of the twelfth anniversary ceremonies of the 1917 revolution. They were of various sizes and said to combine the best principles of European and American tanks and bear individual names such as Railway Worker, Printer, Miner, Textile Worker, Sailor, and Soldier.

Russian women, who had long been admitted to special units in the Red Army were to have advanced instruction in the art of war. The Revolutionary War Council, according to press information of November 11, decided to admit women between the ages of 18 and 23 to military academies for instruction in rifle and artillery fire, aviation, photography, communications, and medical service.

MEXICO. The Secretary of War, Joaquin Amaro, made public on October 23 the 1930 War Department budget amounting to about \$41,000,000 and providing for an army of 60,000 men—a reduction of \$31,000,000 over the 1929 budget or nearly 45 per cent.

IRELAND. The whole of the Army Air Corps was based at Baldonnel Aerodrome about ten miles out of Dublin. There were four very large hangars constructed by the British government in 1917. The Air Corps consisted of headquarters and one squadron having two training and one service flights. Officers must know the make of every machine and be prepared to act as pilot, observer, workshop, or stores officer. The machines bear the Irish State colors, emerald, white, and orange, on the wings and tail. Colonel Fitzmaurice, the first to fly the Atlantic from east to west was the officer commanding.

The Army Medical Service was organized as a division of two companies. The service was commanded by a colonel, with 53 officers, 33 nurses, and other ranks. The Military Police Corps had its headquarters in Dublin with a depot company, one company at Dublin, Cork, Athlone, and Curragh, the first two having two platoons each,

the other two one platoon each. The Army Signal Corps was organized in a headquarters company at Dublin, three signal companies for the Limerick, Cork, and Athlone districts.

In the matter of uniform, one is struck with the great uniformity present, for there is practically one uniform. Six patterns of cloth cover the whole range of army dress. Three for officers, one for the tunic, one for the breeches of dismounted officers and for trousers, and the third a light buff khaki cord for the breeches of mounted officers. The color of the two former is a dull green, slightly tinged with brown. The three cloths for the men are uniform in shade, very much darker and greener. In equipment, the whole army, except commissioned officers, carries the 303 Mark VII short Lee-Enfield rifle with 17-inch bayonet.

For training, there is a special training establishment at Curragh called the Army School of Instruction. Every battalion goes to camp for one month during the year. Musketry training entails the firing of 285 rounds per man for infantry and 150 for other services. All officers take a six weeks' course at Curragh. The machine-gun course of six weeks for junior officers embodies training in riding and horse mastery. For the non-commissioned officers, the school at Curragh also is used, an unusual feature being the giving of religious instruction.

Officers' pay is as follows: Lieutenant-General, £1000 per year, Major General, £800 a year, Colonel, 28s, 30s, and 32s a day, the increase being after two and five years' service, Major, 24s, 26s, and 28s per day, Commandant, 20s, 22s, and 24s a day, Captain, 14s, 16s, and 18s a day, Lieutenant, 10s, 12s, and 14s a day, Second Lieutenant, 8s, 9s, and 10s per day. Officers' messes are maintained very much after the model of the British Army, with a defense force regulation for the "cultural and social well being of the members, the messing of members and visitors, the cultivation of esprit de corps, and the maintenance of the national and social position of the officers of the forces." Commanding officers were directed to dine in mess once a week and to see that all non-dining members attend that evening.

FINLAND. An unusual feature in the military aspect of Finland is the fact that operations are in many ways facilitated in winter owing to snow and ice, as in other seasons of the year the Finnish Army has to adopt a special form of warfare suited to the geographical features of the country, which consist largely of forest areas divided by a vast number of lakes and waterways. Field operations such as are carried out in most European countries are thus more or less impracticable in Finland, and a special form of guerrilla tactics has become the leading feature in Finnish military training. With the coming of winter every man in the Finnish Army takes to skis, the whole military machine becomes more mobile, and swift offensive action is the aim of all military commanders.

It was not until after the War of Independence of 1918, when the Finns defeated the Bolsheviks, that special ski battalions were formed. The artillery moves on skis, the guns being carried on sleighs drawn by horses, or having special heavy skis fitted to the wheels of the carriages. Machine guns are mounted on small sledges, drawn, as is the light transport, in small Lapland sledges by men with ropes over their shoulders. Ammunition is carried partly on the soldier, partly in

regimental reserves or hand-drawn sledges, and partly in large reserves carried on sleighs or motor tractors operating on the roads. The small Lapland sledges form the connecting links between the troops in action and the columns, and their mobility enables them to maintain a supply system over a considerable distance. Cavalry operates as a mounted force.

As an example of a ski march done by the Tampere Regiment the distance skied was 186 miles, covering 15 miles in the last day's march without any straggling. A normal day's march on roads with horse and sleigh transport is about 25 miles, while a maximum forced march without transport is about 62 miles.

UNITED STATES. Today, national defense cannot be left to haphazard methods, but must be planned consistently and carried out likewise. The President's message to Congress was most interesting as far as its figures are concerned, showing the United States to be foremost in the matter of current military expense exceeding "those of the most highly militarized nations of the world." The question naturally arose—Was it up to the United States to make the first offer of a real slash in military expenses? It remained to be seen whether in the forthcoming disarmament parley this would be the case. France may take this expression of President Hoover as being the very reason for her not reducing her military strength. From a total expenditure for national defense purposes in 1914 of \$267,000,000, it naturally rose with the Great War, but receded again to \$612,000,000 in 1924, when again it began to rise, until during the current fiscal year the expenditures will reach to over \$730,000,000, excluding all civilian services of these departments. President Hoover authorized will carry it to still larger figures in future years, yet the total of our expenditures is in excess of those of the most highly militarized nations of the world (President's message).

"In 1914 the officers and men in our Regular Army and Navy were about 164,000, in 1924 there were about 256,000 and in 1929 about 260,000. Our citizens army, however, including the National Guard and other forms of reserves, increased these totals to about 299,000 in 1914, about 672,000 in 1928, and 728,000 in 1929. Under the Kellogg Pact, we have undertaken never to use war as an instrument of national policy. We have therefore undertaken by covenant to use these equipments solely for defensive purposes. The improvement in the National Guard has definitely strengthened our National security by rendering it far more effective than ever heretofore—"

The actual strength of the active Army of the United States on June 30, 1929, was 137,539, according to the report of the Adjutant-General of the Army. The table on page 515 shows the total strength by classes of personnel.

In addition to all of the foregoing, there were 734 army nurses (561 regular and 173 reserve), 29 contract surgeons, 850 cadets at the United States Military Academy, making altogether 139,142 in the military service on that date.

Of the Commissioned officers, warrant officers, and enlisted men on active duty June 30, 1929, 98,943 were serving in the continental United States, 14,228 in Hawaii; 8734 in the Canal Zone, 228 in Alaska; 1196 in Porto Rico, 12,337 in Philippine Islands (including scouts), 1012 in China, 6 in Europe, and 1735 en route

COMMISSIONED OFFICERS	
Regular Army (active list)	11,948
Philippine Scouts (active list)	87
Retired Regular Army, on active duty	131
Retired Philippine Scouts on active duty	14
Total Commissioned	12,176
WARRANT OFFICERS	
Regular Army (active)	1,138
ENLISTED MEN	
Regular Army (active list)	117,701
Philippine Scouts (active list)	6,491
Retired Regular Army on active duty	24
Total enlisted	124,216
Grand total	137,620

from one country to another, on leave of absence, or serving as military attachés in various foreign countries.

The strength of the Officers Reserve Corps at the end of the fiscal year June 30, 1929, was 112,757 including 10,831 officers who held commissions in both the National Guard and Reserve Corps. This was a net decrease of 2067 during the year. A total of 19,608 received training during the year for periods of 14 days and 940 for longer periods, a total of 20,548.

For the first time the annual report of the Assistant Secretary of War revealed the fact that it would cost from \$250,000,000 to \$4,000,000,000 to build up a safe reserve of raw materials not produced in quantity in this country and necessary to conduct a modern war, and it gives a clear idea of the task of the department in attempting to create a reserve of materials for use in a national emergency. Major-General Fries, retired chief of Chemical Warfare Service, states there were some 25 strategic raw materials that the United States lacks that are absolutely essential in war, and without which military success will be impossible. Rubber, for motor transport, the vitally necessary gas mask, and large quantities required by the air service, with uses in all branches of the military machine is one of the twenty-five. Coconut shell charcoal, the best absorbent for war gases and the principal constituent of the gas mask canister is another. Tin, manganese, sisal, and shellac are some others. To insure a proper supply of these commodities, the sea lanes must be kept open, adequate substitutes found or a reserve of materials sufficient to last for a war of at least two years' duration. This is a task difficult in the United States where people are inclined to minimize the possibilities of any or another war.

The annual report of the Secretary of War praises peace-time activities. As to the mechanization of the armed forces, he states "When we increase the soldier's mobility, we should not accomplish it at the expense of his protection or his striking power."

A section of the report dealt with the work of rescue and assistance performed by the Army during the year, which included large expenditures from army stores for tornado victims and sufferers from disasters in many parts of the world. Supplies valued at \$953,766 were furnished to the Porto Rican hurricane victims.

With reference to the National Guard "The present condition is most gratifying. It is continually becoming a more valuable and dependable potential component of the Army of the United

States. The strength of the National Guard on June 30, 1929, was 12,347 officers, 188 warrant officers, and 164,453 enlisted men, an aggregate of 176,888. There was a net increase of 25 headquarters and 34 units. The cavalry has been reorganized into larger units. The total authorized strength on June 30, 1929, was 187,950.

"The Reserve Officers Training Corps now has a total of 112,424 students, enrolled in 321 units located at 226 educational institutions. Of these units, 221 were senior units, with an enrollment of 71,903, and 100 were junior units, with an enrollment of 40,521. This important element of our national defense continues to supply the life blood for the organized reserves, furnishing as it does approximately 5000 young officers each year. The Citizens Military Training Camps have been accepted by the country as a desirable contribution of good citizenship . . . We were assured of never again being forced into war, the camps still would be a profitable investment, for they awaken in those who attend them a readiness to serve the country in peace or war."

The New York *Herald Tribune* on December 2 editorially recalled the complexity of the army problem, referring to the suggested possibility of a reduction without impairing the national defense by Mr. Hoover, who pointed to the great absolute size of our military and naval expenditures.

"The real problem of the Army can be solved by neither the President nor the General Staff alone. The Army finds itself charged with 'the national defense.' It is a mission of complete vagueness, under which it may be called upon to do any one of half a dozen quite different things at any time between to-morrow and eternity. In theory it is supposed to be equally prepared for a punitive expedition in unsettled territory or a major war in highly developed country. It can, to take an example, dispense with neither its mules nor its tractors. It must keep up its weapons for use to-morrow, at the same time that it must avoid loading up with a vast equipment which may be obsolete long before any actual service is required of it. And it must retain the infantryman while developing the Air Corps, because there is no possible way short of actual fighting in which to determine which one will prove the more valuable in war . . . Everywhere throughout the Army, there reigns a want of men, a want of means, a feeling that existing units and services have been piled down so far that they are of little use."

According to the opinion quoted, the Army has never abandoned the "six-field army plan" of organization for the national defense on a theoretical war-time force of some 2,000,000 men. The plan above survives because Congress has not changed it, but Congress has cut the strength of the regular establishment in two and the appropriations for reserve work never have been forthcoming on the scale anticipated. In the end Congress has to say what the plan will be and will have to do its share in making the revision.

The conclusion of Major-General Gilchrist, Chief of the Chemical Warfare Service that "flesh and blood cannot advance against machine guns in the proportion in which they are now included in modern armies without the protection afforded by armor, smoke, or great masses of artillery" is in consonance with the later experience of the World War. As against artillery and armor, smoke is very economical and is about the only possible protection, other than the

speed of the mechanized force itself, against semi-automatic weapons. Accentuation of smoke training has been one of the major aims of the Chemical Warfare Service during the year. Specifications for the construction of atomizing apparatus for airplanes have been prepared and instructions for their use have been written. A number of these apparatuses have been constructed and successfully employed for the production of smoke screens in a great number of demonstrations and field tests.

"The Infantry Board has also carried out a test of the smoke-screen apparatus for tanks, finding that the mechanical elements and their functioning were in general mechanically satisfactory and that the blanketing smoke laid down would greatly assist the advance of attacking riflemen." To combat enemy smoke and chemicals, the War Department has approved the creation of a field laboratory chemical company for each field army. To assist the training of a chemical regiment there is included a platoon in the experimental mechanized forces at Fort Meade, Maryland. It has 42-inch chemical mortars mounted on hand carts, the entire platoon and arms being carried in trucks. The trucks can keep up with the mechanized force while on the march and the hand carts keep up with the infantry in the attack.

Improvements have been made in gas masks, a new type being produced with a universal-sized face-piece, screw-type eye-piece assembly, sun-proof hose tube without stockinette, hose-tube clamp and pressed metal diaphragm assembly. During the year the production of 24,667 gas masks was undertaken for the Army and 30,000 for the Navy.

According to the Chief of the Air Service there were to be arranged long cross-country flights of tactical units, especially bombardment, pursuit, and attack planes, to points as far away as Panama with a view to a concentration of the air force in 1931 for a maneuver in conjunction with ground troops in defense of the Canal.

During the year the following developments resulted, that of a satisfactory temperature indicator for radial engines had progressed sufficiently to warrant construction of a number of these units. Fuel-system development consisted largely in improving existing equipment and investigating new pumps submitted by the manufacturers. Ignition development centered largely upon obtaining a satisfactory method of shielding the ignition system and spark plugs to prevent radio interference. The use of aircraft radio receivers of greater sensitivity has demanded greater care in shielding the ignition system.

The Assistant Secretary of War for Aviation stated rather emphatically the shortness of army airplanes and equipment. The Army Air Corps had only 1273 planes on hand and 231 in process of manufacture on June 30, 1929. Of the planes listed many were laid up for repairs and a big percentage of the original number were training planes suitable only for primary flying of students or "refreshing" of reserve officers.

At Mitchell Field, so serious had the shortage become that the seven Consolidated PT training planes ordinarily reserved for reserve officers, were being used by regular army flyers to maintain their flying schedules. While the reserves were suffering with the Regular Army, the National Guard was well taken care of. At Miller Field, L. I., there were five Curtiss Falcons,

a Douglas observation plane, two Consolidated PT's with Wright Whirlwind motors and an ordinary Consolidated training plane for New York's National Guard flyers, 17 pilots qualified to fly nine planes. Seven service type planes (Falcon, with liberty motors) and one Consolidated PT training plane were to be turned over to the newly formed New Jersey National Guard Squadron at Newark with a flying personnel of probably less than 20.

A new system of classifying reserves according to their flying efficiency was put into effect; such as a monthly report showing the physical, flying, and professional status of every active reserve officer. Of the 5954 reserves in the Air Corps, only about 1500 were qualified for flying service and, of these, some 600 were qualified for immediate service. When it is considered that approximately 4000 group-1 reserves are required, it is apparent that the Air Corps was far below strength necessary to make it effective from a national defense standpoint. In the National Guard units were 80 per cent of their authorized strength in pilots and observers and 70 per cent of which have grouped classification. The squadron had 50 per cent of their authorized observers, some not rated, however. On June 30, 1929, there were 1143 officers and 10,890 enlisted men in the Air Corps.

A new tank for the storing of helium gas was completed at Scott Field, Belleville, Ill., having a capacity of 300,000 cubic feet, another tank at the same field has a capacity of 500,000 cubic feet.

To allow for increments in the Air force, 11 of the 38 regiments of infantry had only two battalions. Field artillery battalions had been reduced to two battalions and cavalry squadrons to two groups, three of the five annual increments having been made.

The combat arms had suffered to effect this, and they were just as essential to national defense as the air forces. According to general military opinion, it was all wrong.

Contracts were awarded on October 24 for 66 new airplanes, extra motor and parts, to cost \$1,643,383, being part of the five-year building programme of the Army Air Corps. Thirty-six will be of the observation type, and 30 for observation training of army pilots. The observation planes will be used for tactical missions and both will provide prompter training and tactical work.

In regard to motorization, General Summerall, Chief of Staff, stated in his annual report "We must recognize that we are living in a machine age and, in the interest of national defense, the Army must act accordingly. In the commercial world, the machine has largely replaced man power, so in the Army, we must to the fullest practicable degree, use machines in place of man power in order that our man power can occupy and 'hold' without terrific losses incident to modern fire power. The Army must be a constantly functioning research laboratory. Every effort should be made to set aside sufficient funds to permit the development of mechanization at a pace commensurate with the progress of modern science."

The movement to speed up the Army through motorization and mechanization advanced another step when the Secretary of War approved the purchase of a new type of light armored vehicle in which experts saw much promise. It was de-

The material collected in 1920 from the crater of Vesuvius has, upon recent investigation, yielded a new hydrous chloride of potassium and copper. The name of *mitscherlichite* has been given to this mineral in honor of E. Mitscherlich, who, as early as 1840, prepared an artificial salt of this composition.

Larnite, a new rock-forming orthosilicate of calcium, has been noted among other rare species in the contact zone between chalk and dolerite near Laine, County Antrim, Ireland. This mineral occurs in grayish crystalline masses with unique optical properties. The name *tanteuzenite* has been given to a new titanotantalate of yttrium from the Pilbara Goldfield in the northwest division of West Australia, because it is essentially an *euzenite* in which *tantalum* replaces columbium. The mineral is found in indistinct crystals and crystalline masses of a brownish-black color and resinous lustre. *Thucholite* is a new carbon mineral containing thorium and uranium. Jet black, noncrystalline nodular masses of this mineral were found on Parry Sound, Ontario, Canada. Some of the salt stock of North Germany has yielded a new oxychloride

of complex composition named *zirklerite* in honor of Dr. Zirkler, General Director of the Ascherleben Potash Works.

The mines of the New Jersey Zinc Company at Franklin, New Jersey, have produced during the year two new mineral species. A very basic hydrous sulphate of magnesium, manganese, and zinc, occurring in white tabular, monoclinic crystals, was named *mooreite* in honor of the late Dr. Gideon Moore, a chemist and local investigator of Franklin minerals. Also from Franklin comes another new species, *loseyite*, named in honor of the late Samuel R. Losey, a local mineral collector. *Loseyite* is a basic carbonate of manganese and zinc which is found occurring in bluish-white lath shaped, monoclinic crystals.

A platinum compound which is claimed as a new mineral occurs very sparsely in steel-gray metallic fragments and irregular grains in the Rustenburg District of the Transvaal. This mineral occurrence, which is a sulpharsenide of the rare metal platinum, and is said to be distinct from sperrylite, the only known native compound of platinum, is designated by the name *cooperville*

MINERAL PRODUCTS OF THE UNITED STATES, 1927 AND 1928 *

Product		1927		1928	
METALLIC		Quantity	Value	Quantity	Value
Aluminum	pounds		\$ 39,266,000		\$ 47,899,000
Antimonial lead ^b	short tons (2000 pounds)	24,347	3,277,043	33,058	3,978,318
Antimony ^c	do	2,736	875,800	1,432	707,000
Bauxite	long tons (2240 pounds)	320,940	1,988,780	375,426	2,273,898
Cadmium	pounds	1,074,664	645,000	1,875,866	1,144,297
Chromite	long tons	201	5,063	660	14,807
Copper, ^d sales value	pounds	1,684,040,983	220,609,000	1,825,900,891	262,940,000
Ferro alloys	long tons	646,749	55,161,574	794,695	66,578,039
Gold ^e	troy ounces	2,197,125	45,418,600	2,194,295	45,360,100
Iron					
Or ^f	long tons	61,232,473	151,125,820 ^g	67,432,826	157,788,657 ^h
Pig	do	34,866,644	646,226,139	38,301,699	661,351,270
Lead (refined), ^d sales value	short tons	668,320	84,208,000	626,202	72,639,000
Manganese ore (35 per cent or more Mn)	long tons	44,741	1,151,918	46,636	1,212,679
Manganiferous ore (5 to 35 per cent Mn) ^g	long tons	1,461,608	3,947,016	1,177,762	3,052,907
Mercury					
Metal	flasks (75 pounds net)	11,276	1,314,782	16,638	2,052,215
Or ^f	short tons	(^h)	(^h)	(^h)	(^h)
Nickel (value at New York City)	do	860	390,740	522	291,836
Ores (crude), tailings, etc					
Copper	do	56,826,000	(ⁱ)	(^j)	(ⁱ)
Copper-lead zinc	do	419,000	(ⁱ)	(^j)	(ⁱ)
Copper-lead zinc (gold and silver)	do	8,550,000	(ⁱ)	(^j)	(ⁱ)
Lead	do	8,349,000	(ⁱ)	(^j)	(ⁱ)
Lead zinc	do	14,647,000	(ⁱ)	(^j)	(ⁱ)
Zinc	do	6,823,000	(ⁱ)	(^j)	(ⁱ)
Platinum and allied metals (value at New York City)	troy ounces	46,050	3,780,216	59,079	4,692,786
Silver	do	60,484,441	34,266,328	56,020,268	32,771,857
Tin (metallic equivalent)	short tons	27	84,600	46	46,400
Titanium ore					
Ilmenite	do	3,500	44,000	(^k)	(^k)
Rutile	do	(^k)	(^k)	(^k)	(^k)
Tungsten ore (60 per cent concentrates)	do	1,164	724,000	1,208	758,900
Titanium and vanadium ores	do	(^l)	(^l)	(^l)	(^l)
Zinc, ^d sales value	do	576,960	73,851,000	591,525	72,166,000
Total value of metallic products (approximate)			1,217,700,000		1,282,000,000
NONMETALLIC					
Arsenious oxide	short tons	11,560	725,360	11,767	735,371
Asbestos	do	2,981	336,882	2,239	351,178
Asphalt					
Native	do	839,040	5,605,850	799,071	5,094,983
Oil ^f	do	1,525,420	19,019,150 ^g	1,741,392	20,425,371
Barite (crude)	do	254,265	1,670,878	269,544	1,750,709
Borates (colemanite and naturally occurring sodium borate)	short tons	109,080	3,473,399	131,000	3,999,773
Bromine	pounds	1,756,310	564,689	2,164,000	649,475
Calcium-magnesium chloride	short tons	95,721	1,947,797	102,090	1,995,693
Cement	barrels (376 pounds net)	174,028,051	281,735,676	177,948,619	278,705,999
Clay					
Products ⁱ	do		403,363,270		(ⁱ)
Raw ^j	do	3,849,176	19,697,159 ^g	3,975,000	13,696,000
Coal ^k					
Bituminous ^m	do	517,763,352	1,029,657,000	492,755,000	946,090,000
Pennsylvania anthracite	long tons	71,513,896	420,941,726	66,512,500	400,374,000

MINERAL PRODUCTS OF THE UNITED STATES, 1927 AND 1928 —Continued

Product		1927		1928	
NONMETALLIC—continued		Quantity	Value	Quantity	Value
Coke ¹	short tons	51,092,143	\$ 262,320,578 ²	52,689,025	\$ (f) ³
Diatomite and tripoli ⁴	do	26,069	447,068	30,299	514,986
Emery	do	506	5,855	1,841	16,787
Feldspar (crude)	long tons	202,497	1,424,755	210,811	1,418,975
Fluorspar	short tons	112,546	2,034,728	140,490	2,656,554
Fuller's earth	do	264,478	3,767,038	287,012	3,895,991
Garnet for abrasive purposes	do	6,989	573,525	6,617	459,307
Gems and precious stones	do		(⁵)		(⁵)
Graphite					
Amorphous	short tons	2,595	75,850	2,994	43,320
Crystalline	pounds	5,224,400	197,121	5,233,300	253,770
Grindstones and pulpstones	short tons	81,931	1,554,750	33,238	1,508,870
Gypsum	do	5,846,888	42,174,454	7,102,250	32,036,160
Ising	do	4,414,932	38,638,413	4,395,000	36,600,000
Magnesite (expressed as equivalent crude)	short tons	121,490	1,090,550	127,200	1,098,550
Mica					
Scrap	do	6,280	110 1/4	5,800	104,400
Sheet	pounds	1,512,492	212,482	1,620,000	259,200
Millstones			35,418		39,442
Mineral paints					
Natural pigment ⁶	short tons	(⁷)	(⁷)	(⁷)	(⁷)
Zinc and lead pigments ⁸	do	191,853	25,275,975	201,495	25,893,125
Mineral waters	gallons, sold	(⁹)	(⁹)	(⁹)	(⁹)
Natural gas	m cubic feet	1,445,428,000	317,930,000	1,540,000,000	333,000,000
Natural gasoline	gallons	1,641,144,000	118,688,000	1,776,000,000	135,800,000
Oilstones, etc	short tons	1,048	23,1545	956	228,245
Pest	do		(¹⁰)		(¹⁰)
Petroleum	barrels (42 gallon-)	901,129,000	1,172,830,000	900,364,000	1,077,900,000
Phosphate rock	long tons	3,170,699	11,251,352	3,449,921	12,339,850
Potassium salts	short tons	49,500	2,148,116	60,370	3,029,422
Pumice	do	53,208	221,481	67,480	278,516
Pyrites	long tons	215,786	804,006	182,019	605,459
Salt	short tons	7,568,690	24,817,962	8,074,700	26,772,568
Sand					
Class	do	2,171,691	3,257,790	2,000,000	3,000,000
Molding building, etc., and gravel	do	195,282,576	112,271,996	194,000,000	109,000,000
Sand lime brick ¹¹	thousands	319,618	3,645,842	311,551	3,654,590
Silica (quartz)	short tons	22,144	194,040	22,198	209,348
Slate	do	692,040	11,380,736	646,960	11,472,291
Stone	do	136,345,130	198,647,222	139,100,000	196,800,000
Sulphur	long tons	2,072,109	38,300,000	2,822,924	37,500,000
Sulphuric acid (60° Baumé) from copper and zinc smelters	short tons	1,041,199	8,231,313	1,140,268	9,007,809
Talc and soapstone ¹²	do	192,316	2,234,724	205,926	2,529,278
Total value of nonmetallic products (approximate)			\$4,303,600,000		\$4,109,000,000
SUMMARY					
Total value of metallic products			\$1,217,700,000		\$1,282,000,000
Total value of nonmetallic products (exclusive of mineral fuels)			1,243,553,000		1,216,000,000
Total value of mineral fuels			3,060,047,000		2,893,000,000
Total value of "unspecified" (metallic and nonmetallic products partly estimated) ¹³			8,200,000		9,000,000 ¹⁴
Grand total approximate value of mineral products			\$5,529,500,000		\$5,400,000,000

¹ In this general statement, certain of the figures represent shipments rather than quantity mined, and some of the figures for 1928 are estimates. The reader is referred to articles on the various mineral products for information in greater detail than it seems practicable to give here.

² From both domestic and foreign ores.

³ Figures represent antimony content of antimonial lead. Value excluded from metallic total as the value of the antimony is included in the antimonial lead value. Value for antimony other than that in antimonial lead is included in metallic total. Bureau of Mines not at liberty to publish figures.

⁴ Product from domestic ores only.

⁵ Value, \$20 6718 1425332 an ounce.

⁶ Value not included in total value.

⁷ Including ore used for fluing.

⁸ Figures not available.

⁹ Figures showing values not available.

¹⁰ Figures for 1928 not yet available.

¹¹ Value included in total value of metallic products, Bureau of Mines not at liberty to publish figures.

¹² Figures obtained through cooperation with Bureau of the Census. Figures for 1928 not yet available, estimate of value included in total value of nonmetallic products.

¹³ Includes brown coal and lignite and anthracite mined elsewhere than in Pennsylvania.

¹⁴ Figures represent tripoli only. Value of diatomite is included in total value of nonmetallic products, Bureau of Mines not at liberty to publish figures.

¹⁵ No figures for value included in total value of nonmetallic products.

¹⁶ Canvases discontinued after 1915. Value of iron ore sold for paint included under last item ("Unspecified").

¹⁷ Sublimed blue lead, sublimed white lead, leaded zinc oxide, and zinc oxide.

¹⁸ K₂O equivalent.

¹⁹ Figures obtained through cooperation with Bureau of the Census.

²⁰ Figures represent talc only. Value of soapstone is included in total value of nonmetallic products, Bureau of Mines not at liberty to publish figures.

²¹ Includes for 1928 the value of bismuth cadmium sulphide and other cadmium compounds (\$228,013), chalcocite (\$26,332), flint lining for tube mills and pebbles for grinding (\$89,421), gum feldspar (\$12,000), iron ore sold for magnets, iron ore sold for paint (\$83,190), lithium minerals (\$94,750), natural magnesium salts (\$1,020,044), calcareous marl (\$200,704), greensand marl (\$207,000), micaceous minerals, molybdenum (\$1,924,600), selenium, silica sand and sandstone (finely ground) sodium salts (carbonate bicarbonate, sulphate, and iron) from natural sources (\$1,738,241), tellurium (\$1960), zircon, and an estimate of the value of miscellaneous mineral products, statistics for which are not collected annually by the Bureau of Mines.

MINERAL PRODUCTION OF THE UNITED STATES. The total value of mineral products in the United States in 1929 was estimated at approximately \$5,900,000,000, as announced by Scott Turner, Director of the U S Bureau of Mines, Department of Commerce. This was an increase of nearly 10 per cent over the total value of mineral products in 1928 and was due to increases in the total value of metals and the mineral fuels produced. The total value of nonmetallic mineral products in 1929 decreased slightly, as compared with 1928. The increase in the value of metallic products was due chiefly to the increase in quantity and unit value of copper and iron produced. Lead and zinc also increased, but gold and silver decreased. The value of each of the mineral fuels produced showed increases, especially petroleum and natural gas. The total quantity of petroleum produced changed little, but there was a slight increase in the unit value. On the other hand, the total quantity of coal produced increased appreciably, but the total value increased relatively less, because unit values were lower.

The following figures give the estimated value of metallic mineral products and nonmetallic mineral products other than fuels and of mineral fuels produced in the United States in 1929.

ESTIMATED VALUE OF MINERAL PRODUCTS OF THE UNITED STATES, 1929

Metallic	\$1,540,000,000
Nonmetallic (other than fuels)	1,200,000,000
Mineral fuels	3,160,000,000
Total	\$5,900,000,000

These estimates were subject to revision and replacement by precise figures for 1929, as soon as the Bureau of Mines could complete its systematic canvass of mineral industries. In this canvass, the Bureau sent to every mining, quarrying, and well-operating company an inquiry soliciting a report on the output of each mineral commodity by each producing establishment.

According to the Summary of Mineral Resources of the United States in 1928, published by the U S Bureau of Mines, the combined output of all mineral production was valued in 1928 at \$5,400,000,000, or 2 per cent less than the corresponding value for 1927 and 13 per cent less than for 1926. The mineral fuels as a group showed a decrease of about 5.5 per cent in total value, attributable chiefly to the decrease in petroleum and in bituminous coal, although anthracite shared in the decline, there being less anthracite and bituminous coal mined in 1928 than in the preceding year. On the other hand, natural gas and its coproducts increased. The total value of metallic products of mines of the United States in 1928 was about 5 per cent greater than that in 1927, copper, iron, and aluminum accounting for the gain, the last named showing a large increase in production, and in total value amounting to 22 per cent, notwithstanding a decline in price.

The total refined copper output of the United States established a new all-time record, and the smelter output made a new peace-time record. There was a decreased value and quantity of lead production, while the total quantity of zinc produced was greater than in 1927 but with a lower aggregate value. The production of steel reached a new peak in 1928, but the output of pig iron

and iron ore, though larger in 1927, was considerably below the record years. Gold production remained virtually unchanged while the production of silver in the United States decreased sharply but was accompanied by a higher average price in 1928 than in 1927.

The total value of nonmetallic mineral production (not including fuels) showed a decrease in 1928 as a result of the general decline in prices. Among structural materials, stone and sand and gravel production decreased moderately in quantity and value, lime production showed a decrease more in value than in quantity, cement production increased in quantity but decreased in value, and gypsum production decreased about 5 per cent in quantity and 24 per cent in value. Clay and feldspar showed moderate increases in quantity but diminished in value. Phosphate rock and potash, the chief fertilizer ingredients, increased markedly in quantity and value of production, as did also salt, while sulphur shipments were a trifle greater in quantity and slightly less in volume than in the previous year. Graphite showed a large increase in value.

The statistical summary (pages 518 and 519), prepared by Martha B. Clark of the U S Bureau of Mines, indicates the mineral production of the United States in 1927 and 1928. The more important minerals, both for the United States and other countries, are discussed under their own heads, such as COAL, COPPER, GOLD, IRON AND STEEL, LEAD, ZINC, etc.

MINIMUM WAGE. In 1928 the U S Bureau of Labor Statistics issued an interesting report detailing the origins and present status of minimum-wage legislation in a number of the leading industrial countries of the world. Its survey showed that the basis of the origin of minimum-wage legislation was a public uprising against the "sweating" system, particularly of women and children. As abolition of sweating, it became evident, it was necessary to determine a living wage, and it was the discovery of this living wage which was the cornerstone of existing minimum-wage systems throughout the world. The ability of the trade to bear wage increases is only a secondary consideration in most countries. In Great Britain and in Russia, the principle is used for the purpose of increasing the efficiency of the workers.

The Bureau's survey found that the laws were administered by wage boards in Victoria, Great Britain, Germany, Austria, Czechoslovakia, Norway, Hungary, most of the provinces of Canada, most of the States in the United States, Argentina, Mexico, and South Africa. The method of industrial arbitration, particularly where strong labor unions exist and are in a position to begin the fixing of living wages, has been restored to in New South Wales, New Zealand, Italy, and Rumania. The direct fixation of wages appears to have been the rule adopted in the American States of Arizona, South Dakota, and Utah, in the Canadian Province of Alberta, in Uruguay, and in the Argentine State of Tucuman, as well as in the state trusts of Russia.

A variety of methods has been developed to insure enforcement of minimum-wage decrees. France, in the case of home workers, and Norway, in the case of commercial employees, have resorted to civil suits for the enforcement of wage decisions with, however, slight results. A chief source of reliance appears to be in the regular state inspection forces. These agencies are em-

powered to impose fines for violations. The Survey reports that enforcement has been particularly good in the countries of the British Empire, in the United States, and in some of the continental European nations. The particular case of Massachusetts, where reliance is had entirely on the strength of public opinion, has been referred to often in the YEAR BOOK. The survey reported the entire success of the Massachusetts scheme.

The following were found to be some of the general results of minimum-wage control. The abolition of sweating among home workers, particularly in Australia, New Zealand, and England, similarly good results have been obtained in the home-work trades of Norway and Argentina. The relief of women workers in shops and stores in the United States and in the Canadian provinces has been marked. Another outstanding effect of minimum-wage legislation has been the general increase in wages. From Canadian provinces, Australasian States, New Zealand, and certain States of the United States, reports were general that the fixing of a minimum in no way tends to standardize the wage for the particular industry covered. In Australasia and New Zealand, increases and stabilization of wages for women workers appeared to be slow, even in the face of industrial depression and falling prices. The effect of minimum wages on slow workers is of course an important question. Are slow workers handicapped because of the inability of employers to pay them below a fixed minimum? Of course, the system of licenses permits the payment of sub-minimums to handicapped workers, but these apparent handicaps are not always of a discernible nature. The survey found that in the United States and in Canada no great hardships were recorded as a result of the establishment of minimums. On the other hand, in Great Britain and in Australasia, where the economic situation is not nearly as favorable, the abolition of some home-work trades and their replacement by factories resulted. This was due to the fact that home-work trades had competed with factories on the basis of a lower wage scale, also, in France, Austria, and Germany, it was felt that there was an increase in unemployment because of minimum wage legislation, particularly in the effect on home-work industries. It was reported by Massachusetts, Pacific States, and by employers in Victoria, Australia, and in Great Britain that the fair employers were grateful for the elimination of competition by sweating. The fact is, the British employers favored an international convention for minimum-wage legislation in order to eliminate competition from nations that were still tolerating the sweating of employees. Similarly, British and American experience does not indicate a harmful effect on industry because of the fixation of minimum wages. In fact, the prosperity of the women-employing industries of Massachusetts has grown since the introduction of a standard minimum. In New Zealand and Australasia, the application of the laws has been brought to its logical conclusion, i.e., the States used their machinery to suppress all industries where living wages cannot be paid.

In summary, it is worth pointing out that the minimum wage legislation has coped with three different industrial situations. (1) Home-work trades and women's trades, particularly as covered by the legislation of the United States, Canada, Great Britain, and most of the countries

on the European continent. Here, the minimum wage was introduced not against strikes, but against sweating. (2) The introduction of minimums in the insufficiently organized trades and in agriculture, particularly in Great Britain (by the Act of 1918). (3) The introduction of minimums to cover the highly organized trades of New Zealand, the Australian States, Russia, and Italy. The purpose of the establishment of these minimums was to eliminate industrial strife. By the creation of arbitration courts, machinery has been perfected for fixing wages very much as legislative assemblies enacted laws to meet general situations. In other words, the arbitration courts do not wait for specific disputes before stepping in to do their work.

The survey seeks to answer the question as to whether or not the legal fixation of wages will ever take the place of the so-called laws of supply and demand. It reports that the experiences of 30 years of wage fixing do not yet permit a complete answer. In Victoria (Australia), wages are fixed everywhere by wage boards. In the other States of Australasia and in Great Britain, a trend toward the same goal is apparent. The same is true of Canada, South Africa, and Mexico, and Italy and Russia are reaching the same place, though of course by different methods. On the other hand, in other countries the advance toward legal wage-fixing is still uncertain. The survey's closing generalization is: "It seems to be particularly in line with the British tradition of continuous legal progress, of endeavoring for harmony between the various branches of national life. Australia, perhaps more purely British than Great Britain itself, has shown the way. Great Britain follows Australia, and Canada follows Great Britain. In the other countries, there are more cross goals, more diversity, less continuous development."

CANADA. The Minimum Wage Board of British Columbia reported that since its organization it had issued orders for the creation of minimum wages in the following nine industries: mercantile trades, laundries, public-house keeping, office occupations, personal service, fishing, telephone and telegraph operating, manufacturing, and the fruit and vegetable industry. In 1927 the number of employees affected was 17,507, of whom 90 per cent were over 18 years of age. The average weekly wage for those 18 and over and experienced workers was \$17.06, and for those under 18 and inexperienced, it was \$10.40. The Board's report denied that the minimum wage tended to become the standard rate. It will be recalled that the experiences of the California Board cited in the 1928 YEAR BOOK coincided with this belief. The board found in British Columbia that, after nine years' experience, only 3056 workers out of a total of 17,507 were reporting as having received the actual minimum set up. On the other hand, 3703 were paid below the minimum, leaving a total of 10,748 women and girls, or 61.30 per cent, as being in receipt of wages in excess of the legal minimum. The basis for the establishment of minimum wages is always an interesting phenomenon. Thus, the minimum-wage board of the Province of Ontario fixed a weekly wage of \$12.50 for women employed in the industries of the city of Toronto. On the basis of an annual wage of \$653, the following are the budgetary distributions: \$364 per year for board and lodging; \$127 per year for

clothing; \$162 for sundries which include laundry, doctor, dentist, car fare, amusements, church, etc. Thus, the weekly budget is as follows: board and lodging, \$7, clothing, \$2 44, sundries, \$3.06; making a total minimum weekly wage of \$12.50

MINING AND METALLURGICAL ENGINEERS, AMERICAN INSTITUTE OF An organization founded in 1871 and incorporated under the laws of New York State in 1905 "to promote the arts and sciences connected with the economic production of the useful minerals and metals and the welfare of those employed in these industries." It is made up of 27 local sections and has 43 affiliated societies in colleges throughout the country. There are six classes of membership. Members, men who have been practicing engineers for at least six years; junior members, the younger engineers, associates, men interested in or connected with mining, geology, metallurgy, or chemistry, but not practicing engineers, junior associates, those who were elected when students in engineering schools, membership being retained for not more than six years, student associates, students in engineering schools; and honorary members, those elected by unanimous vote of the board of directors. On Dec. 5, 1929, there were 9978 members, distributed as follows: Honorary, 16, members, 6596; junior members, 36, associates, 1042, junior associates, 1038, student associates, 112, Rocky Mountain members, 138. The income for 1928 was \$190,573.

In addition to the monthly meetings of the local sections, the annual meeting, a four-day convention, is held on the third Tuesday in February in New York City, and regional meetings are held in various important mining or metallurgical centres in the United States or abroad. At the 1929 convention, the following officers were elected: President, Frederick W. Bradley, vice presidents, W. H. Bassett, Henry A. Krumb, F. Julius Fohs, George D. Barron, Henry A. Buchler, Edgar Rickard, secretary, H. Foster Bain, treasurer, Karl Eilers. The Institute publishes *Transactions*, an annual containing the best papers of the year on mining and metallurgical subjects, *Mining and Metallurgy*, a monthly bulletin; the *Year Book*, which constitutes a "Who's Who" in the profession, *Technical Publications*, a series of individual technical pamphlets, and special volumes from time to time. In connection with three other societies, the Institute maintains the engineering societies' library and an employment bureau. Headquarters are at the Engineering Societies Building, 29 West 39th Street, New York City.

MINNESOTA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,387,125. The estimated population on July 1, 1928, was 2,722,000. The capital is St. Paul.

AGRICULTURE. The accompanying table gives the acreage, production, and value of the principal crops in 1928 and 1929.

MINERAL PRODUCTION. The State supplied about 60 per cent of the iron ore produced in the United States in 1928. Its production of iron ore was 38,129,018 long tons, as against 35,563,177 in 1927; in value, \$94,258,899 for 1928 and for 1927, \$87,935,099. Though not a coal-producing State, Minnesota produced considerable coke, 622,696 short tons, valued at \$5,816,506 in 1928, as against 632,628 tons or \$6,212,501 in 1927. The

PRINCIPAL CROPS IN 1928 AND 1929

Crop	Year	Acreage	Prod. Bu.	Value
Corn	1929	4,253,000	148,555,000	\$96,755,000
	1928	4,089,000	139,026,000	\$6,196,000
Hay	1929	4,326,000	6,467,000 *	62,118,000
	1928	4,164,000	6,440,000 *	55,303,000
Oats	1929	4,212,000	153,738,000	56,888,000
	1928	4,089,000	153,388,000	53,668,000
Wheat	1929	1,372,000	19,944,000	21,005,000
	1928	1,532,000	22,964,000	21,990,000
Barley	1929	2,306,000	59,400,000	28,512,000
	1928	2,000,000	60,000,000	30,000,000
Potatoes	1929	812,000	25,896,000	25,896,000
	1928	354,000	38,940,000	11,682,000
Flaxseed	1929	523,000	4,707,000	13,509,000
	1928	726,000	5,808,000	11,906,000
Rye	1929	395,000	6,930,000	5,683,000
	1928	421,000	6,515,000	5,368,000

* Tons

blast furnaces shipped 341,203 long tons of pig iron in 1928, 287,813 in 1927. The production of low-content manganiferous ore increased, being 940,875 long tons, in value, \$2,192,051 for 1927 and 1,025,014 and \$2,471,582 for 1928. Stone was quarried to the quantity of 802,340 short tons in 1927 and 628,800 in 1926, the value of the product was \$4,259,766 for 1927 and \$3,746,392 for 1926. The value of all mineral products of the State was, for 1927, \$102,972,753, for 1926, \$118,361,306.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were for maintenance and operation of governmental departments, \$34,064, 115 (of which \$9,996,434 was for local education), for interest on debt, including the reimbursement of some \$1,651,372 of interest on county road debt, \$4,103,386, for permanent improvements, \$12,914,533, total, \$51,982,034 (of which \$16,197,082 was for highways, \$4,010,862 being for maintenance and \$1,286,400 for construction). Revenues were \$59,565,551. Of these, property and special taxes formed 21 7 per cent, departmental earnings and remuneration for officers' services, 9 1; sale of licenses, 50 4 (including gasoline taxation of \$5,327,079). The State's funded debt of June 30, 1928, was \$56,683,359 outstanding, and but \$8,008,569 net of sinking funds. The totals included rural credit bonds but not county road bonds that the State had undertaken to reimburse. On a property valuation of \$2,359,556, there were levied in the year State taxes of \$15,188,343.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 8822 31. There was no reported construction of new line in 1929.

MANUFACTURES. According to the biennial Census of Manufactures published by the Department of Commerce in 1929 and relating to the operations of 1927, there were in the State in 1927 3886 manufacturing establishments. These employed 98,833 wage earners, whose wages totaled \$123,619,231. Materials and supplies used in manufacture cost \$726,390,744. The manufactured products combined were valued at \$1,066,727,215.

EDUCATION. The year witnessed a campaign for the passage in the Legislature of a bill to establish a State retirement fund for teachers. The supporters of the bill were reported as finding encouragement for the expectation that a measure of like tenor might pass in 1931. There were enrolled in the public schools of the State, in the academic year 1928-29, 553,336 pupils. Of these, 459,030 were in elementary and rural schools and 94,306, in high-school grades. Kx

penditure for public-school education in 1928 totaled \$53,152,364. The salaries of teachers, except those in the three chief cities, averaged \$176.12 for men and \$115.16 for women, by the month. In Minneapolis, they averaged \$245 for men and \$188.82 for women. In Duluth, they were a shade lower, and in St. Paul somewhat lower than in Duluth.

CHARITIES AND CORRECTIONS. Wide powers of central control are vested in the State Board of Control, with regard to State institutions for the care and custody of individuals. It has charge of 18 institutions for the divers classes of defectives, invalids, and delinquents, supervises certain of the county institutions, operates prison industries, appoints county child-welfare boards, exercises legal guardianship over committed children, and establishes the paternity of illegitimate children. The State institutions in 1929 were: Asylums and mental hospitals at Anoka, Hastings, Willmar, Fergus Falls, and Rochester; St. Peter Hospital, Asylum for the Dangerous Insane, and School for Feeble-minded, Faribault; Home School for Girls, Sauk Center; Colony for Epileptics, Cambridge; State Training School for Boys, Red Wing; State Reformatory, St. Cloud; Reformatory for Women, Shakopee; State Prison, Stillwater; Hospital for Inebriates and School for the Blind, Faribault; School for the Deaf, Faribault; State Public School for Dependent Children, Owatonna; Sanatorium for Consumptives, A-Gwah-Ching; Hospital for Crippled Children, St. Paul.

LEGISLATION The State Legislature met in regular session, adjourning April 25. One of its chief concerns was to correct the troubles of counties suffering from financial depression. Among these were Beltrami, Lake of the Woods, and Koochiching, within whose bounds the obligations incurred for extensive drainage ditching approached maturity. An act was accordingly passed to create the Red Lake Game Preserve, for which the counties in question were to deed the State 1,250,000 acres, in return, the State was to issue its certificates of indebtedness for \$2,500,000 as a maximum, to redeem the drainage obligations. The act provided for the maintenance of the preserve thus formed as a refuge for wild life and, at the same time, as a public hunting ground. The law of 1927 for the promotion of tree planting on the private lands of low farming value was amended by setting still lower the small annual tax required of owners during the growing period of trees and prior to the final tax at cutting. A measure in the counties' interest, to require the State to pay counties containing State forestry lands five cents an acre on such lands was passed, but Governor Christianson vetoed it.

On behalf of the Iron Range region, where taxation had caused much difficulty, the moderation of direct taxation under the per-capita-tax law was adopted. The per-capita rate was lowered to \$60 for the succeeding two years, after 1929, \$75 for 1932 and \$70 for 1933. To support further highway construction, the State was authorized to refund certain bond issues of nearing maturity and to divert to highway construction the sinking funds accumulated for their redemption, thus releasing \$3,500,000 in the current year and greater amounts in the three years to follow. The gasoline tax was increased to three cents a gallon, but much proposed taxation along novel lines was defeated. The Legislature abol-

ished the two boards of visitors and merged the department of agriculture with that of dairies and foods. An effort to subject the regents of the State University to the central authority was defeated. The law on the sale and transportation of liquor was rendered more stringent. Closing hour at the polls was advanced to 8 P. M., from 9 P. M. Counties received the option to pay old-age pensions instead of maintaining the old in poor houses. A cooperative pension plan for State employees was adopted, under which these were to contribute 3½ per cent of salary and retire at 65 years on half pay, if 20 years in service. Provision was made for the conversion of the scene of the Battle of Birch Coulee into a State park.

POLITICAL AND OTHER EVENTS The conflict of interest over the development of the Rainy Lake watershed continued during the year. This area, partly in Minnesota and partly in Ontario, as it contained numerous lakes and possessed much unspoiled wilderness scenery, was the object of an effort to have it made by international treaty into a park. Because of the presence of water-power possibilities, it was at the same time the subject of investigation by the international joint commission which considered plans for changing the lake levels and developing power sites. The movement for the State gained headway through the announcement on behalf of the Weyerhaeuser lumber interests, on June 18, of a plan for creating by self-reproduction a forest on areas comprising 172,420 acres in the northern part of the State. Petition to create an auxiliary forest was filed in the name of the Northwest Paper Company, one of the Weyerhaeuser interests, in order to benefit by the remission of taxation provided by an act of the Legislature of 1929. The hasty use of firearms by a Federal Prohibition agent at International Falls caused the death in June of an inoffensive citizen, Henry Viikkula, and occasioned the sending of a local petition to President Hoover for relief from similar excesses of authority.

At Minneapolis occurred on November 1 a financial failure described as the greatest on record in the Northwest, when the W. B. Foshay Company and allied companies went into receivership with liabilities reported as approximating \$20,000,000. The holdings of the embarrassed companies included the Foshay Tower, a 32-story building at Minneapolis that had been opened in August. The First National Bank of St. Paul absorbed the Merchants' National Bank in January and in March joined with the First National Bank of Minneapolis to form a company for the acquisition of a chain of banks in the Ninth Federal Reserve District. The St. Paul institution, which had successfully contested the State ad valorem bank tax, negotiated a compromise with the State, whereby it would pay this tax if made a depository of public moneys. Condemnation proceedings to provide the site for a \$2,700,000 Federal Building at Third and Sibley Streets, St. Paul, were begun on June 14. St. Paul made provision for a city-planning commission, representing both city and county, to consider improvements to be made under a \$15,719,000 programme of municipal public works.

OFFICIALS Governor, Theodore Christianson, Lieutenant-Governor, Charles E. Adams, Secretary of State, Mike Holm; State Treasurer, Julius A. Schmah; Auditor, Ray P. Chase; Attorney-General, Henry N. Benson; Commissioner of Education, James M. McConnell.

JUDICIARY Supreme Court. Chief Justice, Samuel B. Wilson; Associate Justices, Homer B. Dibell, Andrew Holt, Clifford L. Hilton, Royal A. Stone

MINNESOTA. UNIVERSITY OF A coeducational State institution for higher learning in Minneapolis, Minn., founded in 1851. The 1929 autumn registration was 11,357, while the summer-session enrollment for the same year was 5887. The university staff on a full-time basis, including professors, associate professors, assistant professors, and instructors, numbered 687. The income for the year ending June 30, 1929, amounted to \$10,248,873, distributed as follows: State appropriations for maintenance, buildings, and special purposes, \$4,717,695; Federal aid, \$330,776; permanent university fund, \$217,882; income from student fees, \$1,112,154; income from service enterprises, revolving funds, and intercollegiate athletics, \$2,206,883; income from trust funds, \$666,005, received from students, alumni, and friends for construction of auditorium, \$489,699, sales and miscellaneous income, \$507,719. The permanent university fund was increased by \$278,598, also, a gift of \$40,000 was received from William H. Eustis. There were more than 525,000 volumes in the library. The Cyrus Northrup Auditorium, erected at a cost of \$1,375,000, was dedicated on Nov. 15, 1929; additions to the Minnesota Hospital and Home for Crippled Children, which was erected in 1928, made the completed total cost \$1,254,317, a law school building, costing \$256,090, and a plant industry building, costing \$220,472, also were completed during the year. President, Lotus Delta Coffman, Ph.D., LL.D.

MINORITIES. See LEAGUE OF NATIONS

MISSISSIPPI. POPULATION According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,790,618. Owing to a decrease between 1910 and 1920, no later estimates have been made. Capital, Jackson.

AGRICULTURE The following table gives the average, production, and value of the principal crops in 1928 and 1929

Crop	Year	Acreage	Prod Bu	Value
Cotton	1929	4,071,000	1,915,000 *	\$164,690,000
	1928	4,029,000	1,475,000 *	136,438,000
Corn	1929	1,765,000	35,300,000	92,829,000
	1928	1,765,000	24,710,000	25,204,000
Hay	1929	479,000	592,000 *	9,041,000
	1928	493,000	616,000 *	9,223,000
Sweet potatoes	1929	59,000	7,670,000	6,186,000
	1928	55,000	6,050,000	5,445,000
Potatoes	1929	14,000	1,222,000	1,894,000
	1928	15,000	1,329,000	1,695,000

* Bales * Tons

MINERAL PRODUCTION While the mineral industries of the State remained entirely secondary, they made a relatively large increase in 1927 over 1926. The total mineral production of Mississippi was \$2,553,633 for 1927, for 1926, \$1,882,986. The difference was due chiefly to increase in the output of sand and gravel, of which 3,122,401 short tons were produced in 1927, as against 1,952,781 in 1926. The respective values of the products were 1927, \$1,372,089; 1926, \$871,038. The value of the clay products of the State attained, for 1927, \$1,146,472, for 1926, \$1,006,061.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 4266.33. There was no reported construction of new line in 1929.

MANUFACTURES. According to the Federal Biennial Census of Manufactures published by the U. S. Department of Commerce in 1929, and dealing with 1927, there were in the State, in 1927, 1333 manufacturing establishments. These employed 50,569 wage earners, whose wages for the year totaled \$40,734,359. Materials and supplies used in production cost \$103,559,493. Manufactured products attained the combined value of \$196,640,742.

EDUCATION The State committed itself in 1929 to a policy of county-wide equalization of the burden of taxation for public schools. The district school taxes were generally eliminated and school taxes were made assessable throughout each county as a unit. A programme of high-school consolidation was likewise adopted, to the end that only those high schools having student bodies sufficiently large to admit of their giving college preparation and vocational courses should be maintained.

CHARITIES AND CORRECTIONS The State had in 1929 no single central body for control of its institutions. These were under separate boards of trustees. The State institutions were Beauvoir Soldiers' Home, Gulfport, State Insane Hospital, Jackson, East Mississippi Insane Hospital, Meridian, State Charity Hospital, Jackson, South Mississippi Charity Hospital, Laurel, Vicksburg Charity Hospital, Vicksburg, State Charity Hospital, Natchez, Mattie Hersee Hospital, Meridian, Colony for Feeble-minded, Ellisville, Deaf and Dumb Institute, Jackson, Blind Institute, Jackson.

LEGISLATION A special session of the State Legislature, called by Governor Bilbo, convened on June 24. It was summoned exclusively for the purpose of passing highway legislation. It was desired to create a programme for the construction of a system of hard-surfaced highways and to qualify the State to obtain from the Federal Government a share of the latter's yearly distribution of highway aid to States. The legislators failed to support the proposal of the Governor that the highway commission be made appointive and eventually adjourned on September 4, having accomplished nothing.

POLITICAL AND OTHER EVENTS Because of the failure of the previous Legislature to end the division of authority between State and county as to road improvement, the continuation of Federal road aid to the State was imperiled. The special session convened in June was to have corrected this difficulty, but its failure to agree with Governor Bilbo left the prospect of further Federal aid uncertain. The State Superintendent of Banks announced in April that the State law for the guaranty of deposits had proved inadequate to its purpose and required repeal. His published statement was to the effect that the fund for guaranty of deposits was short by some \$2,285,980 of the amount required to cover claims. The resignation of Rush H. Knox, impeached Attorney-General, was tendered on August 19.

OFFICERS. Governor, Theodore G. Bilbo, Lieutenant-Governor, Bidwell Adam, Secretary of State, Walker Wood, Attorney-General, George T. Mitchell; Treasurer, Welb Waller, Auditor, C. C. White, Superintendent of Education, W. F. Bond.

JUDICIARY Supreme Court: Chief Justice, Sydney Smith, Associate Justices, W. D. Anderson, James G. McGowan, George H. Ethridge, W. H. Cook, V. A. Griffith.

MISSISSIPPI, UNIVERSITY OF A coeducational, State institution of higher learning in University, Miss., chartered in 1844 and opened in 1848. The university consists of a college of liberal arts and schools of law, engineering, medicine, pharmacy, education, and commerce and business administration. The total enrollment for the autumn of 1929 was 1216, the registration for the 1929 summer session was 312. The faculty numbered 66, exclusive of fellows and student assistants. There were approximately 40,000 volumes in the library. The productive funds amounted to \$210,000 from State appropriation, \$98,000 from student fees, and \$52,000 from other sources. A special appropriation of \$1,600,000 was made by the 1928 Legislature for the construction of new buildings and other permanent improvements. Among the buildings completed or approaching completion by the end of 1929 were those for the law and graduate schools, a model high school, a gymnasium, a field house, a hospital, and seven dormitories. Chancellor, Alfred Hume, D.Sc.

MISSISSIPPI FLOODS. See FLOODS

MISSOURI, POPULATION According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 3,404,065. The estimated population on July 1, 1928, was 3,523,000. The capital is Jefferson City.

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod. Bu.	Value
Corn	1929	5,384,000	126,524,000	\$108,811,000
	1928	6,260,000	181,540,000	132,524,000
Hay	1929	4,056,000	5,368,000 *	55,324,000
	1928	3,714,000	4,724,000 *	49,430,000
Wheat	1929	1,730,000	17,900,000	19,546,000
	1928	1,514,000	19,194,000	23,186,000
Oats	1929	1,536,000	34,770,000	15,872,000
	1928	1,706,000	47,768,000	20,063,000
Cotton	1929	843,000	215,000 *	17,952,000
	1928	834,000	147,000 *	13,230,000
Potatoes	1929	33,000	1,980,000	3,360,000
	1928	85,000	10,285,000	6,171,000
Sweet potatoes	1929	12,000	1,320,000	1,584,000
	1928	11,000	1,155,000	1,213,000

* Tons * Bales

MINERAL PRODUCTION Lead production, in which the State ranked first in the Union in 1927, proceeded in Missouri in 1928 at a rate little changed. The quantity of lead mined was, for 1928, 195,393 short tons, for 1927, 198,760 tons. Its value was 1928, \$22,605,588; 1927, \$25,043,760. The factory shipments of cement attained for 1928 the quantity of 7,943,367 barrels, as against 6,929,229 for 1927. In value they were \$12,367,018 for 1928 and \$11,117,047 for 1927. Coal production increased in 1928, attaining for that year 3,732,421 short tons. The production of 1927 was 3,064,313 short tons. In value, the product of 1928 attained \$9,637,000, that of 1927, \$8,698,000. The clay products of the State, almost entirely consisting of brick and tile, attained for 1927 the value of \$16,392,171, as against \$17,618,931 for 1926. Chief of the other metals beside lead was zinc, of which was produced in 1928 the quantity of 12,974 short tons, and in 1927 of 18,737 tons, in value, \$1,582,828 for 1928 and \$2,289,336 for 1927. The silver production (\$103,451 for 1928) and that of copper were secondary in importance. Stone production was, as to quantity, 3,064,600 short tons for 1927, 3,093,000 for 1926, as to value, \$5,170,859 for 1927, \$6,

012,013 for 1926. The production of lime was estimated for 1928 to be 301,000 short tons, in value, \$2,263,000, for 1927 it was 287,776 tons, in value, \$2,189,420. The aggregate value of the mineral product of the State was, for 1927, \$75,890,415, for 1926, \$90,003,537.

FINANCE State expenditures for the year ending Dec. 31, 1927, as reported by the U. S. Department of Commerce, were for departmental maintenance and operation, \$24,247,504 (of which \$6,202,776 was aid to local education), for interest on debt, \$3,218,105, for permanent improvements, \$14,320,321, total, \$41,785,930 (of which \$15,075,761 was for highways, \$1,006,148 being for maintenance and \$14,069,613 for construction).

Revenues amounted to \$45,013,708. Of this, property and special taxes furnished 34.4 per cent, departmental earnings and compensation to the State for officers' services, 16.0 per cent, sale of licenses and taxation of gasoline, 41.2 per cent. The valuation of property assessed to aid valorem taxation was \$4,909,112,393. State taxation thereon, \$6,381,846. The net funded State debt was \$68,840,469.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 7954.31. There were built, in 1929, 51.13 miles of first, and 0.03 mile of second, track.

MANUFACTURES According to the biennial Federal Census of Manufactures published by the U. S. Department of Commerce in 1929 and relating to the operations of 1927, there were in the State, in 1927, 5422 establishments. These employed 100,000 wage earners, whose wages for the year totaled \$230,017,241. Materials and supplies used in manufacture cost \$1,004,709,373. Manufactured products attained the combined value of \$1,665,173,463.

EDUCATION A State survey commission carried on a survey of the educational system of the State, on which it was to render a report in 1930.

CHARITIES AND CORRECTIONS The institutions of the State include four State hospitals, the Missouri Colony for the Feeble-minded and Epileptic, Missouri State Sanatorium, Confederate Home, State Soldiers' Home, State Penitentiary, Reformatory, Industrial Home for Girls, and Industrial Home for Negro Girls.

LEGISLATION The fifty-fifth General Assembly of the State sat in regular biennial session for 150 days, adjourning on May 29. The rapid transit programme of St. Louis engaged much of its attention. A measure proposing a constitutional amendment was passed, whereby cities and towns of more than 5000 inhabitants might have authority to issue their bonds for terms up to 50 years, in order to acquire or to construct various public utilities.

The amendment was to be submitted for popular ratification at the election of 1930. Its chief purpose was to aid the plans of St. Louis. There was enacted a measure enabling St. Louis to buy, build, or own rapid-transit facilities, and authorizing assessment of the cost of such action against property benefiting, or at will, the meeting of such cost by bond issue. It was also enacted, in another bill, that so-called terminable permits for operating street railways in St. Louis might be issued. These permits were opposed by a strong St. Louis element as amounting to perpetual franchises and, in accordance with the opposition, Governor Caulfield vetoed the measure. By

enactment, the rate of interest on small loans was restricted to the maximum of 24 per cent. In the criminal field, the possession and the use of machine guns were made special offenses. Despite the defeat of a specific police-pension plan by the voters of St. Louis in the election of the previous November, the Legislature enacted a police-pension system. This was on different lines from those of the defeated plan and established the police pensions upon what were described as actuarial principles. An interim commission was created to survey the condition of the State's eleemosynary, educational and penal institutions.

Quite a number of changes in the State's system of criminal justice, backed by the Association for Criminal Justice in Missouri, which had worked out a plan of revision, failed of passage. A bill to name a projected artificial lake, in the Osage River, Lake Benton, after the historic Missourian, Thomas H. Benton, was passed but was vetoed by the Governor as likely by its praise of Benton to wound admirers of other distinguished sons of the State.

POLITICAL AND OTHER EVENTS The State Supreme Court in a decision of June 13 sustained the constitutionality of the inheritance tax act of 1927 permitting the State to collect up to 80 per cent of the Federal assessment on decedents' estates. By Federal Court order, fire, lightning, hail, and wind insurance companies were directed to refund to policyholders sums collected on premiums, in excess of rates set by the State in 1922, when a 10 per cent rate cut was made. Somewhat less than \$14,000,000 in premiums was estimated as having been paid the companies in excess of the State's rate. The Missouri Society for Social Welfare conducted through an agent a survey of the State reformatory at Boonville, a report of unsatisfactory conditions, indicating the inadequacy of the institution either as a training school or as a reformatory, was published.

A new board of managers for the Missouri State eleemosynary institutions, consisting of six members, three of them members of the old board, was appointed in April. Opposition in southeastern Missouri to the proposals of the Chief of Army Engineers for a setback levee from Birds Point to New Madrid, as a part of the general plan of Mississippi River flood control, led in June to the postponement of award of the necessary contracts. Construction went ahead during the summer on an \$8,000,000 Federal project for improvement of the channel of the Missouri River at Robinson Bend, near Boonville, to provide a 6-foot channel and stone-faced river banks as a preventive to erosion. Success in the growing of Burley tobacco in the Ozark region along the line of the Missouri Pacific in the previous two years was apparently confirmed by the marketing of Missouri tobacco at Lexington, Kentucky, for favorable prices.

In Kansas City the construction of a bus terminal, having two levels, and of an adjacent hotel, an office building, and a public garage, the whole to cost \$3,200,000, was started at Ninth, Tenth, McGee, and Oak streets. A move of the Kansas City Public Service Company to increase traction fares to 10 cents was opposed by the city in the courts. The Mississippi River Fuel Company began in December to supply to consumers in St. Louis natural gas conveyed from Louisiana by a 431-mile pipe line.

OFFICERS. Governor, Henry S. Caulfield; Lieutenant-Governor, Edwin H. Winter; Secretary of State, Charles U. Becker; Auditor, L. D. Thompson; Treasurer, Larry Brunk; Attorney-General, Stratton Shartel; Superintendent of Public Schools, Charles A. Lee.

JUDICIARY. Supreme Court Chief Justice, John Turner White; Associate Justices, David E. Blair, Robert F. Walker, Frank E. Atwood, William S. Ragland, Earnest S. Gantt, William F. Frank.

MISSOURI, UNIVERSITY OF. A State institution of higher education in Columbia and Rolla, Mo., founded in 1830. The enrollment for the first semester of 1929-30 was 4568, of whom 3174 were men and 1394, women. This enrollment was distributed as follows: Agriculture, 368; arts and science, 1760; business and public administration, 194; education, 427; engineering, 435; mines, 518; fine arts, 128; graduate, 316; journalism, 303; law, 147; medicine, 73; short course in agriculture, 32. The total enrollment for the summer session was 2479, of whom 1044 were men and 1435 women. The total annual enrollment of all classes of students, including those in correspondence and extension courses, was more than 8500. There were 400 faculty members. The endowment of the university was approximately \$2,500,000 and the total income from all sources a little more than \$3,500,000. The libraries contained approximately 326,000 volumes. President, Stratton Duluth Brooks, LL.D.

MITTSCHERLICHTE. See MINERALOGY.

MITTEN, THOMAS EUGENE. American street-railway executive, was drowned near Milford, Pa., Oct. 1, 1929. He was born in Brighton, England, Mar. 31, 1864, and came with his parents to America in 1877, living until he was 19 on a farm in Newton Co., Ind. His first connection with the railway was as telephone operator and joint agent for the Chicago & Eastern Illinois Railroad and the Big Four, at Wyndham, Ind. He held only minor positions on various railroads until 1890, when he became general superintendent of the Denver, Lakewood & Golden Railroad. From 1895 to 1900, he was superintendent and general manager of the Milwaukee Electric Railway, in 1901-04, general superintendent, and in 1904-05, general manager of the International Railway Company. In 1905 he became vice president, and later, president, of the Chicago City Railway Company, and also vice president and managing director of the International Railway Company. In 1911 he was chairman of the executive committee of the Philadelphia Rapid Transit Company, president from 1914 to 1923, and after 1923, chairman of the board. Mr. Mitten was also president of the Mitten Men & Management Bank & Trust Company.

MOLASSES. See CHEMISTRY, INDUSTRIAL.

MOLECULES. See PHYSICS.

MONACO, mōn'ā-kō. A principality on the Mediterranean coast, surrounded on the land sides by the French Department of Alps Maritimes Area, eight square miles. Population, according to the census of 1928, 24,927. It is chiefly known for its gambling resort, Monte Carlo (population in 1928, 11,055). Other towns are Monaco (2085) and La Condamine (11,787). Under the constitution of Jan. 7, 1911, the Government consists of the Prince assisted by a Council of State and a National Council elected

by universal suffrage. The ruler in 1929 was Prince Louis II, born July 12, 1870, who succeeded his father, Prince Albert, June 26, 1922.

HISTORY There was a continuance in 1929 of the internal difficulties which broke out in this tiny state in 1928, largely as a result of the declining revenues of the Casino, the famous gambling resort at Monte Carlo, and the decrease in the number of tourists attracted to the principality. The failure of Prince Louis to authorize the elections scheduled to be held in March caused the resignation of a commission appointed in 1928 to seek a way out of the difficulty. The Prince refused to receive a delegation sent to urge him to call for new elections as soon as possible. A crowd of some 500 indignant citizens then forced its way to the Palace, demanding to be received by the Prince, but was finally dispersed by the police, who made a number of arrests. The Prince then announced that elections would be held in June and promised that a new constitution would be promulgated. At the end of the year, more amicable relations existed between the Prince and his people but the latter were still waiting for some of his promised reforms to be carried out.

MOND CONFERENCES. See **TRADE UNIONS**.

MONEY. The table on page 528 from the annual report of the director of the United States Mint shows the distribution of the stock of money in the United States on June 30, 1929, June 30, 1928, Oct 31, 1920, June 30, 1914, and Jan 1, 1879.

MONEY RATES See **FINANCIAL REVIEW**.

MONGOLIA A vast and indefinite tract of territory lying to the west of Manchuria and divided into two political divisions, Inner Mongolia, which is administratively a part of China, and Outer Mongolia, a soviet republic in close relations with Soviet Russia. In 1928 the Nationalist Government of China made provinces of the former special administrative districts of Jehol, Suiyuan, and Chahar into which Inner Mongolia had been divided. Chengteh, Kweisai, and Kalgan are the respective provincial capitals. Urga is the capital and chief town of Outer Mongolia. The total area is about 1,875,000

square miles, although some authorities place it as low as 1,367,000 square miles. Population, variously estimated at 750,000 to 2,000,000. Mongolia is inhabited by nomadic Mongol and Kalinuk tribes, but latterly the Chinese have emigrated in considerable numbers. The chief occupation is stock raising and the principal exports are furs, skins, hides, horns, and wool. The soil is naturally fertile but needs irrigation to be productive. Gold, iron, copper, silver, and tin are found, but are not worked extensively. Since 1917 there has been a motor-car freight service across the Gobi Desert. The trip takes three days and is only feasible in the summer. See **CHINA**.

MONOPLANES. See **AERONAUTICS**.

MONRO, GENERAL SIR CHARLES (CARMICHAEL) A British soldier, died in London, Dec 7, 1929. He was born June 15, 1860, and entered the British Army in 1879. From captain in 1889, he was promoted through the grades to general in 1917. In 1879-80 he served on the northwestern frontier of India, and in 1899-1900 he was in South Africa. At the opening of the World War, he was put in command of the 2d Division at Aldershot, and in 1915 was given command of the 3d Army. Sent to Gallipoli in the last months of 1915 to study the strength of

the Allies in the Dardanelles, he returned a report in favor of evacuation of Gallipoli. As commander-in-chief of the Mediterranean Expeditionary Forces, he led this withdrawal in greater secrecy and with more success than the British Government had hoped. From 1916 to 1920, he was commander-in-chief in India, and from 1923 to 1928, he was governor and commander-in-chief in Gibraltar. He was knighted by the British Government in 1915. He also received decorations from France and Japan.

MONTAGU OF BEAULIEU, SECOND BARON, JOHN WALTER EDWARD DOUGLAS J. SCOTT-MONTAGU English engineer and scientist, died Mar 30, 1929, in London. He was born June 10, 1866, and was educated at Eton and at New College, Oxford. He entered the shops of the London & South-Western Railway at Nine Elms, where he made himself a competent mechanic and locomotive driver. Lord Montagu was an expert in motor construction and was a pioneer in promoting the British motor industry in its early years. Later, he was an enthusiastic advocate of aviation and believed in the future of the sea plane. The magazine, *Car*, which he founded and edited for a long time, reflected his interest in travel and transport problems. He also wrote magazine and newspaper articles about his experiences as a traveler, for he traveled widely in America, Japan, China, India, Egypt, and South Africa.

Baron Montagu was a member of the Road Board from 1909 to 1919. At the beginning of the World War, he joined the 7th Battalion Hants Regiment and went to India. In 1915 he was appointed adviser on mechanical transport services to the Government of India, winning government recognition for his services when he was created Companion of the Order of the Star of India (1916) and Knight Commander of the Indian Empire (1919). He was a Conservative member of Parliament, New Forest Division Hants (1892-1905), when he succeeded his father in the House of Lords.

MONTANA. **POPULATION** According to the Fourteenth Census, the population of the State on Jan 1, 1920, was 548,889. The capital is Helena.

AGRICULTURE The following table gives the acreage, production, and value of the principal crop in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Wheat	1929	4,166,000	40,098,000	\$38,181,000
	1928	4,275,000	77,998,000	65,036,000
Hay	1929	2,082,000	2,527,000	30,762,000
	1928	1,900,000	3,103,000	27,126,000
Oats	1929	554,000	4,418,000	4,803,000
	1928	554,000	29,221,000	8,291,000
Corn	1929	301,000	3,612,000	3,034,000
	1928	274,000	5,206,000	4,269,000
Flaxseed	1929	293,000	938,000	2,626,000
	1928	183,000	1,556,000	2,988,000
Barley	1929	251,000	4,016,000	2,731,000
	1928	209,000	6,374,000	3,569,000
Potatoes	1929	35,000	1,980,000	3,366,000
	1928	37,000	4,355,000	2,340,000
Dry beans	1929	50,000	525,000	1,890,000
	1928	40,000	580,000	2,233,000
Rye	1929	111,000	1,221,000	879,000
	1928	154,000	2,156,000	1,488,000

* Tons.

MINERAL PRODUCTION Copper, by far the most important mineral product of the State, in which it ranks third as a producer in the United States, yielded more heavily in 1928 as to quantity and much more as to value, than in 1927.

LOCATION, OWNERSHIP, AND PER CAPITA CIRCULATION OF UNITED STATES MONEY, JUNE 30, 1929
[From the Report of the Director of the Mint]

Kind of money	Money held in the Treasury			Held for Fed- eral Reserve banks and agents		Money outside of the Treasury			In circulation		Total amount *
	Total	Amount held in trust against gold and silver certificates (and Treasury notes of 1890)	United States gold and silver notes (and Treasury notes of 1890)	All other money	Total	Fed- eral Reserve banks and agents	Amount	Per capita			
Gold coin and bullion /	\$3,278,368,764	\$1,384,335,199	\$156,039,088	\$1,562,425,579	\$175,568,898	\$1,045,982,091	\$677,493,652	\$368,488,439	\$ 3.08	\$4,324,350,855 *	
Gold certificates						1,384,335,199	449,341,260	934,993,939	7.91	(1,384,335,195) *	
Standard silver dollars						51,558,490	7,874,240	43,684,250	36	59,960,849	
Silver certificates	488,402,359	470,037,392			18,364,967	468,753,942	887,073,075	887,073,075	3.23	(468,753,943) *	
Treasury notes of 1890						1,283,450		1,283,450	0.1	(1,283,450) *	
Subsidiary silver						301,845,764	17,619,764	284,225,000	2.37	304,167,449	
Minor coin						2,002,466	118,637,569	115,268,931	9.6	120,640,035	
United States notes						2,271,041	83,221,638	262,188,339	2.19	346,661,016	
Federal Reserve notes						1,108,120	2,193,862,995	501,146,879	14.13	2,194,970,415	
Federal Reserve Bank notes						88,154	7,466	8,616,511	0.3	3,711,131	
National bank notes						15,303,625	688,990,817	36,178,605	5.45	704,294,442	
Total June 30, 1929*	\$3,789,886,214*	\$1,854,372,591	\$156,039,088	\$1,562,425,579	\$217,048,958*	\$6,803,282,568*	\$1,856,986,007*	\$4,746,296,562*	\$39.62	\$8,588,796,192	
Comparative totals											
June 30, 1928	\$3,725,649,727*	\$1,986,761,140	\$156,039,088	\$1,387,650,413	\$195,199,036	\$6,379,202,167	\$1,585,575,910*	\$4,796,626,257	\$40.52	\$8,118,090,754	
Oct 31, 1920 /	2,436,864,530 *	718,674,378	152,879,026	1,212,360,791	\$52,850,936	6,761,430,672	1,063,216,060	5,698,214,612	53.01	8,479,620,824	
June 30, 1914	1,845,575,888 *	1,507,178,879	150,000,000		188,397,009	3,458,659,755		3,458,659,755	34.92	3,798,456,764	
Jan. 1, 1879 /	212,420,402 *	21,602,640	100,000,000		90,817,762	816,266,721		816,266,721	16.92	1,007,084,483	

* The amount of money held in trust against gold and silver certificates and Treasury notes of 1890 should be deducted from this total before combining it with total money outside of the Treasury to arrive at the stock of money in the United States.

This total includes \$15,724,715 of notes in process of redemption, \$168,415,343 of gold deposited for redemption of Federal reserve notes, \$13,157,972 deposited for redemption of national bank notes, \$1950 deposited for retirement of additional circulation (Act of May 30, 1908), and \$7,459,992 deposited as a reserve against postal savings deposits.

* Includes money held by the Cuban agency of the Federal Reserve Bank of Atlanta.

* Population of continental United States (estimated) June 30, 1929, 119,788,000; June 30, 1928, 118,364,000; Oct 31, 1920, 107,491,000; June 30, 1914, 99,027,000; Jan 1, 1879, 41,000,000.

* United States paper currency in circulation in foreign countries and the amount held by the Cuban agency of the Federal Reserve Bank of Atlanta.

* Does not include gold bullion or foreign coin other than that held by the Treasury. Federal reserve banks, and Federal reserve agents Gold held by Federal reserve banks under earmarks for foreign account is excluded, and gold held abroad for Federal reserve banks is included.

* These amounts are not included in the total since the money held in trust against gold and silver certificates and Treasury notes of 1890 is included under gold coin and bullion and standard silver dollars respectively.

* Notes—Gold certificates are secured dollar for dollar by gold held in the Treasury for their redemption silver certificates are secured dollar for dollar by standard silver dollars held in the Treasury. This reserve fund may also be used for the redemption of silver certificates.

* The Federal Reserve Bank of Atlanta is the only Federal Reserve Bank which has a first lien on all the assets of the United States.

* Gold or silver and much discounted or purchased paper as is eligible under the terms of the Federal Reserve Act.

* The Federal Reserve Bank of Atlanta is the only Federal Reserve Bank which has a first lien on all the assets of the United States.

* 40 per cent, including the gold redemption fund which must be deposited with the United States Treasurer against Federal reserve bank notes.

* The Federal Reserve Bank of Atlanta is the only Federal Reserve Bank which has a first lien on all the assets of the United States.

* Where lawful money has been deposited with the Treasurer of the United States for their retirement A 5 per cent fund is also maintained in lawful money with the Treasurer of the United States for the redemption of national bank notes secured by Government bonds.

The total mine production of copper in Montana was 248,262,027 pounds for 1928, as against 223,492,639 pounds for 1927. Its average value for 1928, 14 4 cents a pound, was well above the 13 1 cents of 1927. The value of the product of 1928 was thus not far from \$36,000,000, as against \$29,277,536 for 1927. Of other leading metals, the quantities produced were as follows: gold, 58,196 fine ounces in 1928 and 53,541 in 1927; silver, 1928, 10,853,276 and in 1927, 11,200,077; lead, in 1928, 33,759,044 pounds and in 1927, 35,898,315; zinc, in 1928, 165,660,198 pounds and in 1927, 160,461,803. The aggregate value of the year's product of gold, silver, copper, lead, and zinc was, for 1928, \$55,365,240, for 1927, \$49,265,945.

The State's coal production for the year 1928 was 3,324,195 short tons, in value, \$7,550,000, that of 1927 had been 3,143,634 tons, in value, \$7,403,000. The output of petroleum declined, for 1928, to 3,935,000 barrels, in value (estimated), \$6,400,000, from 5,058,000 barrels, value, \$7,000,000 for 1927. Arsenious oxide, lime, and natural gas were produced to the value of less than \$1,000,000 each in 1927. The aggregate value of the mineral product of the State was, for 1927, \$68,264,687, for 1926, \$79,700,390.

The value of gold, silver, copper, lead, and zinc produced from Montana mines in 1929, according to estimates, was about \$75,019,500, scoring a sharp increase over 1928. The improvement in the market for copper was reflected in increased output from the Butte district. The value of the gold output decreased from that of 1928 to about \$1,054,200 for 1929. There was a decided decrease in gold from copper ores. Gold from the Spring Hill mine near Helena was nearly double that of 1928. The mine output of silver increased to about 12,650,000 ounces for 1929, and the value to about \$6,755,000.

The copper output increased to about 298,600,000 pounds for 1929, and its value to about \$53,450,000. The increase of about 20 per cent in the output, making the largest year's production value since 1918, was due chiefly to the advanced price of copper. The Anaconda Copper Mining Company, as in the past, produced most of the copper from its mines at Butte. The production of lead increased to about 39,500,000 pounds, valued at \$2,508,200 for 1929. The increase of about 17 per cent was due chiefly to the unusually large output from the Block P Mine, owned by the St. Joseph Lead Co. The output of zinc recovered from ore mined in Montana increased to about 169,660,000 pounds for 1929, and the value, to about \$11,282,000.

FINANCE State expenditures of the year ending June 30, 1928, as reported by the U. S. Department of Commerce were for departmental maintenance and operation, \$6,531,522 (of which \$1,542,914 was for local education), for interest on debt, \$406,275, for permanent improvements, \$3,573,361, total, \$10,511,161 (of which \$4,708,074 was for highways, \$785,812 being for maintenance and \$3,292,262 for construction). Revenues were \$11,235,840. Of this, property and special taxes furnished 25 1 per cent, departmental earnings and compensation to the State for officers' services, 6 0, sale of licenses and taxation of gasoline, 29 7. The valuation of property for ad valorem taxation was \$432,544,107, taxation thereon by the State, \$1,935,632. The funded State debt was gross, \$5,651,908, net, \$4,666,984.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 5232 22. There were built, in 1929, 2 72 miles of additional second track.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and dealing with operations of 1927, there were in the State, in 1927, 505 establishments. These employed 14,242 wage earners, whose wages for the year totaled \$20,915,203. Materials and supplies used in production cost \$151,971,508. Manufactures combined were valued at \$203,503,250.

EDUCATION. The school-aged population for the year 1928-29 was placed at 154,751. There were enrolled in the public schools 119,384 pupils, of whom 96,383 were in elementary and 22,961, in high schools. Expenditures for public-school education totaled \$14,592,186. Salaries of teachers averaged \$1700 for large high schools, \$1500 for medium-sized high schools, \$1350 for small high schools, and about \$1100 for grade teachers.

The Montana standard of high-school graduation and of one year of additional professional and academic training was set up as the minimum requirement for the rural public school teachers of the State. It was required that the additional year be taken in an accredited normal school, college, or university.

CHARITIES AND CORRECTIONS. The State Board of Examiners exercised in 1929 direct supervision over the State charitable and correctional institutions. This board was composed of the Governor, Secretary of State, and Attorney-General, serving ex officio. These officers likewise constituted a State Board of Prison Commissioners, a Board of Commissioners for the Insane, and a Parole Board. A separate Board of Pardons, which did not include the Governor, recommended pardons to him. The State Board of Education shared in the control of the orphan, deaf, blind, and reform schools. An appointive advisory board, the Board of Charities and Reform, reported separately each year on the condition of the institutions. The State institutions of care and custody, with the numbers of the respective inmates as of Nov. 30, 1929, were: Montana State Hospital, 1524; School for the Deaf and Blind, 397; Industrial School for Boys, 167; State Prison, 649; Vocational School for Girls, 69; Orphans' Home, 223; Soldiers' Home, 80.

LEGISLATION. The regular biennial session of the State Legislature convened in January and adjourned March 13. A measure was enacted to promote the effort of the farmers' union and other agricultural organizations to establish a system for the regulated storage of wheat on farms, in such fashion as to render wheat thus stored available as security for loans from Federal Intermediate Credit banks. The measure was similar to one adopted at the same time in North Dakota. An act to permit Sunday dancing in cities of over 25,000 population was passed but was vetoed by Governor Erickson. The license fees upon motor vehicles were made to vary according to the weight of the cars, instead of then horse power, the former standard. Appropriations made for the ensuing two-year period totaled \$6,132,300, which did not include earnings of institutions and government agencies, estimated at \$906,540. A tax was placed on carbon black and a measure was passed to regulate dairy products.

POLITICAL AND OTHER EVENTS. Two railroad systems, the Great Northern and the Northern

Pacific, engaged in competition for the opportunity to extend into the eastern and east-central part of the State. The Northern Pacific having built in 1928 62 miles of line from Glendive to Brockway sought to extend from Woodrow northward toward Bloomfield. The Great Northern countered with an application to the Interstate Commerce Commission early in August for permission to build from Richey westward for 195 miles to Jordan, thus opening a line leading toward Lewiston. The Northern Pacific filed a protest to this application without delay, and in turn applied on October 9 to extend its own proposed line all the way to Lewiston, at a probable cost of \$6,000,000 or more. The State Board of Education arranged in April to take over the use of a junior high-school building at Havre for the seat of the North Montana Agricultural School.

Estimates which were made of the wild-animal life of the State, published by the U. S. Forest Service, set the total of the larger wild creatures at 200,000 head, of these, 75,613 were estimated to be game animals, 90,801, fur-bearing creatures; and 26,146, predatory. Deer were listed at 50,220, elk, at 11,639; moose, 1257, mountain sheep, 2212, mountain goats, 4082, black bears, 5713, grizzlies, 490, beaver, 18,150, martens, 8252, mink, 8721. Efforts were made during the summer to round up as nearly as possible all the wild horses at liberty in the State, with the purpose of using some and destroying the rest, for the preservation of range feed. Many of the wild horses, however, took refuge in almost inaccessible parts such as the Missouri Breaks.

OFFICERS Governor, J. E. Erickson, Lieutenant-Governor, Frank A. Hazelbaker, Secretary of State, W. E. Harmon, Treasurer, F. E. Williams; Superintendent of Public Instruction, Elizabeth Ireland.

JUDICIAL Supreme Court Chief Justice, Lew L. Callaway, Associate Justices, John A. Matthews, Albert J. Galen, S. C. Ford, Albert H. Angstman.

MONTANA, STATE UNIVERSITY OF. A State institution for the higher education of men and women in Missoula, Mont., founded in 1895. The enrollment for the autumn of 1929 was 1433, of whom 770 were men and 664, women. These were distributed as follows: Arts and sciences, 978, business administration, 61, forestry, 80, journalism, 115; law, 61, music, 27, pharmacy, 48, music specials, 42, and unclassified, 12. In the 1929 summer session, 450 students were registered of whom 121 were men and 329 women. The faculty had 98 members. The productive funds and income for the year amounted to \$468,362. There were about 150,000 volumes in the library, including government documents. President, Charles H. Clapp, Ph.D.

MONTENEGRO, mōn'tā-nā'g'ro. An integral part of the State of Yugoslavia. Before the World War, it was a Balkan kingdom, bounded by Serbia on the east, Albania on the south, Dalmatia on the west, and Herzegovina on the west and north, with an area of 5603 square miles and a population of 430,789 on Jan. 1, 1917. After Dec. 1, 1918, its status was indeterminate until 1921, when it became an integral part of Yugoslavia. In 1929 Montenegro was abolished as an official subdivision of Yugoslavia and the territory was incorporated in one of the nine new banats established by order of the dictatorship. The area in 1921 was placed at only 3733 square miles, and the popula-

tion according to the census of that year, 199,857. Capital, Cetinje, with a population of 5500. See JUGOSLAVIA.

MONTGOMERY, THOMAS LYNCH. American librarian and historian, died Oct. 1, 1929, in Philadelphia, Pa. He was born Mar. 4, 1862, in Germantown, Philadelphia, and was graduated in 1884 from the University of Pennsylvania. In 1886 he became actuary and librarian of the Wagner Free Institute of Science, remaining there until he was appointed State librarian of Pennsylvania in 1903. In 1921 he resigned this position to fill a similar one for the Historical Society of Pennsylvania, where he was at the time of his death. Mr. Montgomery edited series five to seven of the *Pennsylvania Archives*. He established the first branch of the Philadelphia Free Library in 1892, and was trustee of the library and chairman of the library committee after 1894.

MONTGOMERY Y AGRAMONTE, GEN CHARLES HORACE. See AGRAMONTE.

MONTREAL, GOVERNMENT OF. See MUNICIPAL GOVERNMENT.

MONTSERRAT, mōnt'sē-lāt'. One of the presidencies of the Leeward Islands. See LEeward ISLANDS.

MOON, (FREDERICK) FRANKLIN. An American forester and educator, died Sept. 3, 1929, in Syracuse, N. Y. He was born in Easton, Pa., July 3, 1880, and was graduated from Amherst College in 1901. In 1902-04 he studied at Harvard University, and in 1909 was graduated from the Yale University Forest School with the degree of master of forestry. In the summer of 1908, he made a forest survey in Connecticut, and in 1909, a survey in Kentucky for the United States Forest Service. He was forester for the New York Forest, Fish, and Game Commission, in charge of the Highlands of Hudson Forest Reservation (1909-10). He became associated with the New York State College of Forestry in Syracuse in 1912, as professor of forest engineering, and after 1920 was dean and professor of silviculture there. Mr. Moon went as a delegate to the World Forestry Congress in Rome in 1926 and remained abroad for a year studying systems of forestry education in 11 European countries. He wrote numerous public reports on forestry subjects and was joint author of *Elements of Forestry* and *The Book of Forestry*.

MOON. See ASTRONOMY.

MOORE, JOHN TROTWOOD. Tennessee State librarian, historian, and novelist, died in Nashville, Tenn., May 10, 1929. He was born in Marion, Ala., Aug. 26, 1858, and was graduated from Howard College in 1878. After moving to Tennessee in 1885, he began his literary work. In 1905-06 he edited *Trotwood's Monthly*, and from 1906 to 1911, with Robert Love Taylor, *The Taylor-Trotwood Magazine*. In 1910 he became director of the departments of libraries, archives, and history in the Tennessee State Library. Mr. Moore was a student of Southern history, especially of Andrew Jackson, and was a novelist and poet. His works include *Songs and Stories from Tennessee* (1897); *Ole Mattie* (1897); *The Old Cotton Gin* (1910); *Red Eagle and White* (historical novel, 1924); *Tennessee—The Volunteer State* (with A. P. Foster, 1924); *Ballads of the Unafraid* (1927).

MOOREITE. See MINEROGLOGY.

MORAVIANS. A religious denomination comprising, in the United States, three branches. The Moravian Church (Unitas Fratrum), the

Evangelical Union of Bohemian and Moravian Brethren in North America; and the Independent Bohemian and Moravian Brethren Churches. It was formed in Bohemia in 1467 under the leadership of John Huss and Jerome of Prague, and opposed the efforts of Austria and the Roman Catholic authorities to suppress it. At the beginning of the Reformation, it had more than 400 churches. In 1741 Moravians settling at Bethlehem, Pennsylvania, founded the first Moravian Church in the United States. The doctrine is evangelical, without a creed peculiar to itself, and in its polity the denomination follows a modification of the episcopacy, having a ministry of three orders: bishops, presbyters, and deacons.

THE UNITAS FRATRUM, the largest branch, is organized in two coordinate provinces: the Northern, with a provincial synod meeting every fifth year (a meeting of the Northern Province was to be held in 1930), and the Southern, of which the provincial synod meets every third year. The church maintains the following four educational institutions: Linden Hall, Lititz, Pa.; Moravian College and Theological Seminary, and Moravian Seminary and College for Women, Bethlehem, Pa.; and Salem Academy and College for Women, Winston-Salem, N. C. Missionary workers are maintained in southern California and Alaska, and in Nicaragua, the West Indies, Jamaica, Labrador, Surinam, South America, the Himalayas, and Unyamwezi, Central Africa. The official periodical *The Moravian*, is published weekly in Bethlehem, Pa. On Jan. 1, 1929, there were 135 churches, 102 ministers, 27,454 communicant members, although the actual membership was estimated at 38,000, and 125 Sunday schools, with 22,000 pupils.

THE EVANGELICAL UNION OF BOHEMIAN AND MORAVIAN BROTHERS IN NORTH AMERICA, of which the first congregation was organized in 1804 in Wesley, Tex., is under the direction of a synod which meets each year on July 6, the day of the death of John Huss. In 1926 (the latest year for which figures were available) this denomination reported 34 churches in North America, with 5241 members and 24 Sunday schools, with an enrollment of 1708. Total expenditures were \$12,023 and value of church property, \$76,700.

THE INDEPENDENT BOHEMIAN AND MORAVIAN BROTHERS CHURCHES were founded in 1858 in College Township, Iowa. In 1926 there were three churches with one minister and 356 members and three Sunday schools with 381 scholars.

MORMONS See LATTFE-DAY SAINTS, CHURCH OF JESUS CHRIST OF

MOROCCO. The largest of the Barbary States, occupying the northwestern corner of the continent of Africa, bounded on the west by the Atlantic Ocean, on the north by the Mediterranean Sea, on the east by Algeria, and on the south by the Sahara Desert and the Spanish colony of Rio de Oro. From an administrative and political point of view, Morocco is divided into three zones. First and most important, the French protectorate, including approximately 85 per cent of both area and population, with Fez as the political capital and Casablanca as the leading port and commercial centre. Second, the Spanish protectorate, a narrow strip of land extending for about 300 miles from the Atlantic Ocean along the Mediterranean with Ceuta, Melilla and Tetuan as the principal localities,

and third, the international Tangier zone ruled in accordance with the terms of the Paris convention of Dec. 18, 1923, between France, Great Britain, and Spain. The latest estimate of the total area places it at 218,525 square miles, of which the area claimed by Spain for her zone in the north was 8000 square miles for her southern zone, 9500 square miles, and for Ifni on the west coast, 800 square miles. In 1929 the area effectively held by the French was estimated at 200,000 square miles.

A census of the French zone taken in March, 1926, placed the population at 4,016,882: native Moslems, 107,552; native Jews, and 104,712 foreigners, making a total of 4,229,146. That of the Spanish zone was estimated at nearly 1,000,000, and that of the Tangier zone at about 80,000. The largest towns in the French zone with their populations according to the census of 1926 are Marrakech, 149,263; Casablanca, 106,608, and Fez, 18,172. In the Spanish zone, the largest town is Tetuan, with a population of 24,000. The population of Tangier is approximately 60,000. The chief languages are French, Spanish, Moorish, Arabic, and Berber dialects. In 1926 there were in the French zone 199 schools, in the secondary schools there were 188 teachers and 2822 pupils, in the high schools, 26 teachers and 417 pupils; in the primary schools, 645 teachers and 23,327 pupils. In the professional schools, 79 teachers and 1029 pupils. There are Moslem schools at Rabat and Fez and a research institute for the study of the Arabic and Berber languages at Rabat.

PRODUCTION. The most important industry is agriculture. The principal crops are cereals, especially wheat and barley, beans and chick-peas, canary seed, cummin and coriander, linseed, olives, grapes and other fruits, and especially almonds. In the fall of 1929 swarms of locusts overran many of the valley oases of French Morocco, causing damage estimated at several millions of francs. Stock raising is an increasing industry. In 1926 there were in the French Zone, 1,932,840 cattle, 9,248,402 sheep, 3,037,731 goats, 58,911 pigs, 190,251 horses, 562,835 asses, and 117,917 camels. Although no coal is found in Morocco, the rich mineral resources include phosphates, the output of which in 1928 was 1,337,100 tons, iron ore, gold, silver, tin, copper, and petroleum. The phosphate mines are exploited by the Government and under its monopoly.

COMMERCE. In 1927 exports of the French Zone were valued at 851,390,141 francs and imports, at 1,798,597,755 francs.

FINANCE. The estimated revenue for the French Zone in 1929 was 687,768,968 francs and the estimated expenditures the same amount. The budget for the Spanish Zone for 1928 balanced at 55,913,441 pesetas. In the Tangier Zone, the 1929 budget provided for expenditures of 23,969,533 francs and revenues of 23,971,500.

COMMUNICATIONS. In 1927, 1713 vessels of 2,421,088 tons engaged in foreign trade entered the ports of the French Zone and 1615 vessels of 1,557,188 tons the port of Tangier. There are approximately 1100 miles of railway in Morocco.

GOVERNMENT. The Tangier Zone is permanently neutralized and is governed by an international control organization. The French Zone constitutes a protectorate, under a French and native administration. The highest local authority is the French Resident General. The

with only some 30 per cent of possible votes being cast. By inadvertence, San Diego had been carried on the standard list of manager cities, apparently because since 1915 it had had an operating manager in charge of various kinds of public works.

Votes against the adoption of the manager plan were recorded at Portland, Me., and Cleveland, Ohio, the vote at Cleveland being the third unsuccessful attack on the plan within two years. Majorities in favor of retaining the manager plan at the three elections were, in round numbers, 6400 in November, 1927 (with some twice the number of total ballots cast), 3200 in 1928, and 3000 in 1929. At each of these elections, abandonment of proportional representation in the election of councilmen also was voted down. During the year, Hamilton, Ohio, voted to retain, and Ashtabula, Ohio, to give up, proportional representation, votes being about 8600 for continuation to 3200 against at Hamilton and 1900 for to 2800 against at Ashtabula. According to *Public Management*, January, 1930 (Chicago), Ashtabula was the first American city to adopt and the first to give up proportional representation, nine other cities having voted to retain the plan. Ashtabula adopted the plan 14 years previous—long enough ago to permit the citizens to forget the political conditions before its adoption, the journal named suggests.

Two cities abandoned the plan. Wheeling, W. Va., substituting an elected manager-mayor, and Dearborn, Mich., which was operating under the council-manager plan, combining with Fordson, the combined city having the mayor-council plan. Indianapolis, which was to have come under the manager plan in 1930, was prevented from so doing by a court decision which was interpreted as compelling Michigan City, Ind., to abandon the plan. The court held that the act under which Indianapolis was to have a city manager was unconstitutional because it was physically impossible for the city clerk to verify signatures to the election petition within the time required, the court assuming that personal verification was required instead of having the work done by deputies, as is allowed in other States. It was held that because this verification was physically impossible in Indianapolis, the council-manager enabling act could not be utilized in any other municipality of the State.

The Hartford Metropolitan District was created by the State Legislature of Connecticut and Greater Atlanta by the Legislature of Georgia. The Hartford District includes Hartford, Worcester, Bloomfield, Newington, and Weatherfield, all of which accepted the act by popular vote, while New Hartford voted against coming into the district. The government of the district is vested in a commission of 20 members, in two forms, all appointed by the Governor of Connecticut. In the first form, there is one member for each of the five municipalities. After two years' service, these members will be replaced by elected representatives, one from each municipality. In the other form, there are 15 members, five each appointed for two, four, and six years. At the expiration of these terms, successors will be elected for six-year terms, the election being at large. The work of the district is vested in two bureaus. One of these will be the Bureau of Water Supply with the executive head of the Hartford Water Department as its manager and chief engineer. The other, the Bureau of Public

Works, will be directed by the city engineer of Hartford, who will have charge of trunk highways, sewerage, and drainage.

Greater Atlanta, effective Jan. 1, 1930, is chiefly an organization for working out a plan for future action, except that it was intended to get immediate recognition in the Federal Census. It embraces the city of Atlanta, the adjacent towns of Decatur, Avondale Estates, East Point, College Park, and Hapeville, together with 15 unincorporated districts. In Atlanta, each of the five incorporated towns are called boroughs. The mayor of each of these municipalities will continue as borough mayor with the mayor of Atlanta as ex-officio mayor of Greater Atlanta. There will be 15 councilmen from the unorganized districts, making up a council of 21 in all. This council is empowered to make a study of "such governmental, sanitary, water, and police problems as it sees fit and by a resolution to recommend to the governing bodies of the various boroughs such legislative and other action as may be deemed beneficial."

The borough system of government for Montreal and vicinity was under consideration during the year in the hope of forming Greater Montreal. There is already in existence the Montreal Metropolitan Commission. A proposed charter for the Metropolitan District of Pittsburgh, Pa., to include 122 cities, boroughs and towns, was defeated on referendum vote June 25 because, although the total vote was 87,800 for, to 41,000 against, the charter and although 84 of the 122 municipalities cast a majority vote for the charter, only 49 of the municipalities gave the necessary 2 to 1 vote. The total vote of 129,000 was only about one-third of the vote cast in the same district at the presidential election in 1928. The vote was taken in accordance with a constitutional amendment adopted by the State in 1928.

The charter, as originally framed by a commission, was materially changed by the Legislature before being submitted to popular vote. The charter was designed to create Greater Pittsburgh, including all Allegheny County and still leave municipal autonomy in the 122 minor local-government areas. Attempts to resubmit the charter to popular vote before the taking of the Federal Census of 1930, in order that Greater Pittsburgh might attain high rank among the larger cities of the country, were unsuccessful, a court holding that the Legislature had not authorized resubmission. Since the Legislature does not meet in 1930, it was impossible to secure a legislative amendment before the 1930 census.

GREAT BRITAIN. Sweeping changes in both local government and local taxation in Great Britain were provided in an act of Parliament passed just before the Baldwin, or Conservative, government went out of power. There were separate acts for England and Wales and for Scotland. Hundreds of minor governing bodies were abolished by the act, including those pertaining to parishes in England and to districts in Scotland. In general, powers of county councils were considerably increased, particularly as regards highways outside of large municipalities. For the relief of manufacturing industries and of railways, local taxation was cut to 25 per cent and for the relief of agriculture, local taxes were reduced from the former 25 per cent to zero. The revenue thus lost by the local governing bodies is to be made up from the national Treasury, and various specific

grants-in-aid are to be replaced by lump-sum grants. In Scotland, the taxation relief is somewhat different.

BIBLIOGRAPHY Important books published during the year included Forbes, *Government Purchasing* (New York), Maxwell, *Contemporary Municipal Government in Germany* (Baltimore), Merriam, *Chicago, a More Intimate View of Urban Politics* (New York), Thompson, *Urbanization, Its Effect on Government and Society* (New York), Walker, *Municipal Ordinance Making* (Columbus, Ohio) Whyte, *Local Government (Scotland) Act* (Edinburgh).

See also CHANNING, GARBAGE AND REFUSE DISPOSAL, MUNICIPAL OWNERSHIP, ROADS AND PAVEMENTS, SEWERAGE, WATERWORKS.

MUNICIPAL LEAGUE, NATIONAL See NATIONAL MUNICIPAL LEAGUE.

MUNICIPAL OWNERSHIP Waterworks continue to be far in the lead as regards municipal ownership of public utilities in the United States, with electric light and power plants second. Gas works and street railways show only a few examples of public ownership and little change from year to year except for construction of rapid transit system extensions in New York, Philadelphia, and Cincinnati, all for private operation. The few sewer systems owned and operated by private companies barely hold their own. The largest of these is in Atlantic City, N. J. In December, San Francisco sold the \$41,000,000 of bonds voted in 1928 for the purchase of the works of the Spring Valley Water Company. Mar. 3, 1930, was set for taking possession by the city. Condemnation proceedings in behalf of the cities of Paterson, Passaic, and Clifton, N. J., were prosecuted during 1929 to fix the price for transfer to those cities of the works of the Passaic Consolidated Water Company. When these and the Spring Valley works change to municipal ownership, there will remain only a half-dozen cities in the United States with population of 100,000 or more which do not own their waterworks. The voters of Davenport, Iowa, cast 2800 against, to 2500 for, the purchase of the works of the Davenport Water Company in 1929. Some smaller cities bought privately owned works during the year. Apparently, there were no changes from municipal to private ownership.

Ownership of electric light and power plants has changed fundamentally in recent years. Consolidation of both physical plant and ownership has been rapid. This has greatly reduced the number of plants but neither the number of communities nor the population supplied. Preliminary announcements of U. S. Census statistics gathered as of the year 1927 (summarized in *The American City* for September, 1929) show that the total number of plants decreased from 6385 in 1922 (date of the previous census) to 5335 in 1927. For the same period, municipal establishments fell from 2581 to 2198 and private operating companies, from 3774 to 2137. The municipal loss in five years was thus 383, or 15 per cent, and private loss, 1637, or 43 per cent.

An exhaustive preliminary report entitled "The Changing Character and Extent of Municipal Ownership in the Electric Light and Power Industry" was published in 1929 by The Institute for Research in Land Economics and Public Utilities (Chicago). It is confined to municipally owned plants, which are exhibited in various ways for each year and for groups of years from 1882, the beginning of the industry, until 1927. The

report gives the number of municipal plants at the close of 1927 as 2320, instead of the 2198 in the preliminary census figures already mentioned. The peak of municipal ownership, according to the report, was in 1923, with 3066 establishments, as it terms a municipally owned plant, but at one time or another, there have been 3814 such plants. Of the latter, 827, or 22 per cent, had once been privately owned and the remainder were publicly owned at their inception. Of 2320 municipally owned plants at the close of 1927, 1802 started as such and 518 as privately owned plants. Of 1494 changes from municipal to private ownership in the period under consideration, 1185, or 81 per cent, began as municipal and 309, or 21 per cent, as private plants, the 309 having changed from private to public then back to private ownership. Most of the 3814 plants now or previously municipal are in small places, 1099, or 29 per cent, in places of 500 or less, 2058, or 54 per cent, in places of less than 1000, 3125, or 84.5 per cent, in places of 2500 or less, and only 44, or 1.15 per cent, in cities of 20,000 and over.

CANADA Figures collected by the Dominion Bureau of Statistics as a part of its 1927 Census of Industry (published late in 1929) showed that for all Canada there were 629 stations generating electric power of which 432 were privately, and 197 publicly, owned, giving percentages of 69 and 31. The total number of organizations engaged in supplying electric power was considerably in excess of the number of stations, because many organizations buy current for distribution. Of 1012 organizations, 473, or 47 per cent, were private and 539, or 53 per cent, were public. Ontario had 311 of the 539 public organizations.

LONDON TRANSIT What would be in substance a single coordinated system of the many competing passenger transit agencies in London and vicinity, under public ownership but with private operation, was foreshadowed in the House of Commons near the close of the year by Herbert Morrison, Minister of Transport, under authority of Prime Minister MacDonald. Such action was considered necessary both to lessen traffic congestion and to facilitate transport, while it was believed that the economies effected by bringing under single ownership and control "the complicated network of separate interests, private and municipal, including omnibuses, tramway and local railway service, would be such as to make unnecessary any liability on public funds or credit." Consult *Municipal Journal* (London), Dec. 6, 1929.

MURDER See CRIME.

MURRAY, THE HON. GEORGE HENRY Canadian statesman, died Jan. 6, 1929, in Montreal, Can. He was born June 7, 1861, in Grand Narrows, Nova Scotia, where he began his education, finishing at Boston University. He was appointed to the Legislative Council of Nova Scotia (1889), and a member of the Government of Nova Scotia without portfolio (1891). He formed a new administration in his province (1896), in which he was both Provincial Secretary and Premier. He resigned in 1923, after serving a remarkably long Premiership.

MURRAY, THE MOST REV. JOHN GARDNER, Presiding bishop of the Protestant Episcopal Church in the United States, died of an apoplectic stroke while conducting a meeting of the House of Bishops in Atlantic City, N. J., Oct. 3, 1929.

He was born in Lonaconing, Md., on Aug. 31, 1857, and he was educated at Womring Seminary in Kingston, Pa., and Drew Theological Seminary. On leaving Drew Seminary in 1881, he was forced to enter business to aid in the support of his family. Beginning as a bookkeeper in the Osage Coal and Mining Company of Selma, Ala., he became vice president before he retired in 1892. He was ordained a deacon of the Protestant Episcopal Church in 1893 and a priest the following year. In 1893-96 he was in charge of missionary work in southern Alabama, and after that became rector of the Church of the Advent in Birmingham. He went to Baltimore as rector of the Church of St. Michael and All Angels in 1903. In 1909 he was consecrated bishop coadjutor of Maryland, and in 1911 he became bishop of Maryland. He was elected presiding bishop of the Protestant Episcopal Church for the period 1926-31. Bishop Murray was an able administrator, and as the presiding bishop, directed the missionary work of his church both in the United States and abroad. Attention to missions and an absorbing interest in the human needs of his people were distinctive features of Bishop Murray's work.

MUSCLE SHOALS. See AGRICULTURAL LEGISLATION, FERTILIZERS, and UNITED STATES.

MUSEUMS, SCIENTIFIC. See ANTHROPOLOGY.

MUSIC. GENERAL NEWS. Having perfected a vast organization during the celebration of the Beethoven and Schubert centennials of the two preceding years, the Columbia Phonograph Company of New York conceived a plan of making this organization a permanent body to act as a jury in determining an annual award of \$5000 for the outstanding contribution in the field of music during any year, beginning with the year 1929. This body was officially incorporated as "The Columbia Yearly Award for the Advancement of Music and the International Parliament of Music." For the purpose of the award, the "field of music" is defined as comprising all compositions in the various forms, as well as original and scholarly contributions to musicology.

On October 6, the birthday of the late Oscar G. Sonneck, the Beethoven Association of New York presented to the Library of Congress a check for \$10,000 as a Sonneck Memorial Fund. The income is to be devoted to the advancement of musicology in the United States by offering annual prizes and stipends for original research work.

In his will the late Charles H. Ditson set aside \$800,000 to be evenly divided among the music departments of eight institutions of learning: Columbia, Harvard, Yale, Princeton, the Chicago Musical College, the College of Music of Cincinnati, the New England Conservatory, and the Ann Arbor School of Music.

The famous Wanamaker Collection of Stringed Instruments, which after the death of its collector (1928) was acquired by Dr. Thaddeus Rich, was sold by the latter for \$850,000 to Rudolph Wurlitzer, who thus became the owner of the world's largest collection, representing a total value of \$3,000,000.

Impressed by the fact that some recently published works on American folklore contain a number of hitherto unknown folksongs, Lorraine Foster, a singer and direct descendant of the composer, organized in New York, on November 29, the Stephen Foster Society for the

purpose of collecting and publishing unknown American folksongs that may still survive in any part of the United States.

In Gotha occurred in March, the world-première of an unfinished opera by Mozart, *Lo sposo deluso*, which dates from the year 1783 and was abandoned by the composer because of its silly libretto. Ludwig Kuschner completed the score by using the music of another unfinished opera, *L'oca del Cairo*, written in the same year. The result hardly justified the pains taken by the arranger and certainly did not add an iota to Mozart's fame.

Among the papers left by an orchestral player, who died in Prague in 1916, there was found the complete score of the original version of Dvořák's opera, *King and Charcoal Burner*, dated 1871. When this was rejected as too difficult, the composer reset the entire libretto to new music, in which form it was produced in Prague in 1874. In Leipzig Gunter Raphael discovered an unknown concerto for cello and orchestra in A minor by Dvořák, which had its first performance at a Gewandhaus concert in October, under the direction of Hermann Scheichen, with Hans Munch-Holland as soloist.

In Berlin the original manuscript of the first version of Schubert's *Erkonia*, which had been in the possession of Clara Schumann, was sold at auction for \$6000.

In Vienna Fritz Lange, the biographer of Johann Strauss, discovered among the composers' papers in the possession of his widow parts of the orchestral score of a hitherto entirely unknown operetta, *Romulus*, written about 1866.

On an extended tour of the principal cities of Germany in the spring, the famous Concertgebouw Orchestra of Amsterdam, under Willem Mengelberg, aroused everywhere demonstrations of frantic enthusiasm, which later on were duplicated at a series of concerts given in Paris.

To its already existing three important opera houses, Berlin added a fourth one, Die Volkoper des Westens, under the directorship of Karl Stolzberg. It was formally opened on August 18 with Lortzing's *Die beiden Schützen*.

The death of Siegfried Ochs (90), in February, stirred the numerous admirers of the great conductor to quick action, resulting in the re-establishment of the famous Berlin Philharmonic Chorus, with Otto Klemperer as conductor. Ochs had founded this chorus in 1882 and conducted its concerts till 1921, when post-war conditions brought about the dissolution of this world-famous organization.

Through the annual subvention of 480,000 marks, guaranteed by the Berlin municipality for ten years, the Philharmonic Orchestra, of which Wilhelm Furtwängler is the principal conductor, became a state institution.

Prague and several other Czech cities devoted the latter part of April and the entire month of May to an elaborate celebration of the twenty-fifth anniversary of the death of Dvořák (May 1, 1904) by performances of almost all his orchestral and chamber music, as well as his operas.

In striking contrast to this enthusiasm the centenary of the birth of Anton Rubinstein passed practically unnoticed. A few of his personal pupils, both in Europe and the United States, resurrected the faded piano concerto in D minor, but no record can be found of the revival of any of the larger works, the symphonies, operas or

otatorious What the great artist had feared, and what embittered the last years of his life, has literally come true Today the world remembers only the superb pianist, the composer was forgotten even before the first decade after his death

The third festival of the Deutsche Händel Gesellschaft, held at Halle, in June, showed considerably lessened interest in works of merely historical importance, although the committee had hoped to attract a large number of visitors by including works by some of the master's contemporaries, Telemann, Keiser, Steffani and Hasse

On the other hand, the enormous success of the seventh festival of the Deutsche Brahms Gesellschaft, held at Jena, also in June, testified to the ever-growing appreciation of this master in wider circles

Under the auspices of the Internationale Bruckner Gesellschaft, founded the preceding year in Leipzig, the first great Bruckner Festival, conducted by Hugo Balzer and Knöll Krips, was held at Karlsruhe, early in November The major works produced were three symphonies (Nos. 1, 3, and 8) and the Mass in F minor

The seventh International Festival of the International Society for Contemporary Music was held at Geneva, in September The programmes presented new works by 21 composers of 15 nationalities

Owing to further extensive alterations and innovations in the Festspielhaus, the annual Bayreuth Festival was omitted

In May Toscanini, with the complete personnel and accessories of La Scala, gave a series of gala performances in Vienna and Berlin, rousing the audiences of both cities to the point of frenzy After the final performance in Berlin (June 29) he startled the world with the unexpected announcement of his resignation, not only as director and principal conductor of La Scala, with which institution he had been connected for more than thirty years, but also of his permanent retirement from all operatic conducting, as he desired in the future to devote his entire time to the concert platform A few days later a second announcement followed, that he had accepted the invitation of Siegfried Wagner to conduct *Tannhäuser* and *Tristan und Isolde* during the Bayreuth Festival of 1930 Thus is the first time that the much-coveted honor of directing at Bayreuth has been extended to a foreign conductor

In connection with the centenary of the premiere of Rossini's *William Tell* (Grand Opera, Aug. 3, 1929) the entire company of the Teatro alla Scala, under Tullio Serafin, was invited to Paris to give a series of model performances of several of Rossini's operas Although these productions were almost flawless in all respects and the audiences were lavish in their demonstration of approval, only one work of the series drew full houses, Rossini's only masterpiece, *Il Barbiere di Siviglia*

At the Théâtre des Champs Élysées, Maria Kuznetsov-Massenet gave a short season of Russian opera with her own private company, assisted by the Straram Orchestra under Emil Couper The critics were emphatic in their praise of the musical excellence and the scenic splendor of the performances. The repertory included Rimsky-Korsakov's *Snegurochka*, *Tsar Saltan*, and *Tale of Kitezh*, Borodin's *Prince Igor*, Mussorgsky's *Boris Godunov* and Tchaikovsky's *Eugen Onegin*

In London Sir Thomas Beecham conducted a six-day festival of the compositions of Frederick Delius (October 12-November 1), presenting all the major works At the conclusion the invalid composer was visibly moved by the sincere homage of the vast audience

After a long and valiant struggle of seven years the British National Opera Company was obliged to disband in the spring But immediately its place was taken by the Covent Garden Opera Syndicate, under the direction of Colonel Eastlake Blois, with John Bairolihi as principal conductor

The house in Zelazowa Wola, where Chopin was born, was acquired by the city of Warsaw for preservation as a national memorial

ARTISTS It may not be amiss to begin the year's survey of the activities of prominent artists by recording the career of that prodigy of the violin, Yehudi Menuhin, whose extraordinary success in the United States furnished the sensation of the year 1927 After a few more appearances in that country, in January, he made his first visit to Berlin, then revisited Paris, where he had been heard two years before, and also visited London for the first time Everywhere he roused his audiences to frenzied enthusiasm and won the unanimous and unqualified admiration of the critics, who pronounced his interpretation of the colossal concertos of Beethoven and Brahms as the equal of that of the greatest masters of the violin New York was still spellbound by the marvellous art of this boy, when his teacher, Louis Persinger, introduced a second young genius of the violin, twelve-year-old Ruggero Ricci, accounts of whose brilliant playing on the Pacific coast had preceded him The lad did not disappoint expectations for he created a real sensation at his New York début, on October 20, when he played Mendelssohn's Concerto in E minor with the Manhattan Symphony Orchestra For a child of twelve to surmount merely the technical difficulties would be an astonishing achievement, to present this work with such maturity of conception is nothing less than a manifestation of genius that defies explanation Young Ricci's triumph is all the more significant in that it followed so closely upon that of his remarkable fellow-student, when comparison was unavoidable

On October 11, a new Spanish pianist, José Iturbi, made his American debut in Philadelphia, in the Beethoven's G major Concerto with the Philadelphia Symphony Orchestra His success was instantaneous and nothing less than sensational A few weeks later, he received a similar ovation at his first New York appearance with the Philharmonic-Symphony Society (December 5) and at his recitals capacity audiences greeted him with demonstrations usually reserved only for prime favorites. The critics exhausted their superlatives in praising his stupendous technical execution, the variety of his tonal effects, his musical interpretation, the universality of his taste and his marvellous sense of style, as exemplified by his rendition of classical, romantic, and modernistic compositions with equal authority Such praise is, indeed, no exaggeration However, what differentiates one great artist from another, sets him apart as a distinct individuality, is personality, that subtle, indefinable force which emanates unconsciously from the soul of the executant and casts its magic spell over the listener, a force akin to electric-

ity, in that it can neither be described nor explained, but which proves its real existence through results produced; a spiritual force that irresistibly stirs the deepest emotions. This personality Nature has bestowed upon Mr. Iturbu.

Another memorable event was the American debut of a new Russian 'cellist, Gregor Piatigorsky, who was first heard in Philadelphia, on November 8, in the Dvořák's Concerto in B minor with the Philadelphia Symphony Orchestra. A few weeks later, on December 26, he repeated the same work in New York with the Philharmonic-Symphony Society. On both occasions he evoked tumultuous demonstrations and critical opinion proclaimed him the greatest 'cellist heard here since the advent of Cusals in 1901. What has just been said about Iturbu is applicable with equal force to the art and personality of Piatigorsky. An artist new to New York, although favorably known by the reputation which he had won in Chicago, was Alfred Wallenstein, the new solo 'cellist of the Philharmonic-Symphony Society, who made a deep impression at his first appearance as soloist with that organization on October 24, when he played in masterly fashion, together with the concert-master, Scipione Gundi, Brahms's great double Concerto for violin and 'cello. Worthy of mention also is the debut of another 'cellist, Antonio Sala, who was introduced to New York on March 4 and proved himself a fine artist.

A piano recital given by Hans Barth in New York, on April 9, attracted a good-sized audience, curious to witness the demonstration of a quarter-tone piano. In reality, the instrument was nothing else than a combination of two pianos, each fully equipped with its own keyboard and set of pedals. He later tuned a quarter-tone apart. . . . was bewildering, so that no opinion could be formed as to the merits of either the instrument or the music—the latter being written, as a matter of course, in quarter tones—in as much as it was impossible to establish a basis of comparison with any music of the past, or even with the most extravagant productions of the modernists.

There was no dearth of concerts by established favorites—pianists, violinists, organists, harpists and vocalists. The mere enumeration of their names would read almost like a catalogue. In recent years the recital for two pianos seems to have won increasing favor, for, besides well-known artists in this field, there were heard the new teams formed by June Wells and Gizi Stantos, Lewis Sears and W. L. Grossman, and Elizabeth and Frances Copeland.

A hearty welcome was extended to two distinguished Russian composers, Alexander Gretchaninov and Alexander Glazunov, on their first visit to this country, where they appeared as conductors of their own works. The former made his American debut at a special concert in New York, on March 24, the latter with the Detroit Symphony Orchestra on November 21. After conducting also in Chicago and Cleveland, Glazunov appeared at a special concert in New York (December 3). Although he did not reveal extraordinary powers as a conductor, his importance as a composer, widely recognized long before his coming, aroused his audiences to great enthusiasm. During his stay many of the larger orchestras gave performances of his works, and at several of these concerts the composer was present as the guest of honor.

CHAMBER MUSIC. The fourth annual Washington Chamber Music Festival was held in the concert hall of the Library of Congress from October 7-9. The assisting artists were the Barrière Ensemble, the Gordon String Quartet, the Roth String Quartet, a chamber orchestra selected from members of the Philadelphia Symphony Orchestra, under Leopold Stokowski, the pianists Harold Bauer and Arthur Loesser and the organist Lynnwood Farnam. Although the biennial \$1000 prize was formally withdrawn after the last award—to a worthless work—in 1926, Miss Coolidge had offered the prize once more for this festival. Out of 135 scores submitted by composers of 33 nationalities the judges selected a sextet for wind instruments, entitled *Divertissement grotesque*, by Joseph Huttel of Czechoslovakia. A second prize of \$500 had been offered for a composition for two pianos, but was not awarded, because no score was deemed sufficiently meritorious. Another novelty produced was Hindemith's Second Concerto for organ and chamber orchestra. If the *Divertissement* was truly grotesque and execrating, the concerto was unacceptably dull. The third novelty, a sextet for wind instruments, by Werner Janssen, was most appropriately entitled *Obscures of a Saxophone*. It was genuine jazz, repellent in its vulgarity. These and several more modernistic works were scarcely suited to put the audience into a receptive mood for such a masterpiece as Brahms's *String Sextet*, or even Bruckner's *Piano Quintet*. A remarkable feature of the festival was the splendid execution of Bach's last work, *Die Kunst der Fuge*, a collection of 19 masterly, but rather long, fugues, the performance of which required exactly one hour and forty minutes. Whether any listener derived real æsthetic enjoyment from this purely intellectual, technical exhibition, without appeal to the emotions, is highly questionable. The work was not presented in its original setting for organ, but in the very effective orchestral arrangement of Wolfgang Graesser.

In Valley Forge, Pa., Ben Stad gave, in May, a concert of early music performed on the old instruments for which it was originally written. He attracted so much attention, that he organized the Society of Ancient Instruments, which made its initial appearance in four festival concerts on November 15 and 16, and the success led to a movement to establish an annual festival similar to Arnold Dolmetsch's famous Haslemere Festival. The artists were Ben Stad, viola d'amore, J. Brode, quinton, J. Smit, viola da gamba, C. Klug, viola da basso, Flora Stad, clavierin.

The twenty-fifth season of the famous Flonzaley Quartet established a record for packed houses, as it had been announced that after the conclusion of the tour the world-famous organization would be disbanded. The last concert took place in New York, March 17. Originally established in 1902 as a private quartet maintained by a wealthy patron of art, Edward de Coppet, the members, by constant practice, attained such perfection of ensemble, that on their first tour of Europe, in 1904, they created a sensation. The following year, they began their regular American tours and were recognized immediately as the equals of the famous Kneisel Quartet. The flawless perfection of their ensemble was maintained throughout their career by literally adhering to the original policy to devote the entire time to rehearsing or to concert tours with the quartet as a whole. As a matter of fact, no member ever

taught or ever appeared as a soloist. The original members were Adolfo Betti, Alfred Pochon, Ugo Ara, and Ivan d'Archambeau. Until the time of dissolution only three changes were made in the personnel, all affecting the viola desk. In 1917 Ara was succeeded by Léon Bailly, the latter in 1924 by Félixien d'Archambeau, and he, in 1926, by Nicolas Moldavan.

The passing of this famous organization gives rise to some inevitable reflection. In 1917 an equally famous group of artists, the Kneisel Quartet, was disbanded, and their rare art was irrevocably lost, except as it lingers in the memory of those who had the good fortune of actually hearing it. With the passage of time such memories are bound to become dimmed. Certainly he must be rash who would dare compare a present, actual performance with the memory of a performance of the same work heard twenty or thirty years before. Thanks to the perfection attained by the present method of recording and reproducing, actual performances by the Flonzaleys are preserved for all posterity of two of Beethoven's *String Quartets*, op. 18, no. 2 and op. 135, of Brahms's *Piano Quintet*, op. 34, of Schumann's *String Quartet*, op. 41, no. 1 and the same composer's *Piano Quintet*, op. 44. All these works are recorded in their entirety.

Immediately after the dissolution of the Flonzaleys two of its members formed the Stradivarius Quartet for the avowed purpose of continuing the tradition of the Flonzaleys. The personnel consists of Wolfe Wolfenson, Alfred Pochon, Nicolas Moldavan, and Gerald Warburg. The name was chosen because of the fact that every member plays a Stradivarius instrument. They began their activities on May 10, with a series of twenty-eight concerts at Mills College in California.

Another new organization, that gave its initial concert on November 15, is the Cincinnati String Quartet, formed by players of the Cincinnati Symphony Orchestra, Raoul Berger, Mikail Stolarevsky, Vladimir Bekaleinikov, and Desné Dan-cowski.

Two important changes were made in the personnel of the Curtis String Quartet of Philadelphia. Carl Flesch and Emanuel Zetlin, first and second violins, respectively, were replaced by Lea Luboshutz and Edwin Bachmann. Leon Bailly and Felix Salmond continue as violist and cellist.

One of the sensations of the year was provided by the Aguilar Lute Quartet of Madrid, which made its debut in New York on November 9. The members were three brothers, Ezequiel, Paco, Pepe, and their sister Elisa. Their masterly renditions of classical and modern compositions revealed undreamt possibilities of the lute as a concert instrument.

CHORAL SOCIETIES. On January 3, the Prague Teachers' Chorus, a body of 60 trained male voices, under the direction of Metod Dolezal, made its American debut in Boston and scored a most emphatic success, which was repeated a few days later in New York (January 7). The flawless technical execution respecting intonation, attack, release, and fine nuances caused no surprise, was, in fact, expected, and thus taken as a matter of course. The real interest centred in the compositions themselves, the majority of which possessed the characteristic flavor of the national folk-music. Thus, while the works themselves were real novelties, they were representative of a type of music not only familiar to, but even

very popular with, American audiences through the works of Dvořák and Smetana.

Before embarking for their first European tour the Dayton Westminster Chorus, under J. F. Williamson, visited several of the Eastern cities and won high praise for their fine rendition of a cappella works of the older masters in England, France, Germany, and Austria; their concerts evoked genuine enthusiasm.

After two years of intensive training and rehearsing, the Smallman Association of Chicago, composed of 32 trained voices, under John Smallman, gave their first public concert in Chicago, scoring a pronounced success, and at once undertook a transcontinental tour. Their first New York concert, on November 7, was nothing less than a triumph.

On April 23, the A Cappella Choir of the Denver College of Music, a body of 32 trained voices under John C. Wilcox, made their debut as a concert organization in their home town and won immediate favor.

A noteworthy concert was given on December 4 by the Brahms Chorus of Philadelphia, under N. Landsay Noiden, when Beethoven's *Mass Solemnis* was produced in a manner that caused local critics to write in superlatives. Because of its extraordinary demands upon the singers, both soloists and chorus, this mass is heard rather infrequently, consequently, any performance, even in New York, is a musical event. On this particular occasion Philadelphia heard not only an eloquent artistic interpretation, but also the first performance in that city of the great work in its entirety. Thus the distinction of having given the local première of one of the world's greatest masterpieces belongs to the city's youngest choral society, for at that time the Brahms Chorus was just beginning its third season.

On April 18 the Columbia University Chorus, under the direction of W. H. Hall, gave the American première of Handel's oratorio, *Solomon*, which was first produced in London in 1748. The work proved to possess merely historical interest.

FESTIVALS. The twenty-ninth biennial Cincinnati May Festival was held under the direction of Frederick Stock, from May 7-10. The new conductor, who succeeded Frank Van der Stucken, was no stranger to this festival, since he has taken part in many festivals of earlier years, first as viola player in the Chicago Symphony Orchestra, then as associate and later as guest-conductor. The chief works performed were Mendelssohn's *St. Paul*, Wolf-Ferrari's *La Vita Nuova*, Pierné's *Les Enfants de Bethléem* and Honegger's *Le Roi David*. The climax of the festival was the afternoon concert of May 9, when Dr. Stock presented a Wagner of excerpts from the Ring dramas, with assistance of Florence Austral, Fritze Schumann-Heink, Dorothy Manski, Tudor Davies, Paul Allhouse and Frederick Patton.

The works produced at the twenty-third Bethlehem-Bach Festival (May, 10, 11), under Dr. Frederick Wolle, were the *Passion According to St. Matthew* and the *Mass* in B minor.

The ninth Harrisburg Festival (May 11-13), directed by Ward-Stevens, offered as principal works a repetition of Mozart's *Mass* in C minor, which at the preceding festival had its American première, and Pierné's *Children's Crusade*.

The fifth Westchester Festival at White Plains (May 9-11), under Albert Stoessel, presented as

the chief attractions splendid concert performances of Saint-Saëns's *Samson and Dalilah* and the entire first act of Wagner's *Lohengrin*.

The thirty-sixth Ann Arbor May Festival (May 22-25), under Earl V. Moore, with the assistance of the Chicago Symphony Orchestra, produced a novelty, Norman Lockwood's orchestral suite, *Odysseus*. Josef Hofmann, as soloist, observed the centenary of the birth of Anton Rubinstein, his former teacher, by a brilliant performance of the D minor concerto. The choral offerings included Brahms's *Ein Deutsches Requiem* and Wolf-Ferrari's *La Vita Nuova*.

The twenty-first North Shore Festival at Evanston (May 27-June 1), under Peter Lutkin, brought forward as the principal offering Bach's *Mass* in B minor. Josef Hofmann repeated the Rubinstein concerto, assisted by the Chicago Symphony Orchestra directed by Frederick Stock.

The seventieth Worcester Festival (October 2-5), under the direction of Albert Stoessel, offered a decided innovation in presenting the Marmion Dancers at the second concert. It is the first time that the art of dancing was ever represented at any of the festivals, but the demonstrations of a capacity house left no doubt as to the favorable reception of the innovation. Two novelties were produced, Josten's *Ode for St Cecilia's Day*, for soprano, baritone, chorus, and orchestra, and Hanson's *Lament for Beowulf*, for chorus and orchestra. The program of the last concert consisted of Pienze's *Crusade*.

ORCHESTRAS. Owing to the delayed arrival, because of the illness of Toscanini, the concerts of the New York Philharmonic-Symphony Society during January and February were conducted by Hans Lange, the associate conductor, and Reiner, Gabilowitch, Molinari, and Krauss as guests. Toscanini then led the concerts from February 21 to April 1. He also was at the helm of the opening of the fall season, from October 3 to November 24, when Mengelberg conducted to the end of the year. At the concerts of January 19 and 20, Arthur Honegger appeared as guest-conductor, conducting his *Rugby* and a *Concertino* for piano and orchestra, the latter work being interpreted by the composer's wife, Andree Vauraboug. The concert for the pension fund, on April 1, was made a gala occasion in honor of the solo cellist, Leo Schulz, who retired after thirty consecutive years of distinguished service. On that evening, he appeared as soloist, playing the Schumann concerto for 'cello, and as composer and conductor, directing his *American Overture*. After the conclusion of the summer season at the Stadium, the other solo 'cellist, Cornelius Van Vliet, also retired. The two positions were then consolidated and Alfred Wallenstein, until then solo 'cellist of the Chicago Symphony Orchestra, succeeded Schulz and Van Vliet.

Two important changes took place in the Philadelphia Symphony Orchestra. Dr. Arthur Rodzinski, the assistant conductor, and Mischa Mischakow, the concert-master, resigned and were succeeded by Alexander Smallens and George Beinel, respectively. Ossip Gabilowitch and Clemens Krauss appeared as guest-conductors. Early in the year, when illness necessitated the cancellation of Sir Thomas Beecham's visit, the concerts that were to have been directed by him were divided between the assistant conductor, Dr. Rodzinski, Eugene Goossens, and Alexander Smallens. At the concert of October 11, Stokowski introduced for the first time the perfected

Thereminphone as an orchestral instrument. The programme of November 29 marked a radical departure from the accustomed order of symphony programmes, in as much as an entire opera, lasting almost four hours, was given in concert form. The occasion marked the American premiere of the original version of Mussorgsky's *Boris Godunov*. Opinions may differ as to the necessity or propriety of the radical changes made by Rimsky-Korsakov, whose version is the only one known to the operatic public, but even a single hearing suffices to establish the vast superiority of Rimsky-Korsakov's instrumentation over Mussorgsky's. At any rate, the concert aroused sufficient interest to warrant repetition the following day and on December 2.

In less than a year, the stipulated \$1,500,000 was raised by popular subscription to supplement the original gift of \$1,000,000, made the year before to the Cleveland Symphony Orchestra by Mr. and Mrs. John L. Severance for the orchestra's own concert hall and a permanent endowment fund. The experiment of the preceding year of performing Bloch's symphony, *Israel*, in New York as a pantomime was so successful, that Mr. Sokolov arranged a similar pantomime programme for Strauss's *Heldenleben*, which he performed in New York on April 26, 27, and 28, followed by two repetitions of *Israel*.

The frequent appearances as a concert pianist of Gabilowitch, the regular conductor of the Detroit Symphony Orchestra, were responsible for the unusually large number of guest-conductors during the year. The audience had ample opportunity to admire the art of Mengelberg, Stokowski, Arbos, Enesco, Hertz, and Schneevogt. The concert of November 21 was memorable for the fact that it introduced for the first time to an American audience the distinguished Russian composer, Alexander Glazunov, who conducted his *North Symphony* in C minor and his *Second Piano Concerto*, played by Elena Gavrilova.

During January and February, the Minneapolis Symphony Orchestra, under its regular conductor, Henri Verbrugghen, made a successful tour of Southern cities and also gave two concerts in Havana.

The year marked the twentieth consecutive season of Frederick Stock as regular conductor of the Chicago Symphony Orchestra. Alfred Wallenstein, the solo 'cellist resigned to accept a similar position with the New York Philharmonic-Symphony Society, and was succeeded by Emilio Bolchini of Buenos Aires.

The announcement that, after 15 years of distinguished service, Alfred Hertz would resign as conductor of the San Francisco Symphony Orchestra produced, quite aside from the unpleasant surprise, the result of drawing capacity audiences to every concert of his final season. Whether the unexpected and unsolicited subvention of \$15,000 by the municipality toward meeting the expenses of the orchestra had relation with the conductor's contemplated resignation was not known. The fact remains, that this is the very first instance in the United States of any musical orchestra having been subsidized out of the

At the conclusion of the spring season George Schneevogt retired as conductor of the Los Angeles Philharmonic Orchestra. His successor, Dr. Arthur Rodzinski, formerly assistant conductor of the Philadelphia Symphony Orchestra,

began his first season on October 24, creating a deep impression.

The Woman's Symphony Orchestra of Chicago opened its fourth season on October 9 under a new conductor, Ebba Sundström, who succeeds Ethel Legunska. Miss Sundström had been concert-master from the beginning of the organization, and assistant conductor during the preceding season.

The twelfth season of the summer concerts at the Stadium in New York (July 6-August 29), by the Philharmonic-Symphony Orchestra under Willem Van Hoogstraten and Albert Coates, was noteworthy for the unusual variety of the programmes. Besides the regular orchestral concerts, there were given two performances of Beethoven's *Ninth Symphony*, under Van Hoogstraten (July 17, 18), and two of Verdi's *Requiem*, under Coates (July 31, August 1). In both works the choral portions were sung by the Choral Symphony Society. Three nights (August 6, 7, 8) were given over to the Denishawn Dancers, when the orchestra was directed by Anna Fuleihan. The night of August 12 brought a concert performance of *Carmen* and *Pagliacci* by the American Opera Company, under the direction of Eugene Omandy. On August 20 and 21 another dancer, Anna Duncan, was presented, while David Mendoza directed the orchestra.

Of the new orchestras that began their career during the year, the most important is the Manhattan Symphony Orchestra of New York, under Henry Hall. Its organization of 100 players gave its initial concert on June 9, the first of a series of summer concerts. The regular winter series was inaugurated on October 20, when that young prodigy of the violin, Ruggiero Ricci, made his sensational New York debut. Since the nucleus of the orchestra is composed of former members of the disbanded New York Symphony Society, a high level of technical finish was evident even at the opening concerts. Milwaukee, which for serious symphonic concerts had been dependent upon the visits of the Chicago Symphony Orchestra, at last established its own Milwaukee Philharmonic Orchestra of 70 performers, under Frank L. Waller. The first concert was given on September 3. The members of the former Eastman Theatre Orchestra were organized as the Rochester Civic Orchestra, under Guy F. Harrison, and began their first season with a series of 34 concerts.

NOVELTIES. The following is a list of the principal novelties heard during the year. Boston Symphony Orchestra, under Koussevitzky, A. Honegger, *Rugby* and *Concerto* for piano and orchestra (January 11), W. Josten, *Jungle*, symphonic poem (November 15), L. Gruenberg, *The Enchanted Isle*, symphonic poem (November 23). New York Philharmonic-Symphony Society, under Toscanini, I. Pizzetti, *Concerto dell'Estate* (February 24), V. Tommasini, *Prelude, Fanfare and Fugue* (March 21), A. Coates, *The Elopement of the Spinster Aunt*, orchestral scherzo after Dickens (August 4, conducted by the composer), M. Ravel, *Bolero*, and H. Wetzler, *The Basque Venus* (November 14). Philadelphia Symphony Orchestra, under Gabilowitch, A. Chausson, *Concerto* for piano and orchestra, in F minor (January 18), under Goossens, Lord Berners, *Suite from The Triumph of Neptune* (March 1), under Stokowski, A. Tansman, *Ouverture symphonique* and J. Eichheim, *Japanese Nocturne* (April 12), S. Prokofiev, *Symphony No. 2* (October 11), A. Schoenberg, *Vari-*

ations (October 18); under Stock, A. Krein, *Ode to Lenin* (October 25), S. Fridman-Gramatté, *Concerto* for piano and orchestra, *Danse Marocaine*, *El Que* and *Caprice* for violin and orchestra (November 1); J. Eichheim, *Jana*, Chicago Symphony Orchestra, under Stock, F. Stock, *Concerto* for cello and orchestra, played by Alfred Wallenstein (January 25); A. Casella, *Concerto* for violin and orchestra, played by Josef Szigeti (February 1), B. Guraña, *Marionette*, orchestral scherzo, and *Apna stolen by the Dwarfs of the Mountain* (February 8), N. Lockwood, *Odysseus*, orchestral suite (March 22); A. Tansman, *Symphony* in A minor (December 27). Detroit Symphony Orchestra, under Enecco G. Enecco, *Second Orchestral Suite* (February 21), under Gabilowitch, C. McKinley, *Masquerade* (November 7), R. Henschel, *Mountain Legend* and J. Wagenaar, *Divertimento* (November 28). Minneapolis Symphony Orchestra, under Verbruggen, E. Stingham, *Symphony* in Bb minor (November 15), A. Fallwell, *The Gods of the Mountain*, suite (December 13). Cleveland Symphony Orchestra, under Sokoloff, J. Rivier, *Overture to Don Quixote* (November 14), J. Schilling, *Airphonc Suite* (November 29).

OPERA. At the Metropolitan Opera House in New York 197 performances were given from a repertory of 48 operas by 28 composers. According to nationality these were divided as follows: Italian, 23 works by 12 composers totaled 104 performances; German, 14 works by six composers totaled 54 performances; French, nine works by eight composers totaled 34 performances. One Russian opera was given twice (in French) and one American work had three performances. Wagner, represented by nine works, stood first with 32 performances. Next came Verdi, represented by six works with 31 performances, then Puccini, with six works and a total of 29 performances.

Only two novelties were produced. The first was Ernst Krenck's *Johann spielt auf* (January 19), under Bodanzky, with Easton, Fleischer, Laubenthal, Bohnen, and Schair in the principal rôles. Nobody took this jazz opera seriously. However, curiosity to hear a work that three years ago had been the operatic sensation throughout Germany was sufficiently strong to fill the auditorium for seven performances. There were some people who derived genuine amusement from this exhibition of silly buffoonery, but the real lovers of art were disgusted, and the majority of critics considered the production of such frivolous satire on music as unworthy of an institution devoted to musical art. The second novelty was Ildebrando Pizzetti's *Fra Gherardo* (March 21), under Serafin, with Mueller, Clausen, Johnson, and Pinza in the chief rôles. In spite of a really powerful dramatic action and gorgeous scenic effects, the opera failed because of the composer's inability to write adequate, characteristic music.

Of far more interest than either novelty was the revival of Mozart's *Don Giovanni* (November 29), under Serafin, with Corona, Retliberg, Fleischer, Ghil, Pinza, and Ludikar. The last time that this opera had been heard at the Metropolitan was on April 3, 1908, when the singers were Eames, Farrar, Formai, Bonei, Scotti, and Muhlmann, and the conductor, Mahler. A comparison of the two casts will probably reassure those who are open-minded and endowed with a

fairly good memory that the art of singing cannot have fallen upon quite such evil days as we hear often asserted. The revival of *Don Giovanni* was in all respects a model performance. Another revival was that of Verdi's early opera, *Luisa Miller* (December 21), under Serafini, with Ponselle, de Luca, and Lauri-Volpi. The tumultuous applause throughout the performance was not coked by Verdi's music. It was quite evident that the enthusiasm was due to the reappearance, after a serious illness, of one of the prime operatic favorites.

Only three new singers were introduced during the year. They were capable artists, but none showed outstanding quality. Tancredi Laseco made his debut as The Duke, in *La Gioconda* (November 1), Santa Biondo as Nedda, in *Pagliacci* (November 23) and Edward Ransome as Manrico, in *Trovatore* (December 14).

A wonderfully eloquent performance of *Tristan and Isolde*, on April 13, was made the occasion of a tremendous ovation to the conductor, Artur Bodanzky, who, after 14 years of distinguished service, was bidding farewell to his Metropolitan audiences. His successor, Josef Rosenstock of Wiesbaden, made his debut on October 30 with *Die Meistersinger*, but failed to measure up to the standard set by his predecessor. After only four more appearances, he tendered his resignation on November 16. Thunderous applause greeted Bodanzky, when, on November 30, he resumed his former post with a brilliant performance of *Der Rosenkavalier*. In the short interim, Karl Riedel, one of the assistant conductors, acquitted himself creditably, when suddenly called upon to conduct *Lohengrin* and *Die Walkure*.

The Chicago Civic Opera Company gave in its home town 86 performances of 33 works by 17 composers. According to nationality these were distributed as follows: Italian, 16 works by eight composers totaled 41 performances, French, 10 works by six composers totaled 23 performances; German, seven works by three composers totaled 22 performances. Verdi, represented by seven works, achieved 21 performances, Wagner came second with 12 performances of four works, in spite of the fact that the much belated restoration of his works to the repertory was begun only during the last six weeks of the year. It is also significant that every Wagner performance drew a capacity house. The management wisely engaged the finest artists available. First of all, there was Egon Pollak, who had proved his superlative skill as a Wagner conductor as far back as 1915-17, and who was greeted with boundless enthusiasm upon his reappearance in *Tristan and Isolde*, on November 9. In the same performance, Theodor Strack made his American debut as Tristan, with emphatic success, while the unsurpassable Frieda Leider sang *Isolde*. Maria Olszewska (Brangäne), Richard Bonelli (Kurwenal), and Alexander Kipnis (Marke) completed an ideal cast. Three other newcomers made a fine impression at their debut, Emil Schipper as Telramund (*Lohengrin*, January 12), Nellie Stiles as Elsa (*Lohengrin*, December 19) and Giovanni Inghilleri as Rigoletto (*Rigoletto*, December 28). Henry G. Weber resigned as conductor and Frank St. Leger returned as conductor after an absence of two seasons. A new conductor, Emil Cooper, made his debut with *Roméo et Juliette* (November 7) and proved himself a master of the baton. After the conclusion of the Chicago season, the company gave 63 perform-

ances on tour, including a two weeks' stay in Boston.

The performance of *Roméo et Juliette*, on January 26, was the last given in the company's old home, the Auditorium. The same opera had been chosen for the inauguration of the theatre in 1889. The magnificent new home, situated on Wacker Drive, was inaugurated with great pomp and ceremony on November 4 with a brilliant performance of *Aida*, under the direction of Giorgio Polacco. The cast was as follows: Rosa Raisa (*Aida*), Charles Marshall (*Rhadames*), Cyrena Van Gordon (*Amneris*), Cesare Formichi (*Amonasro*), Virgilio Lazari (*Ramfis*), Chase Baromeo (*Il Re*), Giuseppe Cavadore (*Messenger*), Iilda Burke (*High Priestess*).

A company calling itself the German Grand Opera Company made a tour of the principal cities from New York as far west as Chicago, giving Wagner's *Ring des Nibelungen* without cuts. Advance notices, promising exact duplication of the Bayreuth festival performances, had raised high expectations which were not fulfilled. The tour opened in New York (January 14-22), where two complete cycles were given. Even after the first two performances the company found itself in financial difficulties and had it not been for the timely aid of several enthusiastic lovers of Wagner, the undertaking would have collapsed right then. However, sufficient funds were guaranteed to make possible the carrying out of the original plans. The most serious shortcomings were antiquated scenic decorations and an orchestra numerically insufficient and inadequately rehearsed. Even two such superb conductors as Walter Rabi and Ernst Knoch could not remedy this latter fault in New York. Favorable and enthusiastic reports from cities visited later on indicated that constant repetition must have wrought an improvement in this respect. Among the singers there stood forth as towers of strength Johanna Gadski, Ottilie Metzger-Lattermann, Carl Jörn, Carl Braun, and Marcel Salzinger. A special performance of *Tristan and Isolde* (January 14) was noteworthy for the reappearance in New York on the operatic stage of Johanna Gadski, who had not been heard here in opera since she left the Metropolitan Opera House in 1917. The occasion resulted in an overwhelming ovation to the great artist, whose voice had lost none of its pure quality and very little of its former power and brilliancy. She sang also *Brunnhilde in Die Walkure*, and on January 22 was heard for the first time in America as Brunnhilde in *Götterdämmerung*.

The Philadelphia Civic Opera Company, with Alexander Smallens as conductor, launched its most ambitious undertaking, so far, with the presentation of the complete *Ring des Nibelungen*. *Rheingold* was given on November 21 and *Die Walkure* followed on December 12, both being rapturously received by public and critics. In the latter work, Florence Austral, as guest, sang Brunnhilde and created nothing less than a sensation. *Siegfried* and *Götterdämmerung* were scheduled for performance in Philadelphia early in 1930.

The Philadelphia Grand Opera Company became affiliated with the Curtis Institute of Music. Mrs. Joseph Leider remains president and William C. Hammer, general manager, while Mrs. Mary Curtis Bok became chairman of the board of directors. Emil Mlynarski succeeded Artur Rodzinsky as conductor. The chief event of the

year was the American première of Eugene Goossens' *Judith* (December 26).

The American Opera Company, under the general direction of Vladimir Rosing, began its third touring season of September 20, with a three weeks' engagement in Chicago. On October 9, an American opera, *Yolanda of Cyprus*, by Clarence Loomis, conducted by Isaac Van Grove, had its world-première and achieved considerable local success.

The Cincinnati Zoo Opera (June 16-August 28) repeated the excellent performances of *Die Meistersinger*, which had been the sensation of the preceding summer, and furnished a similar sensation this year with an equally fine production of *Parafal* (August 6), under Isaac Van Grove, with Forrest Lamont, Marta Wittkowska, Henri Scott, Frederik Patton and Robert Ringling. There were two repetitions.

At Ravinia Park, Chicago, the usual summer season of opera (June 22-September 2) offered nothing but familiar works from the standard repertory. The innovation of the Sunday symphony concerts of the preceding year had met with such favor, that in 1929 additional symphony concerts were given on Monday evenings and Thursday afternoons by the Chicago Symphony Orchestra under Eric Delamarter.

At Smith College, Northampton, Mass., Werner Josten, with artists recruited from the faculty and students of the college, chose for the annual revival of older operas Monteverdi's *Orfeo* and Handel's *Apollo e Dafne* (May 11).

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MUSIN, mŭz"ăn', OVIDE A famous Belgian violinist, died in New York, Nov. 24, 1929. He was born at Nandrin, near Liège, Sept. 22, 1854. After four years' study at the Liège Conservatory under Heynberg, he won the first prize, while Ysaÿe (Massart's pupil) carried off the second. He then continued to study with Léonard in Paris, and began his career as soloist in Spa, in 1870. Three years later, upon the recommendation of Léonard, he filled a series of engagements which had been offered to Léonard and Wieniawski, but which neither was able to accept then. From 1874 to 1882, he made triumphal tours of Europe and in 1883 visited the United States for the first time. In 1892 and 1897, he made tours of the entire world. On his return, he was made professor of violin at the Liège Conservatory, succeeding César Thomson. At the same time, he made an arrangement to spend half the year in New York. In 1905 he resigned his position in Liège and settled permanently in New York, where he established his own school. He was the recipient of numerous orders and decorations. His compositions for the violin are brilliant and effective, but of slight musical value. His technical studies are of more importance, especially his chief work, *The Belgian School of the Violin* (1916), a combination of his own and Léonard's methods. He also published *My Musical Memoirs* (1920).

MUSSOLINI, BENITO See ITALY, under History.

MUTATION See ZOOLOGY.

MUTHESIUS, KARI A German educator and Goethe scholar, died Feb. 22, 1929, at the age of 70. From 1906 to 1925, he was director of a seminary in Weimar. He published in connection with his pedagogical work *Stellung der Heimatkunde in Lehrplan* (1890), *Schulaufsicht und Lehrerbildung* (1902), *Universität und Volksschullehrerbildung* (1904), *Die Lehrerbildung im Strom der Zeit* (1906), *Schule und soziale Erziehung* (1911), *Der Einheits des deutschen Lehrerstandes* (1917), *Die Zukunft der Volksschullehrerbildung* (1919). He was an authority on Goethe, and contributed to studies of him *Goethe ein Kinderfreund* (1903), *Goethe und Pestalozzi* (1908), *Goethe und Karl Alexander* (1910), *Goethe und seine Mutter* (1923), *Goethe und das Handwerk* (1927).

MUTTON See LIVESTOCK.

NAIRN, VISCOUNT OF See FINLAY, ROBERT BANNATTYNE.

NANNAB, TEMPLE OF See ARCHAEOLOGY.

NATAL, na-tal' An original province of the Union of South America. See SOUTH AFRICA, UNION OF.

NATIONAL ACADEMY OF DESIGN. An institution in New York City, established in 1825 and incorporated in 1828 for the purpose of "the cultivation and extension of the arts of de-

sign." The academy holds two exhibitions of contemporary art each year, to which an artist of any country may submit his work. The works which are accepted by the jury of selection are exhibited without charge to the artists, members of the academy may exhibit one work without approval by the jury. The total number of associate members in 1929 was 152, the number of academicians was 142, including 111 painters, 24 sculptors, 5 architects, and 2 engravers. The following academicians were elected in 1929: Edward Dufner, Howard Giles, Charles Hopkinson, Jerome Meyers, Violet Oakley, Henry Parton, Rudolph Evans, Harriet Frishmuth, and Frederick Law Olmstead. The associate members elected were: Arthur Covey, Will Foster, Mary Gray, F. Tenney Johnson, George J. Nelson, Dorothy Oechman, Paul Jennewein, Arthur Lee, J. Monroe Hewlett, and Allen Lewis. The curriculum of the free art school was enlarged in 1929 by a grant of \$20,000 from the Carnegie Corporation. This grant made possible the addition of several cultural studies, so that students would be well equipped for mural painting, as well as other branches of the fine arts. On Nov. 26, 1929, the academy's gold medal for "distinguished services to the fine arts," awarded for the first time went to Elihu Root in recognition of his efforts to beautify the nation's capital. The officers in 1929 were: President, Cass Gilbert, first vice president, H. W. Watrous, second vice president, Robert Atken, corresponding secretary, Charles C. Curran, assistant corresponding secretary, Albert P. Lucas, recording secretary, Holbert Nichols, and treasurer, Henry Prellwitz. The council members were: Charles S. Chapman, Ernest L. Ipsen, Carl Rungius, Chauncey F. Ryder, Eugene Savage, and James Earle Fraser. Headquarters are at Amsterdam Avenue and 109th Street, New York City. See ART EXHIBITIONS.

NATIONAL ACADEMY OF SCIENCES. A body of American scientists incorporated by Act of Congress, approved by President Lincoln in 1863, for the purpose of investigating, examining, experimenting, and reporting upon any subject of science or art when called upon by any department of the government. The actual expense of such investigations, examinations, experiments, and reports are met from appropriations made for the purpose, without compensation for any services to the Government. Membership in the academy is limited to 300 active members and 50 foreign associates. New members are elected on nominations from the 10 sections: Mathematics, astronomy, physics, engineering, chemistry, geology and paleontology, botany, zoology and anatomy, physiology and pathology, anthropology, and psychology. The following new members were elected in 1929: Roger Adams, Irving Widmer Bailey, Albert Francis Blakelee, James Bryant Conant, Joel Henry Hildebrand, William Hovgaard, Albert Wallace Hull, Frank Levelett, Paul Willard Merrill, David Hilt Tennent, George Hoyt Whipple, and Clark Wissler. The foreign associates elected were: Frederick Orpen Bower of Yorks, England, C. de la Vallée-Poussin of Louvain, Belgium, Willem de Sitter of Leiden, the Netherlands, and Richard Hertwig and Arnold Sommerfeld of Munich, Germany.

The academy holds two meetings each year. The annual meeting is held in Washington, beginning the fourth Monday in April, and the autumn meeting is held at a place and on dates

decided upon by the council of the academy. The 1929 autumn meeting was held Nov. 18-20 in Princeton, N. J. These meetings are devoted to the transaction of business and the presentation of scientific papers by academicians or persons introduced by them. Among the papers read at the annual meeting were "An Experimental Method for Determining the Activity of Convalescent Polymyositis Serum," by Simon Flexner and Cornelius P. Rhoads, "The Relief of Experimental Pneumonia," by Yandell Henderson, G. L. Binbaum, P. N. Coryllos, H. W. Haggard, and E. M. Radloff, "Measurements of 100 Members of the Academy and What They Show," by Ales Hrdlicka, "The Reality of the Great Star Streams," by Jan Schlitt, "Scattered Light," by R. W. Wood, and "Reconciliation of Binocular and Monocular Color Fusion," by Christine Ladd-Franklin. The papers read at the autumn meeting included "A Classification of Stellar Systems," by Harlow Shapley, "Radiation of the Planet Earth," by Charles G. Abbott, "Ancient Migration Routes to Central Asia," by Henry Fairfield Osborn, "Report on Ether Drift Experiments of 1929 and Consideration of Other Experimental Evidence Indicating a Motion of the Solar System," by D. C. Miller, "Spontaneous and Induced Streptococcus Disease," by Theobald Smith, "On Some Race Differences in the Structure of Human Spinal Nerves," by H. H. Donaldson, "Relation between Stature of Childhood and Adult Stature," by Franz Boas, "Maps of the Pleistocene Glaciation," by Chester A. Reeds and E. Antevy, and "On New Measurements on the Intensity of Cosmic Rays as a Function of Depth beneath the Surface of the Atmosphere," by R. A. Millikan and G. H. Cameron.

The academy has trust funds from which grants are made for the furtherance of research investigations, other trust funds are used to provide for gold medals in recognition of outstanding scientific work. At the 1929 annual meeting, the Agassiz Medal for Oceanography was awarded to Dr. J. Stanley Gardiner of the zoological laboratory of Cambridge University, England, in recognition of his contributions to that field of science, the James Craig Watson Medal and a honorarium of \$100 were awarded to J. H. van de Sitter, director of the *sterrenwacht* and professor of theoretical astronomy at the University of Leiden, the Netherlands, in recognition of his researches in astronomy. The academy publishes a series, *Memoirs*, consisting of monographs by academicians and others, reports of investigations conducted for the Government, and *Biographical Memoirs* of the deceased members. *Proceedings*, issued monthly, is devoted to condensed reports of the most recent scientific discoveries. The officers in 1929 were: T. H. Morgan, president, Frederick E. Wright, vice president, R. A. Millikan, foreign secretary, David White, home secretary, Joseph S. Ames, treasurer. The headquarters are at B and 21st Streets, Washington.

NATIONAL BANKS. See BANKS AND BANKING.

NATIONAL CIVIC FEDERATION. THE This movement was organized in 1900 to seek the solution of some of the great problems related to social and industrial progress. It provides especially for the discussion of questions of national import, aids in the crystallization of enlightened public opinion, and promotes legislation when desirable. The 38 members of the

executive committee represent the public, employers, and wage earners. The various committees and departments are organized to conduct the activities of the federation.

The department of industrial relations, with William D. Baldwin as chairman, has for its general purpose the seeking of a *modus vivendi* between employers and wage earners to the end that such friction and misunderstanding as exist between them may be reduced to a minimum. While not organized solely to deal with problems of capital and labor, the federation has sought, since its inception, to bring together employers and wage earners for the discussion of questions responsible for bitterness between the two forces that logically should be working together.

The department on active citizenship, John Hays Hammond, chairman, aims to interest citizens in participating actively in their political party organizations. They are urged not only to enroll and vote at primaries and elections but to aid in the selection of reputable and efficient candidates.

The commission on industrial inquiry, as organized, consists of four committees. Plan and scope, study of anti-trust legislation, study of injunctions in industrial disputes, and study of forms of employee organization and of employment contracts. The purpose of the committee on plan and scope, Matthew Woll, chairman, is to study economic factors and policies upon which wide differences of opinion exist and to see if an impartial presentation of facts will disclose basic principles acceptable to the three groups representing American industrial life—capital, labor, and the public. The committee on study of anti-trust legislation, Wheeler P. Bloodgood, chairman, analyzes court decisions, proposals for legislation, results of foreign experience, and the recommendations of various groups such as trade associations, agricultural organizations, etc. As a result of replies received to a questionnaire sent during 1929 to 25,000 individuals and organizations, the committee has recommended the amendment of the anti-trust laws (Sherman Act, Clayton Act, Federal Trade Commission Act, etc.).

The committee on study of injunctions in industrial disputes, under the chairmanship of Hon. James W. Gerard, analyzed Federal and State court decisions in injunction cases where, on the one hand, labor claims to have been wronged and, on the other hand, employers claim that only by the use of an injunction writ can their just rights be protected. The committee on study of forms of employee organization and of employment contracts, Sam A. Lewisohn, chairman, completed an impartial study in which it analyzed existing types of formal arrangements between employees and employers and attempted, in so far as possible, to determine the effectiveness of results obtained through these forms and methods.

The object of the industrial welfare department, Charles L. Edgar chairman, is to secure improvements in working and living conditions of wage earners voluntarily by employers. During 1929 it made an exhaustive report upon the extent of old-age dependency, advocating a proposal for retirement annuities designed to provide economic security for the wage-working population against destitution in old age. The department on subversive activities carried on its programme of opposition to recognition of the

Soviet Government and upheld the policy of the Wilson, Harding, Coolidge, and Hoover administrations against such recognition.

The most active of the committees of the woman's department, Maude Wetmore, chairman, was the committee on education. During 1929 it continued its study of the intimate relation of chemistry to human lives, made a survey of illiteracy among adults, considered a recodification of the naturalization laws, and indorsed restrictive legislation. In cooperation with 12 women's organizations, it also joined in the movement for a closer affiliation of the women of the country with the War Department through the appointment by the Secretary of War of nine women civilian aides, one aide for each of the nine corps areas. The objects of the movement are to provide a medium through which to create a better understanding and wider sympathy with the Army, and to broaden the knowledge of the women of the country of the purpose and aims of the National Defense Act and to encourage their active cooperation in support of the provisions of that act.

The executive council of the federation for 1929 included the following: Elihu Root, honorary president, Matthew Woll, acting president, Samuel McRoberts, treasurer, W. N. Doak, secretary, Ralph M. Easley, chairman executive council, Maude Wetmore, chairman of the woman's department, Charles L. Edgar, chairman industrial welfare department, John Hays Hammond, chairman department on active citizenship, William D. Baldwin, chairman department on industrial relations, Marcus M. Marks, chairman industrial round-table department, Gertrude Beeks Easley, secretary executive council, Mrs. Coffin Van Rensselaer, executive secretary woman's department, and Peter J. Brady, secretary department on active citizenship. Headquarters are in the Metropolitan Tower, 1 Madison Avenue, New York City.

NATIONAL DEFENSE. See MILITARY PROGRESS, NAVAL PROGRESS.

NATIONAL EDUCATIONAL ASSOCIATION OF THE UNITED STATES. An organization of persons actively engaged in educational work and others interested in education, organized Aug. 26, 1857, at Philadelphia under the name of the National Teachers' Association and on June 30, 1907, incorporated by Congress under its present name. In July, 1920, at the annual meeting, the association was reorganized and provision was made for a representative assembly composed of delegates from State and local educational associations. The other governing bodies are a board of directors, an executive committee of five, a board of trustees, departmental organizations, standing and special committees, and a staff at headquarters which is held responsible for carrying out the decisions of the governing bodies. In 1929 there were 17 departments, each having its own officers, as follows: Adult education, business education, class-room teachers, deans of women, elementary school principals, kindergarten-primary education, lip reading, rural education, school health and physical education, science instruction, secondary-school principals, social studies, superintendence, supervisors and directors of instruction, teachers colleges, visual instruction, and vocational education. There were also more than 15 standing and special committees actively at work on the various problems confronting the profession.

The chief objective of the association is to secure from the American public a broader recognition of education and, through a legislative programme, to provide for increased educational opportunities for American children. The association advocates a department of education with a secretary in the President's cabinet, a competent, well-trained teacher in every public-school position in the United States, increased facilities for teacher training, continued investigation of educational problems as the basis for revised educational standards and methods, active assistance to State and local affiliated associations in securing needed legislation and in promoting the interests of such associations, and such an interpretation of education as will awaken the people to a broader realization of its importance. In 1929 the association, through a national commission in which were included many prominent laymen, launched a nationwide, all-inclusive movement for the wiser use of leisure.

The association holds two conventions annually. The summer meeting serves as a clearing house for educational ideas and reviews the year in education. At this time, to the general session, meetings of the representative assembly, the departments of the association, and a number of allied organizations are held. In 1929 this meeting was held June 28 to July 4 in Atlanta, Ga., with an estimated total attendance of more than 10,000. Among the addresses delivered at this convention were "Education for a New America," by William John Cooper, U. S. Commissioner of Education, "America's Part in Bringing about World Peace," by Josephus Daniels, former Secretary of the Navy, "The Need of Improved Integration of Certain Basic Ideals and Practices in American Life and Education," by John W. Withers, dean of the School of Education, New York University, "School Administration and Conflicting American Ideals," by William F. Russell, dean of Teachers College, Columbia University, "Public Cooperation in School Policies," by William J. Hogan, Superintendent of Schools, Chicago, and "Teacher Training for a New World," by W. P. Morgan, president of Western Illinois State Teachers College. The 1930 summer convention was scheduled to be held the first week in July in Columbus, Ohio. The department of superintendence holds a winter convention the last week in February of each year. The 1929 meeting was in Cleveland, Ohio, that for 1930 was to be held in Atlantic City, N. J. The 1930 year book of the department, prepared for presentation at the Atlantic City meeting, was to be on "Supervision." The themes for the 1931 and 1932 year books were scheduled to be "Articulation of the Units of American Education" and "Character Education."

The *Journal of the National Education Association*, the organization's monthly publication, established in 1921, supports the policies and programmes of the association, aims to reflect the activities of professional organizations, and gives special consideration to new movements in education of national and international interest. The association publishes an annual volume, *Proceedings*, and numerous reports on its activities. Research bulletins containing statistical information on educational subjects are issued regularly. The finances of the association are embodied in two funds, the current and the perma-

nent, the latter amounting to \$490,270 on May 31, 1929, the receipts for the year ending on that date having been \$491,118. The enrollment on Jan. 1, 1929, was 193,145. The growth of the association had been such that during 1930 the attractive colonial headquarters building was to be enlarged by the construction of an adjoining building on M Street, thus more than doubling the present facilities. Officers elected for 1929-30 were President, Miss E. Ruth Pytlee, Lincoln, Neb., secretary, J. W. Crabtree, Washington, and treasurer, Henry Lester Smith, Bloomington, Ind. The headquarters of the association are at 1201 Sixteenth Street, Northwest, Washington.

NATIONAL GUARD. See MILITARY PROGRESS.

NATIONAL KINDERGARTEN ASSOCIATION. An organization founded in New York City in 1909 with the object of helping to secure the advantages of kindergarten education for all of the nation's children. The association is supported entirely by private subscriptions, which amount annually to approximately \$45,000. These funds are used for the purpose of promoting a knowledge of, and an interest in, the value of the kindergarten as an integral part of the public-school system. Field secretaries are employed in the different States for the purpose of keeping this matter before the public and assisting parents in having classes organized for their children. By 1929 the association had been instrumental in securing the establishment of 1373 kindergartens; it had the unique record of securing kindergarten training for one child for each dollar that it had ever received. During 1928 and 1929, through the generosity of its members, it was able to set aside a fund from which to aid in the purchase of equipment for 33 classes which otherwise could not have been opened. Where no adequate provision has been made in the school laws for the maintenance of kindergartens, the association has worked to stimulate an effort to secure the enactment of improved laws and has been instrumental in obtaining their passage in 15 States through co-operation with such State organizations as the Congress of Parents and Teachers, Federation of Women's Clubs, Woman's Christian Temperance Union, Federation of Labor, and Chambers of Commerce. Since 1912 the association has co-operated with the National Kindergarten and Elementary College at Evanston, Ill.

In 1917, in cooperation with the U. S. Bureau of Education, the association undertook the publication of weekly articles on Home Education, which were edited by experts on pedagogy and psychology and were issued free of charge to the press. In 1929 these articles were distributed to approximately 2000 periodicals in the United States and 46 foreign countries, thus reaching a combined circulation of many millions. Leaflets on the subject of kindergarten extension and training also were published and distributed extensively free of charge. The officers in 1929 were: President, Maj. Bradley Martin, honorary president, Philander P. Claxton, first vice president, Mrs. Henry Phipps; second vice president, Mrs. Charles Cary Rumsey, secretary, Mrs. Roger C. Aldrich, executive secretary, Miss Beattie Locke; treasurer, Julian M. Gerard. Headquarters are at 8 West 40th Street, New York City.

NATIONAL MUNICIPAL LEAGUE. An organization which acts as a central clearing house for current information on improvements

in State and local government throughout the United States; founded in 1894 and incorporated in 1923. Its aim is to promote efficient and democratic government in city, county, State, and nation. Under its direction, committees of experts are constantly at work to develop sound principles of governmental administration. These committees submit reports which are printed by the league and made available for distribution. The active committees in 1929 were as follows: Committee on government of metropolitan areas; national committee on measurement standards; joint committee on municipal reporting; committee on park and playground administration; committee on teaching municipal government; committee on model election system; committee on organized citizens' participation in city government; committee on organized citizens' support of city-manager government; committee on county manager plan.

The committee on government of metropolitan areas, which is headed by Frank H. Somer, dean of the New York University Law School, secured a grant of \$10,000 from the Russell Sage Foundation to finance a nation-wide survey of metropolitan government and to publish the resultant report early in 1930. The national committee on measurement standards, of which Col. H. M. Warte is chairman, was organized to meet the need of definite standards for appraising the results of municipal administration; this committee is composed of representatives of the National Municipal League, Governmental Research Association, and International City Managers' Association. The joint committee on municipal reporting, of which Col. C. O. Sherrill, city manager of Cincinnati, was chairman, reported the activities of municipal government to the citizens and was composed of representatives of the National Municipal League, the International City Managers' Association, and the American Municipal Association. The committee on park and playground administration, headed by Prof. Jay B. Nash of New York University, prepared recommended standards of administration for park and playground work in city governments. The committee on teaching municipal government, of which Dr. H. W. Dodds was chairman, was at work upon a programme of recommended standards for teaching municipal government in colleges and universities.

The committee on model election system, headed by Prof. Charles E. Merriam of the University of Chicago as chairman and Prof. Joseph P. Harris of the University of Wisconsin as secretary, was engaged in a report which was to be a companion to the league's report on a model registration system and which should be equally effective in improving the methods of selecting public officials. Professor Harris had made a nation-wide field study of election methods and had prepared recommended standards of administration and a recommended model law to set up the proper election system. The committee on organized citizens' participation in city government, with Carl H. Florzheimer as chairman, was engaged in a study of the various types of citizen groups and what they may accomplish through greater correlation of effort. The committee on organized citizens' support of city manager government, headed by Henry Bentley, chairman of the Cincinnati City Charter Committee, was to summarize the best methods for

organizing and conducting a city-manager campaign and for organizing a permanent charter committee to acquaint voters with progress accomplished and to defend the plan against organized attacks. The committee on county-manager plan, of which Prof. John A. Fairlie of the University of Illinois was chairman, was preparing a companion pamphlet to the one on a model city charter, containing arguments in favor of the county-manager plan and a suggested model law to make it effective.

The thirty-fifth annual meeting of the league was held in Chicago Nov. 12 to 14, 1929, under the general title of the National Conference on Improving Government. The Governmental Research Association, the National Association of Civic Secretaries, and the Proportional Representation League cooperated in this conference. Convention topics included: "Regional Consolidation", "The County Manager Plan", "Aviation and Municipal Progress"; "Equalizing the Tax", "Mechanical Helps to Governmental Efficiency", "Traffic Regulation", and "The Administration of Criminal Justice." Among the speakers on the programme of the annual meeting were Frank O. Lowden, former Governor of Illinois, Robert M. Hutchins, president of the University of Chicago, Russell Wilson, councilman-elect of Cincinnati, William B. Stout, president of the Stout Air Lines, Prof. Charles E. Merriam of the University of Chicago, Prof. Thomas H. Reed of the University of Michigan, Prof. Paul W. Wager of the University of North Carolina, Prof. John A. Fairlie of the University of Illinois, Charles M. McDowell, president of the Union League Club of Chicago, Harold S. Battenheim, editor of *The American City*, W. P. Lovett, Detroit Citizens' League, Miss Julia Lathrop, former director of the United States Children's Bureau, J. L. Jacobs, adviser to commissioners of Cook County, Rush C. Butler, president of the Illinois Association for Criminal Justice, Miss Jane Addams, head resident of Hull House, Chicago, William J. Hogan, superintendent of Chicago Public Schools, Richard S. Childs, president of the National Municipal League, Luther Gulick, president of the Governmental Research Association, Leo Tiefenthaler, president of the National Association of Civic Secretaries, Harry H. Freeman, director of the Buffalo Municipal Research Bureau, Clarence E. Ridley, secretary of the International Civic Research Association, Geoffrey T. Bailey, J. Edgar Hoover, George O. Fairweather, chairman of Cook County Joint Commission on Land Valuation, Miller McClintock of Harvard University, and Meredith N. Stiles, of the National Committee on Calendar Simplification.

The officers of the league for 1929-30 were: President, Richard S. Childs, vice presidents, Glenn Frank, president of the University of Wisconsin, Carter Glass, U. S. Senator from Virginia, Charles Evans Hughes of New York, W. D. Lighthall of Montreal, Meyer Lissner of Los Angeles, A. Lawrence Lowell, president of Harvard University, C. E. Merriam of the University of Chicago, W. B. Munro of Harvard University, Frank L. Polk of New York, Miss Belle Sherwin of Washington and A. Leo Weil of Pittsburgh, treasurer, Carl H. Pforzheimer, secretary, Russell Forbes, honorary secretary, Clinton Rogers Woodruff, editor of *The National Municipal Review*, H. W. Dodds, and public rela-

tions secretary, Howard P. Jones. Headquarters are at 261 Broadway, New York City.

NATIONAL RESEARCH COUNCIL. A co-operative organization of American scientists interested in pure and applied science, including engineering and industry. It was established in 1916 by the National Academy of Sciences, at the request of President Wilson, for the purpose of coordinating the research facilities of the country for work on war problems involving scientific knowledge. By executive order, it was reorganized in 1918 as a permanent body, its essential purpose being to promote scientific research and the application and dissemination of scientific knowledge for the benefit of the national strength and well-being. The council maintains close cooperation with governmental scientific bureaus and has the formal recognition and cooperation of 75 national scientific and technical societies, its membership being composed in large part of appointed representatives of these societies.

The activities of the council are conducted by 11 divisions, each of which has a chairman and from 20 to 25 members. These divisions fall into two groups. One group comprises seven divisions of science and technology, representing physics, mathematics, and astronomy, engineering and industrial research, chemistry and chemical technology, geology and geography, the medical sciences, biology and agriculture, and anthropology and psychology. The other group of four divisions of general relationships government relations, foreign relations, States relations, and educational relations. The council also maintains a special research information service.

Among the important undertakings of the council during 1929 were the maintenance of about 120 research fellowships in physics, chemistry, and mathematics and in the biological and medical sciences, work on the preparation and publication of international critical tables of numerical data in physics, chemistry, and technology, of which six of the seven volumes planned had been issued, the continuation in cooperation with the American Petroleum Institute of the work of the central petroleum committee in conducting a series of about 40 fundamental investigations on the physics, chemistry, and geology of petroleum, physics of the earth, research problems on minor planets, highway research, industrial lighting, heat transmission, structural welding, electrical insulation, problems of coastal subsidence and elevation, sedimentation, the measurement of geological time, seismological studies, bibliography of economic geology, medical problems of animal parasitology, especially ascariasis in children, problems of industrial medicine, infectious abortion and undulant fever, scientific problems of sex, drug addiction, medico-legal problems, problems in tropical agriculture and biology, the atmosphere and man, animal nutrition, effects of radiation on organisms, State archaeological surveys, fellowships in child development, and child development abstracts, and physiological and psychological problems of deafness.

The financial support of the council is derived, first, from a gift of \$5,000,000 from the Carnegie Corporation of New York to the National Academy of Sciences, part of which sum has been devoted to the erection of a building in Washington, D. C., to house the academy and the council, the remainder being used for the purposes of the council; and second, from other

gifts from various sources mostly made for the specific support of particular matters. These sources include the Rockefeller Foundation, General Education Board, International Education Board, Laura Spelman Rockefeller Memorial, Commonwealth Fund, and numerous individuals and industrial concerns. The council maintains two regular series of publications, bulletins, of which 74 had been issued up to the end of 1929, and the reprint and circular series, of which 91 had appeared. It issues, in addition, miscellaneous publications and an annual report.

The general administrative officers of the council for 1929 were: Chairman, George K. Burgess, first vice chairman, Thomas H. Morgan, second vice chairman, John C. Merriam, third vice chairman, Simon Flexner, treasurer, J. S. Ames; and permanent secretary, Vernon Kellogg. George E. Hale was the honorary chairman. The headquarters of the council are on B Street, between 21st and 22nd Streets, Washington, D. C.

NATIONAL SAFETY COUNCIL. An international, non-profit, cooperative association of more than 5300 members, companies, and individuals, located in the United States and in foreign countries. It was formed as a result of a meeting of the Association of Iron and Steel Electrical Engineers in Milwaukee in 1912 and functions for the prevention of accidents in factories, schools, homes, streets, the air, as well as for the health, sanitation and general safety of the public at large. In 1929 there were 60 affiliated local councils throughout the United States, and intensive safety work was carried on in hundreds of local plants, embracing approximately 150 different lines of industry and reaching more than 10,000,000 workers. In addition, safety campaigns were carried on in the schools under the auspices of the education division of the council, which receives financial support from the National Bureau of Casualty and Surety Underwriters and maintains a trained staff devoting its entire time to teaching accident prevention fundamentals.

The council maintains a large publication service, including four monthly publications: *The National Safety News*, for industry; *Public Safety*, for public officials, police chiefs, etc.; *Safety Education* for schools; and *The Safe Worker*, which is distributed each month to 200,000 workers. The council also issues safe-practice and health-practice pamphlets for industry and carries on extensive work, through the 28 sections represented in the industrial division, for the exchange of new ideas, new plans, and new practices among members. During 1929 more than 725,000 copies of the annual safety calendar were distributed, and each month 40 different two-colored and multi-colored posters were designed, printed and distributed, the poster circulation for the year being around 2,225,000 copies. The annual income of the organization in 1929 amounted to approximately \$800,000. In addition to paid memberships the council received financial contributions from the Rockefeller Foundation. Companies who are members of the industrial division pay dues in proportion to their size.

The eighteenth annual safety congress was held in Chicago in October, 1929, with an attendance of approximately 7000 delegates. The officers elected for 1930 were: President, C. E. Pettibone, Boston, managing director, W. H. Cameron, Chicago, treasurer, J. I. Banash,

Chicago; vice president for public relations, Charles E. Hill, New York City; for local councils, George Opp, Detroit, for public safety, Prof. Miller McClintock, Cambridge, Mass., for health, Prof. C. E. A. Winslow, New Haven, Conn., for membership, G. T. Helmuth, Chicago, for engineering, Earl F. Blank, Pittsburgh, for finance, C. W. Berquist, Chicago, for education, Albert W. Whitney, New York City, for industrial safety, Charles L. Close, New York City. Executive offices are at 108 East Ohio Street, Chicago.

NATURAL GAS. See GAS, NATURAL, METALLURGY.

NAVAL PROGRESS. The principal development in the various navies of the world during the year 1929 are given in the following notes which are arranged alphabetically. Among the notes upon the navies of the world are tables giving the names and tonnages of vessels completed during the year and the names, tonnages, and conditions of vessels under construction on Dec. 31, 1929.

ARGENTINA. The programme of construction approved in 1926 (See YEAR BOOK, 1927, p. 552, 1928, p. 486) was well advanced. Of the three cruisers, the *Venturino de Mayo* was launched Aug. 11, 1929, at Leghorn, and a sister ship, the *Almirante Brown*, building at Genoa, was put in the water a few weeks later. Two of the 6 destroyers were purchased from Spain and 3 were building in England. These are the *Mendoza*, *Tucuman*, and *La Rioja* and were completed during 1929. The designed speed was 36 knots, but the *Mendoza* was reported to have made nearly 40. Of the 6 submarines, 3 were building at the Tosi works, Taranto. The two marine surveying vessels, *San Juan* and *San Luis*, were completed in England in 1929.

AUSTRALIA. The Australian naval budget for the year 1928-29 was £1,347,000. The aircraft carrier *Albatross* (see YEAR BOOK, 1928, p. 486) was completed in 1929. No other war vessels of importance were under construction or projected. The government dockyard at Cockatoo Island, Sydney, was sold to private industry and all government work was to be carried on at the Government Dockyard and Engineering Works on Walsh Island in the Hunter River about two miles from Newcastle, New South Wales. A floating drydock in three sections was completed in 1929. This, or any of its sections, may be towed to other harbors if desirable. It was expected that it would have considerable use for commercial as well as naval vessels. In order to give greater experience to Australian officers, some of the Australian cruisers were serving in the British fleet and were replaced in Australia by British cruisers.

AUSTRIA. Since Austria lost her seacoast and navy in the World War, her naval force has consisted of river patrol boats on the Danube. In 1929 there were 4 of these—3 of 128 tons and 1 of 60 tons.

BRAZIL. The submarine *Humayta*, 1390/1884 tons (See YEAR BOOK, 1928, p. 486), built at Spezia, Italy, was completed in April, 1929, and joined the Brazilian fleet.

CANADA. The naval budget for 1928-29 was £545,000. The two new destroyers ordered in England were building at the Thornycroft Works, Southampton. They were to have a displacement of 1320 tons, a speed of 35 knots, and probably would resemble quite closely the *Amazon* of the British Navy.

CHILE During the past three or four years, a serious effort was made to reorganize and improve the Chilean Navy. The naval ports of Talcahuano and Valparaíso were strongly fortified and more extensively equipped for repair of vessels and use by the fleet. The coast is divided into five naval districts—Arica, Valparaíso, Talcahuano, Puerto Montt, and Magallanes. Of the 6 cruisers that were to be built under the terms of the programme of 1926, none had yet been ordered. But the 6 destroyers building in England—the *Serrano*, *Orella*, *Riquelme*, *Hyatt*, *Aldoa*, and *Videla*—were completed in 1928-29. They were fully described in the *YEAR BOOK* for 1928, p. 486. Three submarines—the *Almirante Simpson*, *Capitan O'Brien*, and *Capitan Thompson*—were completed or completing in England. These boats are similar to the later British boats of the *O* type and were reported to have a displacement of 1540 tons on the surface and 2020 tons when submerged, the surface speed was 16 knots and the armament consists of one 4-inch gun and 8 torpedo tubes. The battleship *Almirante Latorre* was to be modernized in the British naval dockyard at Devonport. New turbine engines were to be installed, the fuel supply was to be changed from part coal and part oil to oil only, and the boilers were to be altered to conform to this. Armor and other protection against aircraft and torpedoes were to be fitted, additional anti-aircraft guns were to be mounted, and a new system of battery control installed. The *Latorre* was built in England but sold at the outbreak of the World War to the British Admiralty. Under the name of *Canada*, she served throughout the War and was then resold to Chile.

CHINA The Nationalist government was endeavoring to get control of the various Chinese war vessels of former days and consolidate them into an organized navy. These vessels, under the empire, although admitting the imperial authority, were more or less free lances and looked for immediate support and direction to local authorities in the North or in the South. This condition was accentuated by the revolutionary ferment that had pervaded Chinese politics since the deposition of the emperor. The first action of the Nationalists after attaining nearly supreme power was the formation of a navy department. A secretary of the navy and an assistant secretary were appointed and the British Admiralty was requested to send a naval mission to China to give advice as to numbers and types of vessels needed and as to general naval organization. The Government was reported to have approved a programme for new construction to cost 100 million taels (1 tael=55 cents in 1929). The vessels to be built were 3 armored cruisers, 4 destroyers, and 2 submarines. It was presumed that such old vessels as were worth repair would be put in condition for active service.

DENMARK The military and naval situation in Denmark sways back and forth with the changes in Danish politics. The Conservative government at the end of 1928 presented a very considerable programme of new construction consisting of four 4500-ton armored coast-defense vessels, 12 torpedo boats of 300 tons, 12 submarines of 300 tons, 2 mine layers of 500 tons, and 6 mine sweepers. The socialist majority in 1929 canceled the programme and presented a bill which, if passed, would practically disarm the country as regards both army and navy. See *DENMARK* under *History*.

FINLAND The building programme of the Finnish Navy (See *YEAR BOOK* for 1927, p. 552) was

being carried out. Two armored coast-defense vessels of 4000 tons and two submarines of 300 tons had been laid down in the national arsenal at Abo, and one submarine of about 100 tons was commenced at Helsingfors. The coast defense vessels were to have Diesel-electric engines.

FRANCE The budget for 1929-30 was 2683 millions of francs (1 franc=3 92 cents). The vessels of the programme for the year were: 1 cruiser of 10,000 tons, 6 destroyer leaders of about 2700 tons, 6 submarines of 1550 tons (on the surface), 1 submarine mine layer of 760 tons (surface), 1 cruiser mine layer of about 5300 tons, 2 small cruisers of 2000 tons for colonial service, 1 net layer. It was possible that the cruiser would not be laid down; and if laid down it may be of a type which would borrow some features suggested by the German battle cruiser *Admiral Scheer*.

The enlisted personnel of the navy was set at 53,300, or a reduction of 4200 due to the transfer of men to the Air Ministry. The officers performing naval aviation duty do not lose their naval status. The new vessels completed therefore necessitated an increase of officers applicable to the numbers given in the *YEAR BOOK* for 1927, p. 522. The reorganization of the French colonial service brought about the specific designation of the following ports which were to be the colonial naval bases: Saigon in Indo-China, Dakar in West Africa, Port de France in Martinique, and Diego Suarez in Madagascar. Work on the buildings of the new naval academy at Brest was proceeding steadily after many delays. The corner stone of the main building was laid in 1929.

The vessels completed in 1929 were the light cruiser, *Suffren* (10,000 tons), the fuel ship *Mekong* (15,150 tons at full load), the destroyer leaders, *Valmy*, *Ordun* (2780 tons), and the *Jeopard* (2690 tons), the destroyers, *Typhoon* and *Tornado*, of 1460 tons, and the *Fortune*, *Adroit*, *Basque*, *Alyon*, and *Hordeclass* of 1495 tons, the submarines, *Redoutable*, *Vengeur*, *Pascal*, and *Pasteur* of 1550/2000 tons, the submarines, *Danar*, *Kuydice*, *Ariane* (604/778 tons), and the submarines *Doris* and *Thetis* (590/704 tons).

FRANCE WARSHIPS BUILDING IN 1929		
Class and Name	Tons	Condition on Dec 31, 1929
Light Cruisers		
<i>Suffren</i>	10,000	Completed 1929
<i>Colbert</i>	"	Trial in progress
<i>Foch</i>	"	Launched Apr 24, 1929
<i>Dupleix</i>	"	Building
<i>C-4</i>	"	Proposed
Aviation Tender		
<i>Comdt Teste</i>	10,000	Launched Apr 12, 1929
Mine Layer		
<i>Pluton</i>	5,600	Launched Apr 10, 1929
"	"	Authorized
Net Layer		
"	"	Authorized
Subm Tender		
<i>Jules Verne</i>	6,000	Laid down June, 1929
Aviation Tender		
"	"	Authorized
Fuel Ships		
<i>Mekong</i>	15,500	Completed 1929
<i>Niger</i>	"	Launched Apr., 1929
School Ship		
"	6,600	Laid down 1928
Small Cruisers		
<i>Bougainville</i>	2,030	Laid down 1928
<i>Dumont D'Urville</i>	"	"
<i>A-3</i>	"	Building
<i>A-4</i>	"	"
<i>A-5</i>	"	Authorized
<i>A-6</i>	"	"
Destroyer Leaders		
<i>Vauban</i>	2,780	Completed in 1931

FRANCE WARSHIPS BUILDING IN 1929
(Continued)

Class and Name	Tons	Condition on Dec 31, 1929
<i>Yalm</i>	"	Completed 1929
<i>Yerdin</i>	"	"
<i>Rwan</i>	2,690	Trials in progress
<i>Guepard</i>	"	Completed 1929
<i>Lion</i>	"	Trials in progress
<i>Agle</i>	2,700	Laid down 1929
<i>Vautour</i>	"	"
<i>Albatros</i>	"	"
<i>Gerfaut</i>	"	"
<i>Mdan</i>	"	"
<i>Epervier</i>	"	"
<i>D 10</i>	"	Authorized
<i>D 11</i>	"	"
<i>D 12</i>	"	"
<i>D 13</i>	"	"
<i>D 14</i>	"	"
<i>D 15</i>	"	"
<i>D 16</i>	"	"
<i>D 17</i>	"	"
<i>D 18</i>	"	"
Destroyers		
<i>Typhon</i>	1,460	Completed 1929
<i>Fortuné</i>	1,495	"
<i>Adroit</i>	1,495	"
<i>Basque</i>	"	"
<i>Alcyon</i>	"	"
<i>Rodolphe</i>	"	"
<i>Baulonnais</i>	"	"
<i>Forbin</i>	1,600	"
<i>Frondeur</i>	"	Launched June, 1929
<i>Poussier</i>	"	Trials in progress
<i>Foudroyant</i>	"	Launched Apr., 1929
Submarines		
<i>Narcose</i>	1250/2000	Launched Nov., 1929
<i>Redoubtable</i>	1350/2000	Completed 1929
<i>Vengeur</i>	"	"
<i>Paucal</i>	"	"
<i>Pasteur</i>	"	"
<i>H Poincaré</i>	"	Launched Apr., 1929
<i>Pomcel</i>	"	"
<i>Picard</i>	1570/2060	Launched June, 1929
<i>Achilleide</i>	"	Building
<i>Mange</i>	"	Trials in progress
<i>Aclon</i>	"	"
<i>Acheon</i>	"	Launched Aug., 1929
<i>Argo</i>	"	"
<i>Achille</i>	"	Laid down 1928
<i>Ajar</i>	"	Laid down 1929
<i>Prométhée</i>	"	Building
<i>Percée</i>	"	"
<i>Protée</i>	"	"
<i>Pégase</i>	"	"
<i>Phébus</i>	"	"
<i>z</i>	"	Ordered
<i>x</i>	"	"
<i>z</i>	"	"
<i>z</i>	"	"
<i>z</i>	"	Authorized
<i>Saphir</i>	760/925	Nearly completed
<i>Turquoise</i>	"	Launched May, 1929
<i>Nautilus</i>	"	Laid down 1927
<i>Rubin</i>	"	Building
<i>Q 173</i>	"	Laid down 1928
<i>Q 174</i>	"	"
<i>Diane</i>	604/778	Completed 1929
<i>Furydie</i>	"	"
<i>Ariane</i>	"	"
<i>Dois</i>	590/764	"
<i>Thétis</i>	"	"
<i>Arcture</i>	635/809	Launched Aug., 1929
<i>Arionette</i>	"	Launched May, 1929
<i>Diane</i>	"	Launched Apr., 1929
<i>Meduse</i>	"	"
<i>Amphitrite</i>	"	Building
<i>Antiope</i>	"	"
<i>Atalante</i>	"	"
<i>Amazona</i>	"	"
<i>Orphée</i>	"	"
<i>Oréade</i>	"	"
<i>Orion</i>	"	"
<i>Ordane</i>	"	"

(GERMANY The budget for 1929 was 200,544,000 marks (1 mark = 23 82 cents). The following was the principal allotments of funds: second installment for armored ship A (*Admiral Scheer*), 13,220,000 marks, completion of the cruiser *Köln* of 6000 tons, 10,812,000, cruiser *Leipzig* (6000

tons), 8,020,000; for modernization of the old battleship *Hanover*, 1,060,000, guns of the cruiser *Karlsruhe*, 620,000; for the building of large destroyers, 5,620,000; for a tender (type not stated), first installment, 1,000,000, for a new oil-fuel ship, 3,000,000; maintenance and repair of vessels 22,133,240; for maintenance and repair of the target ships, *Zähringen* and *Baden*, 445,570, torpedo boats, 4,135,370. The budget for 1930, as voted by the Reichstag, amounted to 180,000,000 marks. The commission of the budget made large reductions in the projected budget submitted by the Government. The chief ones were for enlarging and developing the dockyard at Wilhelmshaven was refused, as were those for a torpedo factory at Eckenförde, and for a torpedo school at Mülwick, while the allotment for the *Admiral Scheer* was reduced by 800,000 marks.

The personnel of the German Navy in 1929 consisted of 691 line officers, 170 engineer officers, 98 medical officers, 228 warrant officers, 3794 petty officers, and 9933 enlisted men. The cruisers *Königsberg* and *Karlsruhe* of 6000 tons, and 4 torpedo boats of 800 tons were completed in 1929. Similar cruisers, the *Köln* and *Leipzig* were under construction, the former was approaching completion, the latter was launched on October 18, 1929.

By the terms of the peace treaty, Germany was permitted to have 8 cruisers, 6 in commission and 2 in reserve. These vessels are limited to a displacement of 6000 tons. The only other war vessel of importance which was building for the German Navy was armored ship A, sometimes referred to as the *Erzatz Preussen*. The German press stated that she would be named the *Admiral Scheer* when launched. This ship was of such a new and peculiar type as to attract widespread interest and to cause much speculation as to her designed rôle in naval war. The German building programme included four ships of the A class, but it was by no means certain that they would be duplicates of the first one. It was quite possible that the others would be delayed until the *Admiral Scheer* was in service and able to demonstrate the soundness of the design in its various parts and details.

The length of the *Scheer* is 503 feet, beam, 66 feet, standard displacement, 10,000 tons, normal displacement, 11,420 tons, full-load displacement, 13,480 tons. The approximate weights are reported as follows: of the hull, 3640 tons, of armor, 2600 tons, of auxiliary machinery, 475 tons, of equipment and stores, 125 tons, of armament and ammunition, 1670 tons, of propulsive machinery, 1130 tons, of fuel and reserve feed water, 3480 tons. The armament consists of six 11-inch guns, eight 5.9-inch guns, four 3.46-inch anti-aircraft guns and six torpedo tubes. The 11-inch guns are in 3-gun turret—one forward, one aft. The 5.9-inch and anti-aircraft guns are mounted behind shields on the upper deck. The torpedo tubes are on triple mounts, one each side on the quarter-deck and that is about 7 feet below the level of the upper deck which extends from the stem to the after side of the after turret. The propelling machinery consists of two sets of Diesel (M. A. N.) engines geared directly to the propeller shafts. The total designed horse power is 50,000 and the anticipated maximum speed is about 26 knots. The radius of action is said to be 10,000 miles at 20 knots. The armor consists of a waterline belt that extends from abaft the rudder post nearly to the stem, two barbette towers,

each surmounted by a closed turret, a conning tower and communication tube, an armor deck at the level of the top of the belt; a lightly armored upper deck, an inclined armor or protective deck behind the belt abreast the barbettes and communication tubes; vertical, fore-and-aft, anti-torpedo bulkheads extending nearly the full length of the ship, outboard of these are similar bulkheads of thin plating. The belt is 5 inches thick amidships, 3 inches forward and aft, the barrette towers are 4 inches, turrets, 7 inches in front, 2 inches on sides, 2 to 3 inches on top, conning tower and tube, 5 inches; the armor deck, 3 inches around barrette and tube bases, 1 5 inches between barbettes, and 1 inch elsewhere, protective deck, 4 inches, fore-and-aft bulkhead, 2 7/8 inches.

GREAT BRITAIN The naval budget for 1929-30 amounted to £55,865,000, a reduction of £1,435,000 from the figures of 1928-29. It provided for a personnel of 99,800—a reduction of 2000. The allotment for work on the Singapore naval base was £10,000 greater than in 1928-29. The fleet air arm allotment was increased by £200,000, only two vessels of the navy were equipped with catapults on Apr. 1, 1929, but catapults of several designs were being investigated and tested. The programme of new construction for the year 1929-30 comprised 1 cruiser of 10,000 tons, 2 cruisers of 8400 tons, 1 destroyer leader, 8 destroyers, 6 submarines, 1 net layer and 1 vessel, 6 sloops. The vessels completed in 1929 were cruisers, *Devonshire* and *Sussex* of 10,000 tons, submarines, *Odin*, *Olympus*, *Orpheus*, *Ossiris*, *Oswald*, and *Otus* of 1346/1750 tons, submarine depot ship, *Midway*; sloops *Bridgewater* and *Sandwich*, and the river gunboats *Gannet*, *Petrel*, and *Seamew* of 262 to 310 tons.

Two very serious accidents took place during the year. The submarine *H-47* was sunk in collision with the submarine *L-12*. All except three of the personnel of the *H-47* were drowned. A hang-fire and too early opening of the breech of one of her 8-inch guns caused an explosion in a turret of the cruiser *Devonshire* in which 13 men were killed and 12 wounded.

GREAT BRITAIN WARSHIPS BUILDING IN 1929

Class and name	Tons	Condition on Dec 31, 1929
Light Cruisers		
<i>Devonshire</i>	10,000	Completed March, 1929
<i>Sussex</i>	"	"
<i>Shropshire</i>	"	Trials in progress
<i>Dorsetshire</i>	"	Completed Sept., 1930
<i>Norfolk</i>	"	Completed April, 1930
<i>Surrey</i>	"	Building
<i>Northumberland</i>	"	Authorized
"	"	"
<i>York</i>	8,400	Completed March, 1930
<i>Essex</i>	"	Completed Dec., 1930
"	"	Authorized
"	"	"
Aircraft Carriers		
<i>Albatross</i>	6,000	Completed, 1929
"	"	Authorized
Subm. Depot Ships.		
<i>Midway</i>	"	Completed March, 1929
<i>Maudstone</i>	"	Construction canceled
Repair Ships		
<i>Resource</i>	"	Completed Jan., 1930
"	"	"
Sloops (gunboats)		
<i>Pensance</i>	945	Laid down July, 1929
<i>Hastings</i>	"	"
<i>Folkestone</i>	"	Laid down 1929
<i>Scarborough</i>	"	"
<i>Shoreham</i>	"	"
<i>Fowey</i>	"	Laid down Dec., 1929
"	"	Authorized

GREAT BRITAIN WARSHIPS BUILDING IN 1929 (Continued)

Class and Name	Tons	Condition on Dec 31, 1929
"	"	"
"	"	"
"	"	"
"	"	"
<i>Bridgewater</i>	"	Completed 1929
<i>Sandwich</i>	"	"
Dest. Leaders		
<i>Codrington</i>	1,520	Launched Aug. 1929
<i>Keith</i>	"	Laid down 1929
"	"	Authorized
Destroyers		
<i>Arrow</i>	1,800	Launched Aug., 1929
<i>Ardent</i>	"	Launched June, 1929
<i>Anthony</i>	"	Launched April, 1929
<i>Acheron</i>	"	Launching delayed
<i>Acasta</i>	"	Launched Aug., 1929
<i>Achates</i>	"	Launched Oct., 1929
<i>Active</i>	"	Launched July, 1929
<i>Antelope</i>	"	"
<i>Boreas</i>	"	Building
<i>Bruzen</i>	"	"
<i>Blanche</i>	"	"
<i>Boadicea</i>	"	"
<i>Brilliant</i>	"	"
<i>Bulldog</i>	"	"
<i>Barbark</i>	"	"
<i>Scople</i>	"	Authorized
"	"	"
"	"	"
"	"	"
"	1,800	Building
"	"	"
"	"	"
"	"	"
Submarines		
<i>Odin</i>	1346/1750	Completed 1929
<i>Olympus</i>	"	"
<i>Orpheus</i>	"	"
<i>Ossiris</i>	"	"
<i>Oswald</i>	"	"
<i>Otus</i>	"	"
<i>Parthian</i>	"	Launched June, 1929
<i>Perseus</i>	"	Launched May, 1929
<i>Proteus</i>	"	Launched July, 1929
<i>Poseidon</i>	"	Launched June, 1929
<i>Pandora</i>	"	Launched Aug., 1929
<i>Phoenix</i>	"	Launched Oct., 1929
<i>Rainbow</i>	"	Ordered
<i>Regent</i>	"	"
<i>Regulus</i>	"	"
<i>Rover</i>	"	"
<i>Royalist</i>	"	"
<i>Rupert</i>	"	Authorized
"	"	"
"	"	"
"	"	"
"	"	"
"	"	"

GREECE The naval budget for 1929-30 was slightly in excess of 437,000,000 drachmas (1 drachma = 13 cents). The reorganization of the Turkish Navy, the repair and modernization of the battle cruiser *Sultan Selim* (ex-*Goeben*), the building of submarines, and the adoption of a new Turkish building programme that included submarines, destroyers, subchasers, and mine layers caused the Greek Government to consider the question of a building programme for Greece. It was reported that the Government had decided to complete and modernize the battleship *Salamis*, which had been lying unfinished in a German shipyard since 1914, but these reports also were denied. Four submarines of 780/960 tons were completed in France during 1929. During the year two destroyer leaders of 1450 tons were ordered at the Odero Works, Genoa, Italy. These vessels were of modified *Dardo* type (Italian Navy) and the contract speed was 40 knots—39.5 knots for a 4-hour run. The line officers of the navy were 3 rear-admirals, 15 captains, 26 com-

manders, 32 lieutenant-commanders, 70 lieutenants, and 50 sublieutenants and ensigns. The number of enlisted men depends upon the demands of the vessels in commission. The British naval mission in Greece had renewed the contract for three years. In further development of its naval force, the navy department had ordered 6 torpedo planes in England. These were of the Hawker-Horsley type with Rolls-Royce engines of 700 h.p. and an endurance of 8 hours at 170 km per hour.

INDIA A new sloop was ordered for the Indian Marine. It was to be built by the building for the British Navy and have a displacement of about 950 (standard) tons.

ITALY The naval budget for 1929-30 amounted to 1,232,433,530 lire (1 lira = 5.263 cents). Of this sum, 1,070,012,000 lire was for purely naval purposes, the remainder was for coast defense, financial operations, etc. The building programme for 1928-29 was 2 light cruisers of 10,000 tons, 2 cruisers of 5300 tons, 4 destroyers, and 5 submarines. The programme for 1929-30 had not been published up to the end of the year. The battleship *Dante Alighieri*, 19,500 tons, had been condemned.

ITALY WARSHIPS BUILDING IN 1929

Class and name	Tons	Condition on Dec 31, 1929
Light Cruisers		
<i>Giulio</i>	10,000	Laid down 1929
<i>Holzano</i>	"	"
<i>Zara</i>	"	Laid down 1928
<i>Fiume</i>	"	"
<i>Trieste</i>	"	Completed 1928
<i>Banda Nere</i>	5,350	Launched Oct., 1929
<i>Colleoni</i>	"	Laid down 1928
<i>Da Barbiana</i>	"	"
<i>Da Guasano</i>	"	"
<i>Marcosullo Diaz</i>	"	Laid down 1929
<i>Marcosullo Cadorna</i>	"	"
Aircraft tender	1	Authorized
Destroyer Leaders		
<i>L. Tarigo</i>	2,000	Launched Dec., 1928
<i>L. Malorello</i>	"	Launched March, 1929
<i>U. Vesale</i>	"	Launched Dec., 1928
<i>A. Urodinmare</i>	"	Launched May, 1929
<i>L. Pancaldo</i>	2,000	Launched Feb., 1929
<i>A. De Noh</i>	"	Launched May, 1929
<i>E. Passagno</i>	"	Launched Aug., 1929
<i>N. De Recco</i>	"	Building
<i>N. Zeno</i>	"	Launched Jan., 1929
<i>G. Di Verazzano</i>	"	Building
<i>A. Cadamosto</i>	"	Launched July, 1929
<i>A. Pugetta</i>	"	Building
Destroyers		
<i>Dardo</i>	1,350	Laid down 1928
<i>Nitale</i>	"	"
<i>Brecco</i>	"	"
<i>Saetta</i>	"	"
<i>x</i>	"	Laid down 1928
<i>x</i>	"	"
<i>x</i>	"	"
<i>x</i>	"	"
Submarines		
<i>Delpho</i>	825/1090	Laid down 1928
<i>Narvalo</i>	"	"
<i>Siguelo</i>	"	"
<i>Tricheco</i>	"	"
<i>S. Sant'Anna</i>	850/1065	Laid down 1927
<i>G. Menotti</i>	"	"
<i>F. Bandiera</i>	"	Launched Oct., 1929
<i>L. Manara</i>	"	"
<i>L. Settembre</i>	"	Laid down 1927
<i>R. Seltimo</i>	"	"
<i>V. Piana</i>	830/1050	Launched 1929
<i>G. Barisan</i>	"	"
<i>M. Colonna</i>	"	"
<i>A. de Geney</i>	"	Launched Nov., 1928
<i>P. Cuyponi</i>	780/990	Completed 1929
<i>T. Sperti</i>	"	"
<i>G. de Procula</i>	"	"
<i>E. Fieramora</i>	1400/1785	Launched Apr., 1929
<i>M. Brogolino</i>	825/1048	Launched July, 1929
<i>F. Corridoni</i>	"	Building
<i>A. Scusa</i>	1380/1650	Completed 1929

and was to be sold. It was much inferior to the four battleships that were retained. The difficulties connected with the organization and operation of the Air Force system had made themselves manifest and a new decree was designed to effect a closer union of the aviation force assigned to the navy and the naval forces.

JAPAN The naval budget for 1930-31 amounted to 269,120,000 yen (1 yen = 49.8 cents) and was almost exactly 15 per cent of the total Japanese budget. The principal items were, fitting out, maintenance and operation of the fleet, pay of personnel, etc., 147,000,000, new construction, 88,000,000, new naval works, improvement of ports, etc., 8,600,000, renewal of naval war material, 8,000,000, scientific research, 1,300,000, affairs in

JAPAN WARSHIPS BUILDING IN 1929

Class and name	Tons	Condition on Dec 31, 1929
Aircraft Carrier		
<i>Ryuso</i>	8,100	Laid down Jan., 1930
Light Cruisers		
<i>Nachi</i>	10,000	Completed 1929
<i>Myoko</i>	"	"
<i>Ashigara</i>	"	"
<i>Haguro</i>	"	"
<i>Atago</i>	"	Laid down 1926
<i>Takao</i>	"	"
<i>Maya</i>	"	Laid down 1928
<i>Chokai</i>	"	"
<i>x</i>	"	New programme
<i>x</i>	"	"
<i>x</i>	"	"
Destroyers		
<i>Fubuki</i>	1,700	Completed 1929
<i>Shirayuki</i>	"	"
<i>Hatsuyuki</i>	"	"
<i>Nishomomo</i>	"	"
<i>Utsugumo</i>	"	"
<i>Shirakumo</i>	"	"
<i>Isomami</i>	"	"
<i>Myoko</i>	"	"
<i>Uranami</i>	"	"
<i>Murakumo</i>	"	"
<i>Amagiri</i>	"	Laid down Nov., 1928
<i>Asagiri</i>	"	"
<i>Yugiri</i>	"	"
<i>Ayanami</i>	"	Laid down 1929
<i>Sagiri</i>	"	Laid down 1928
<i>Shikishima</i>	"	Laid down July, 1928
<i>x</i>	"	Building
<i>x</i>	"	"
<i>x</i>	"	"
<i>x</i>	"	Probably building
<i>x</i>	"	"
<i>x</i>	"	"
Submarines		
<i>I 5</i>	2000/2550	Building
<i>I 56</i>	1650/2000	Completed 1929
<i>I 57</i>	"	"
<i>I 59</i>	"	Launched March, 1929
<i>I 60</i>	"	Launched Apr., 1929
<i>I 61</i>	"	Launched Nov., 1928
<i>I 62</i>	"	Laid down Nov., 1928
<i>I 63</i>	"	Building
<i>I 64</i>	"	"
Submarine Mine Layers		
<i>I 65</i>	1150/1750	Building
<i>I 66</i>	"	"
<i>I 67</i>	"	"
Surface Mine Layer		
<i>I 65</i>	1150/1750	"
<i>I 66</i>	"	"
<i>I 67</i>	"	"
Surface Mine Layer		
<i>Irukushima</i>	2,050	"
Mine Sweepers		
<i>No 5</i>	700	Probably completed
<i>No 6</i>	700	"
Net Layers		
<i>Shirataka</i>	1,405	Launched Jan., 1929
<i>Amomo</i>	570	Launched Apr., 1929
<i>Tsubame</i>	570	"
River Gunboats		
<i>Atami</i>	400	Launched March, 1929
<i>Futami</i>	400	Building

China, 1,020,000. A programme of construction for the replacement of vessels that are reaching the limit of age was presented to Parliament by the Navy Department. It was to be completed in six to eight years at an estimated cost of 400,000,000 yen and included 4 cruisers of 10,000 tons, 15 first-class destroyers, and as many torpedo boats, submarines, gunboats, fuel-oil ships, and anti-submarine vessels as may need replacement. The cruisers to be replaced were of less than half the tonnage of the new ones and all the other vessels to be replaced were smaller and less important than were their proposed successors. The four battle cruisers of the *Haruna* class were undergoing modernization, elevation of guns, and additional protection against torpedoes and aircraft. Anti-torpedo "bulges" had been fitted, the total displacement thus was increased by nearly 3000 tons and the speed decreased from 27.5 to 26 knots.

The work on the *Haruna* was finally completed in 1929. Similar work on the sister ship *Kongo* was commenced in Yokosuka dockyard about the end of December, 1928. The old battleship *Asahi*, launched in 1899 and condemned about ten years later was stripped and rebuilt as a submarine salvage vessel and workshop. As rebuilt, she had four cylindrical boilers and a speed of 12 knots. Work was completed in the autumn of 1928, but the trials in the early part of 1929 were reported as unsatisfactory—presumably as regards the salvage equipment.

All of the *HA* class of submarines—ten in number—had been condemned for sale. They were of 286 to 480 tons and were launched in the years between 1909 and 1920. The 1700-ton destroyer *Shirakumo* was completed in 1928, the sister boats *Fubuki*, *Shirayuki*, *Hatsuyuki*, *Shinonome*, *Utsugumo*, *Isonami*, *Myuki*, *Uranami*, *Murakumo*, and one unnamed (in reports) were completed in 1929. Thirteen of the 1700-ton class are under construction or about to be laid down. The 10,000-ton cruiser *Nachi* was completed in November, 1928, her sister ships *Myoko*, *Itaguro*, and *Ashigara* have been reported as completed in 1929. The submarines thought to be completed are so marked in the accompanying table—some were known to be in service.

YUGOSLAVIA The naval budget for 1929-30 showed an increase of 13,000,000 dinars (1 dinar = 177 cents). A sum of 100,000,000 was placed at the disposal of the ministry of defense and part of this may be applied to naval affairs. The only vessels under construction during 1929 were the submarines *Smok* (*Redoubtable*) and *Ostvoimik* (*Avenger*). The design was very similar to that of the *Diane* class of the French Navy, the surface displacement being 630 and the submerged displacement about 800 tons.

NETHERLANDS The naval budget for 1930 amounted to 40,544,790 florins (1 florin = 40.2 cents). Of this, 33,600,000 florins was devoted to purely naval purposes, 500,000 florins for the lighthouse service, and 2,000,000 florins for pensions. Of the 16,800,000 florins for material, the sum of 7,300,000 florins was allotted to new construction—naval and aeronautical; 5,600,000 florins to repair and maintenance of ships and shore establishments, 3,400,000 florins to equipment, and 600,000 florins to miscellaneous purposes. The budget provided payment of the final annual installment for the construction of the submarines *O.12*, *O.13*, and *O.14* and the first installment for the construction of the submarines *O.15*, *K.14*, *K.15*, and *K.16*. The *O* boats were de-

signed for the home fleet and the *K* boats for service in the Dutch East Indies. The first four destroyers of the *De Ruyter* class (1620 tons) were completed in 1928 or before. Of the four later boats, the *Van Galen* and the *Witte de Wit* were completed in 1929 while the *Bankert* and *Van Nes* were still under construction. A fast motor boat of 52 tons with a speed of 35 knots was received from Thornycroft in 1929. The enlisted force in home waters was 3475, in the East Indies, 2384.

NEW ZEALAND The budget for the New Zealand Navy for 1928-29 was £711,000 (£ = \$4 8665). The naval force was called the New Zealand Division of the Royal Navy. The ships and complements were furnished by the Royal Navy, but the maintenance charges are paid by New Zealand.

NORWAY According to some Norwegian naval criticism the navy was in a very ineffective state—it should either be wholly abolished or strengthened sufficiently to make it a real defensive force. The naval budget for 1928-29 amounted to 12,114,424 crowns (1 crown = 28.8 cents). This was a reduction of 340,000 crowns from the previous budget. The allotment for new construction and repair of vessels, aircraft, etc., was 8,816,000 crowns. The vessels under construction were the submarines *B.5* and *B.6* of 413/545 tons and a coast-guard cruiser of 1275 tons. The submarines were to be completed in 1929-30 and the coast-guard boat in 1930-31. The allotment of 951,500 for maintenance of vessels in commission supports in service the following: 3 submarines for 12 months of the year, 1 coast-defense armored ship for 6 months, 1 cruiser and 3 torpedo boats for 3 months, 4 mine layers for 2 weeks during the summer. More attention was being paid to naval aviation. The army aviation fields at Kristiansund and Bergen were transferred to the navy. Therefore, the navy had but one field—that at Horten. In the future it was expected to have a fourth field which would be located in the north.

PARAGUAY The Government ordered in Italy the two river gunboats *Comodoro Mesa* and *Captain Cabral*. These vessels are 230 feet long, 35 feet broad, with a draft of 5.4 feet, and a displacement of five to six hundred tons. They were to carry four 4.7-inch guns, three 3-inch guns, and two machine guns of large calibre.

POLAND The naval budget for the fiscal year 1929-30 amounted to 33,064,000 zlotys (1 zloty = 11.22 cents). 16,100,000 is allotted to new construction, 6,400,000 for the maintenance of ships and ports; 620,000 for equipment, 643,000 for naval schools, and 229,000 for cruises abroad. The budget provided for 310 officers, 700 petty officers, and 2280 men. The chief of the Naval Department had under his orders the command of the fleet and of the coast about Gdynia, the Pinsk gunboats, the magazines of ammunition and torpedoes at Gdynia, the naval workshops at Gdynia and Pinsk, the naval academy at Thorn, and the schools of petty officers at Schwetz and Pinsk. Mainly through the initiative of General Zaruski a navy league of 70,000 members and 200 branches had been established. It was presided over by some of the most distinguished citizens of Poland and exercised much influence in directing the national naval policy. The destroyers *Burza* and *Wicher* of 1500 tons, building in France, were completed in 1929, and the submarines *Rys*, *Wilk*, and *Zbik*, of 980/1230 tons, also under construction in France, were completed or approaching completion at the end of 1929. These destroyers and submarines are

fully described in the YEAR BOOK for 1927, p. 556.

PORTUGAL The Government desired to acquire three cruisers of 7850 tons, type of the Spanish cruiser *Almirante Cervera*, but it was unlikely that Parliament would supply the money.

RUMANIA There were building in Italy, for the Rumanian Navy, the submarine *Delfin*, 650/900 tons, the submarine depot ship *Constanta*, 2300 tons, and the destroyer leaders *Regele Ferdinand I* and *Regina Maria*. None of the foregoing was completed. The *Regele Ferdinand I* was launched at Naples in December, 1928, and the *Maria* during 1929. These boats were of 1800 tons, the length is 334.5 feet, beam, 31.5 feet, draft, 11.5 feet, horse power, 75,000; speed, 35 knots, armament, five 4.7-inch guns, one 3-inch gun, two 2-inch anti-aircraft guns, six 21-inch torpedo tubes; 50 mines.

RUSSIA The condition of the navy was not improving to any great extent. The establishment of the naval academy and of special trade and general schools for the men. The great lacks were seagoing knowledge, proper ranks and promotion, and suitable organization and discipline. These seemed difficult of attainment without sacrifice of Communist ideals. See remarks on the Russian Navy in several preceding YEAR BOOKS.

SOUTH AFRICA The budget for 1928-29 was £98,000. There was no real naval defensive force. The expenditure was chiefly on the coast guard.

SPAIN The amount of the naval budget for the year 1929-30 was 167,044,904 pesetas (1 peseta—about 14 cents). For the subvention of merchant steamship lines, the sum of 59,062,292 pesetas was allotted, for maintenance at navy yards and government establishments, 9,914,165 pesetas was provided for the payment and expenses of the personnel and 1,564,988 for materials. For the payment of officers in the active service and reserve, 22,687,125 pesetas were allotted, for the enlisted men, 20,065,213, for naval aviation personnel, 2,710,453, for the marine infantry, 4,639,631, for fuel, 11,800,000, for munitions, 10,260,492 for aircraft and aviation supplies and expenses 3,000,000, for scientific establishments and centres of instruction, 4,475,376, miscellaneous, 16,256,388.

The vessels under construction were the cruisers *Balcarres* and *Canarias*, of 10,000 tons, laid down in 1928, the cruiser *Miguel de Cervantes*, 7850 tons, which was to be completed in 1931, the destroyer leaders *Almirante Juan Ferrandiz*, *José Luis Díaz*, and *Lepanto*, of 1650 tons, were under construction during 1929 and all should have been completed by the end of December, two others of the same class were laid down during the year, the submarines *C-3* and *C-4*, 915/1290 tons, were completed during 1929 and the *C-5* and *C-6* were to be ready for service in 1930. According to the Minister of Marine, the next vessels to be taken in hand were 8 destroyers of about 1300 tons which were to be laid down without delay and 12 submarines that were to be commenced after experiments with the *C* class had settled some features of the design.

SWEDEN. The total amount of the naval budget for 1928-29 was 40 million crowns (1 crown = 20.8 cents). Of this, about 9 millions were allotted to new construction. The vessels under construction for the navy at the end of the year were the airplane carrier and mine layer *Gotland* (laid down in 1929) of 5500 tons, 40,000 h p, 29 knots speed, six 5-inch guns, seven 3-inch anti-aircraft guns, six torpedo tubes, eight airplanes, two airplane catapults, and two cranes for air-

plane handling; the submarine *Ulvén* (laid down in 1928) of 700/850 tons, speeds 15/8, one 3-inch gun, four torpedo tubes, radius of action 10,000 miles; the destroyers *Claes Horn* and *Class Uggla* (laid down in 1928) of 974 tons, 293 feet in length, 29.25 feet beam, 10.5 feet draft, three 4.7-inch guns, two 1-pounder anti-aircraft guns, six 21-inch torpedo tubes, 24,000 h p, 35 knots speed, 150 tons oil fuel, 125 officers and men, they are practically the same as the *Ährnsköld* recently completed. Of that part of the building programme to be completed in 1927-32, all but two submarines of a class smaller than the *Ulvén* have been laid down.

TURKEY The amount of the naval budget for 1929-30 was 6,475,082 Turkish pounds (1 pound = about 52 cents in 1929). The current building programme, approved in 1928, provided for the construction of 6 destroyers, 6 combat submarines, 6 mine-laying submarines, and 6 submarine chasers. Of these, there were ordered in Italy in 1929 the following: at the works of Ansaldo, Genoa, 2 destroyers of 1610 tons, 38 knots speed, four 4.7-inch guns, six 21-inch torpedo tubes, at the Cantiere Triestino, Monfalcone, 1 submarine of 630/800 tons, 15/9 knots speed, one 3-inch gun, four 21-inch torpedo tubes, at the same works, 1 submarine mine layer of about 950/1200 tons, 12/7 knots speed, one 4-inch gun, twelve (?) 21-inch torpedo tubes, 48 torpedoes, at the Cantiere Swan, Venice, 3 anti-submarine motor boats of 32 tons, 34 knots, 2 torpedoes, one 3-inch gun. The battle cruiser *Yavuz Sultan Selim* (ex-German *Goeben*) was very thoroughly repaired and refitted at the new Turkish navy yard at Ismid. This fact and the recent orders of destroyers and submarines in Italy led the Government of Greece to take steps to strengthen its fleet (see foregoing note on the Navy of Greece).

UNITED STATES The naval appropriation bill for 1929-30 as it passed Congress carried a total of \$360,236,697. An allotment of about \$47,000,000 was made for the increase of the Navy, this included \$28,550,000 for construction and machinery, to which was to be added \$2,000,000 by transfer from Treasury funds of the naval supply account, of this appropriation, \$200,000 was made immediately available for expenditure on the second five cruisers of 10,000 tons, that were to be laid down, the remainder of the allotment included the sum of \$18,000,000 for armor, armament, and ammunition for vessels heretofore authorized, said sum to remain available until expended. The appropriation for enlisted personnel provided for an average of \$4,500 during the year. The naval act also provided for an enlisted force of 18,000 marines.

The estimates for 1930-31 were submitted to Congress and amounted to \$383,092,526. This sum included the budget estimates of \$380,392,526, \$2,000,000 to be transferred from the naval supply fund, and \$700,000 to be reappropriated from unexpended balances.

On Feb. 13, 1929, an act of Congress providing for the construction of 15 light cruisers was signed. It directed that five cruisers be commenced in each of the fiscal years ending June 30, 1929, 1930, and 1931. The cost of each cruiser was not to exceed \$17,000,000, the limiting cost of a 10,000-ton cruiser. The act also provides for an aircraft carrier that is to be commenced before June 30, 1930. A contract for the construction of one cruiser (*CL-3*) has been executed with the Bethlehem Shipbuilding Corporation (Fore River

Yard), and one (OL-55) with the New York Shipbuilding Company (Camden, N J, Yard). One was allotted to each of the navy yards at New York, Puget Sound, and Philadelphia. If the conference for the limitation of armaments did not extend the "naval holiday for battleship building" beyond 1931, replacement of the older battleships was to begin in that year. In order to be prepared for such an eventuality, the Navy Department had prepared designs for a new battleship of 35,000 tons to replace the *Utah*, *Florida*, and *Wyoming*.

Of the 10,000 ton cruisers under construction in 1929, the *Salt Lake City* was launched on January 23, and completed in December. The *Pennacola* was launched on April 25, the *Chester*, on July 3, the *Houston*, on September 7, and the *Northampton*, on September 5. Eighteen cruisers and fifty-three destroyers were condemned and were to be withdrawn from service as soon as practicable. The cruisers include the armored cruisers *Frederick*, *Huntington*, *Huron*, *Pittsburgh*, and *Pueblo* of 13,080 tons, the armored cruisers *Seattle*, *Missoula*, and *Charlotte* of 14,500 tons; the armored cruisers *St Louis* and *Charleston* of 9700 tons, the light cruisers *York*, *Salem*, and *Birmingham* of 3750 tons, the cruisers *Challanooga*, *Cleveland*, *Denver*, *Galveston*, and *Des Moines* of 3200 tons.

Much attention was given to submarine safety, rescue, and salvage. A board appointed by the Secretary of the Navy to study submarine safety and salvage appliances made a full report of its findings early in 1929. Much important information was obtained and many devices and fittings were being given careful test. One of the most noteworthy of the devices recently produced is the so-called "submarine lung" devised by Lieutenant Morsen which permits escape of the personnel of a sunken submarine at a depth of 200 feet without aid from the surface.

The Naval Reserve Officers Training Corps in 1929 was in the fourth year of its existence and the enrollment for 1929-30 was 1080. There were 31 divisions of the aviation branch of the Naval Reserve and these divisions were organized and drilled. At the beginning of the fiscal year 1929-30, there were 110 officers in the Merchant Marine Naval Reserve and 61 ships were authorized to fly the Naval Reserve flag.

The United States Navy continues to lead all navies in aviation. The success of his department led to the reappointment of Rear-Admiral Moffett as Chief of the Bureau of Aeronautics. The fiscal year 1928-29 was the third of the 5-year aircraft programme approved by Congress. The appropriation for this year was \$32,189,000 which included \$16,500,000 for the purchase of new airplanes and equipment and 370 planes were acquired for the Regular Navy and 40 for the Naval Reserve. On July 1, 1929, the total number of officers and men on duty in connection with naval aviation activities were: pilots, 693 (officers, 520), student pilots, 191 (officers, 116), observers, 11 (all officers), student observers, 0; flight orders, 743 (officers, 41), non-flyers (approximate figures), 10,847 (officers, 155), total 12,485 (officers, 843). The number of fatalities during the year was 31, flying hours per fatality, 6558. The flying hours per separate fatal accident have increased from 7226 in 1927-28 to 11,288 in 1928-29. Much surveying work was done by naval aviators in Cuba, the Gulf of Panama, Alaska, and elsewhere, 18 flying boats were ordered for the Alaska survey.

The airship *ZRS-4* was under construction by the Goodyear-Zeppelin Corporation and completion was expected in April, 1931, or soon after that date. Work on *ZRS-5* might not start until 21 months after date of contract (Oct. 6, 1928) and until the department gives its approval. Full description of these airships was given in the *YEAR BOOK* for 1928, p. 6. Recent discoveries indicated that there was no likelihood of any shortage of helium and that its cost and the expense of using it are steadily going down. Progress in the development of heavy-oil engines for airships was slow but the results were promising. Aviation charts were being steadily improved by the U. S. Naval Hydrographic Office. Pilot charts of the upper air over the Atlantic Ocean, of particular value to aviators, had been published monthly since December, 1927, similar charts of the air over the North Pacific Ocean had been published monthly since January, 1929. All of the larger ships of the Navy—battleships, cruisers, and some auxiliaries—were carrying airplanes and were fitted with catapults. In no other navy except that of Japan had much progress been made in installing airplanes and catapults on cruising ships. This was due to the lack of knowledge and interest of the air ministries in naval needs and naval strategy. Japan had closely followed American naval air policy.

UNITED STATES WARSHIPS BUILDING IN 1929

Class and Name	Tons	Probable Date Completion
Light cruisers		
<i>Salt Lake City</i>	10,000	Dec. 9, 1929
<i>Pennacola</i>	"	Feb. 1, 1930
<i>Northampton</i>	"	June 13, 1930
<i>Chester</i>	"	"
<i>Louiseville</i>	"	March 13, 1931
<i>Chicago</i>	"	"
<i>Houston</i>	"	June 13, 1930
<i>Augusta</i>	"	March 13, 1931
<i>CL 33</i>	"	Aug. 15, 1932
<i>CL 35</i>	"	"
<i>CL 32</i>	"	Authorized
<i>CL 34</i>	"	"
<i>CL 36</i>	"	"
Fleet Submarines		
<i>V 6</i>	2700/3900	June 1, 1930
<i>V 6</i>	"	Sept. 1, 1930

NAVAL RESERVE. See NAVAL PROGRESS

NAVIES. See NAVAL PROGRESS

NEAR EAST RELIEF. The Near East Relief, organized in 1915 and chartered by special Act of Congress in 1919, on June 30, 1929, terminated 14 years of public campaigning for funds for emergency relief, on the ground that the era of drives for war relief and post-war reconstruction had reached a logical end. During this period operation receipts amounted to \$91,173,073 and expenditures to \$89,748,013. Through the administration of these funds, it was estimated that the lives of 1,500,000 persons were saved, 132,552 of whom were orphan children. Approximately 12,500,000 persons were fed during famine periods, and more than 6,000,000 received medical aid. At the chief centers of distress, 30 hospitals were established, and in the orphanages and schools the children were registered, fed, clothed, and given a practical education. Nurses' training schools, the first schools of their kind for women, were established in Greece and Armenia, the first schools for deaf mutes were established, 263 teachers were prepared for government schools in the Caucasus, and more than 30 trades were taught. In this work, the organization had the constant cooperation

of the officials of each government, without which the results obtained would have been impossible. The centres of administration in 1929 were: Athens, controlling Greece and her islands, Constantinople, Bulgaria, and Egypt, Lennakan (formerly Alexandropol), directing the work in Russian Armenia and Georgia, and Beirut, supervising the areas of Syria, Palestine, and Mesopotamia.

The governments in several areas of operation had requested a continuation of certain departments of the work with government cooperation, chiefly in agriculture, medical aid, and social welfare. There were also more than 20,000 children inadequately provided for. The Near East Relief, therefore, created a subcommittee, called the conservation committee, to take under advisement the projects suggested by the requests of the overseas governments and to see that all children who were still in or out-placed under subsidy and supervision were securely rooted into the social structure of the countries in which they lived. This committee was to operate from headquarters in New York City, under the chairmanship of Cleveland E. Dodge. The officers of the Near East Relief in 1929 were: Chairman, James L. Barton, vice chairman, John H. Finley, treasurer, Cleveland E. Dodge, general counsel, Frank L. Polk, members of executive council, Barclay Acheson, Laird W. Archer, William F. Doughty, II, C. Jaquith, and E. C. Miller. Headquarters are at 151 Fifth Avenue, New York City.

NEBRASKA Population According to the fourteenth census, the population of the State on Jan. 1, 1920 was 1,296,372. The estimated population on July 1, 1928, was 1,408,000. The capital is Lincoln.

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Average	Prod Bu	Value
Corn	1929	9,144,000	237,744,000	\$164,043,000
	1928	8,937,000	212,701,000	151,018,000
	1929	3,548,000	56,555,000	55,902,000
Wheat	1928	3,672,000	69,919,000	65,498,000
	1929	4,580,000	6,224,000	57,131,000
	1928	4,451,000	5,877,000	52,202,000
Oats	1929	2,480,000	86,304,000	33,796,000
	1928	2,792,000	78,936,000	29,996,000
	1929	92,000	8,924,000	9,816,000
Potatoes	1928	105,000	10,080,000	5,040,000
	1929	92,000	1,062,000	
	1928	86,000	1,021,000	7,127,000
Bailey	1929	647,000	18,893,000	9,446,000
	1928	410,000	14,018,000	7,149,000
	1929	242,000	3,604,000	2,807,000
Rye	1928	249,000	3,486,000	2,684,000

* Tons

MINERAL PRODUCTION The total value of the mineral products of the State for 1927 was \$3,541,792, for 1926, \$3,322,460. Supplying the domestic demand for sand and gravel constituted the most important single mineral industry. The value of sand and gravel produced in 1927 was \$1,370,605, in 1926, \$1,124,764. Clay products of 1927 attained the value of \$819,494, falling below the \$1,112,923 of 1927. There was a minor production of pumice, in which mineral the State ranked as the second among producers in the Union in 1927.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 6147.30. There was no reported construction of new line in 1929.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to the operations of 1927, there were in the State, in 1927, 1277 establishments, 211,111 employees. These employees earned wages for the year totaled \$34,296,241. Materials and supplies used in manufacture cost \$326,917,490. Manufactured products attained the combined value of \$420,296,190.

EDUCATION A system of study in rural sociology was developed as part of the course for the training of teachers in normal-training high schools. The State further enlarged its scheme of the tendencies of education by extending the course of school instruction in the unfavorable effects of alcohol and narcotics on the physique of the growing child. For the academic year 1928-29, the school-age population of the State was estimated at 416,644. There were enrolled in the public schools during the year 325,204 pupils. Of these, 258,656 were in elementary, and 66,548 in high-school, grades. Expenditures for public-school education in the academic year totaled \$27,363,923. The salaries of teachers, by the year averaged in cities and villages, for men \$1404 and for women \$1239, in rural districts, for men \$770 and for women \$763.

CHARITIES AND CORRECTIONS The Department of Public Welfare possessed extensive powers with regard to the dependent classes, particularly as to child care. It did not have charge of the State institutions of care and custody, which were under the authority of the separate Board of Control. These institutions were Nebraska Institution for the Feeble-minded, Beatrice, Girls' Training School, Geneva, Nebraska Soldiers' and Sailors' Home, Burkett, Hastings State Hospital, Ingleside, State Industrial School, Kearney, Hospital for Tuberculous, Kearney, Lincoln State Hospital, Lincoln, Orthopedic Hospital, Lincoln, State Penitentiary, Lincoln, Nebraska Industrial Home, Milford, Soldiers' and Sailors' Home, Milford, Nebraska School for the Blind, Nebraska City, Norfolk State Hospital, Nebraska School for the Deaf, Omaha, State Reformatory for Women, York, Nebraska Home for Dependent Children, Lincoln, State Reformatory for Men, Lincoln.

LEGISLATION The State Legislature held a regular biennial session, convening in January. Its most widely noted action was to terminate the unsuccessful bank-guarantee system that had operated for many years in the State. An act was passed repealing the bank-guarantee-fund law and consequently terminating the power of the Bank Commission to conduct banks previously declared insolvent but not thrown into receivership. In order to succeed depositors in defunct banks the Legislature approved a constitutional amendment to allow of the appropriation of \$8,000,000 for depositors' reimbursement. The amendment was to be submitted to popular vote at the election of 1930. By statute, insolvency was defined, with regard to State banks, as occurring when the actual cash value of assets did not suffice to meet liabilities, or when a bank was unable to meet the demands of creditors in the ordinary and usual manner, or when it failed to make good its reserve as required by law, or when stockholders failed to make good capital impairment, after due notice. The gasoline tax was increased to 4 cents a gallon, from 2 cents, and

was assigned in the proportion of 2 cents to the building and maintenance of State roads and 2 cents to improvement of county roads. A measure repealing the prohibition against the couring of rabbits was passed, but was vetoed by Governor Weaver on humanitarian grounds. An effort to ratify the Federal Child Labor Amendment failed.

POLITICAL AND OTHER EVENTS. A decision of Judge Lincoln Frost in one of the inferior State courts, rendered at the end of April, dealt a severe blow to the operation of the State law for the guaranty of bank deposits. This decision granted the application of 500 or more State banks for release from the obligation to pay further special assessments into the State bank-guaranty fund. There were at the time some 60,000 former depositors holding claims against defunct banks. The court held that according to the evidence before it two-thirds of the banks that were solvent could not well keep up their payments on guaranty assessments. The decision was favorable to the hopes of depositors of failed banks for indemnification through a future State grant, rather than through the guaranty fund. In the course of the summer the Banking Commissioner reopened 15 banks in the period of three months by inducing depositors to scale their claims down to the levels of the solid assets of the respective institutions. In the same period, 21 banks were closed. The difficulties of the banks' situation were reported as due to their having invested heavily in real estate and in second mortgages on lands.

The State law of 1929 imposing an ad valorem tax on money, bank deposits, and intangible property generally was upheld by the State Supreme Court in November. This court, on March 28, held that workmen's-compensation insurance companies in filing appeals could not be restricted to the district court of the county in which the injured worker lived.

The charge was made by a former State engineer, George B. Johnson, that more than \$1,000,000 had been wastefully or improperly spent for tile and other building materials in the construction of the State capitol. At North Platte, on July 13, rioters attacked the Negro dwellers, killed a policeman and terrorized about 200 Negroes into flight from the town. With funds supplied by Mrs. Sarah Joslyn, the construction of a \$4,000,000 building at Omaha to serve the city as an art centre was started. The grain elevator of the Trans-Mississippi Grain Company at Omaha, with 400,000 bushels of grain, was burned in August.

OFFICERS. Governor, Arthur J. Weaver, Lieutenant-Governor, George A. Williams, Secretary of State, Frank Marsh, Treasurer, W. M. Stebbins, Auditor, L. B. Johnson, Attorney-General, C. A. Norensen, Superintendent of Public Instruction, C. W. Taylor.

JUDICIARY. Supreme Court Chief Justice, Charles A. Goss, Associate Justices, William B. Rose, James R. Dean, W. H. Thompson, George A. Eberly, Edward E. Good, George A. Day.

NEBRASKA, UNIVERSITY OF. A State institution of higher education in Lincoln, Neb., founded in 1889. The enrollment for the autumn of 1929 was 6535, of whom 3654 were men and 2081 women. The enrollment was distributed as follows: Agriculture, 604, arts and sciences, 1880; business administration, 736; dentistry, 111; engineering, 722; graduate, 398; law, 153,

medicine, 324; nursing, 104, pharmacy, 90; teachers, 1481. Included in the arts and sciences and teachers' colleges were 514 students of the school of fine arts and 184 of the school of journalism. There were 2814 students enrolled in the summer session of 1929, of whom 931 were men and 1883, women. The faculty numbered 374. The total income for the year was \$4,209,977. The library contained 235,605 volumes. Chancellor, Edgar A. Burnett, D.Sc.

NEBULÆ. See **ASTRONOMY**.

NECROLOGY. The following list contains the names of notable persons who died in 1929. Articles will be found in this volume, in their alphabetical order, on those whose names are given below without other text.

Abercorn, Mary, Duchess of English duchess, died May 10, 1929, London, at the age of 81. The fourth daughter of the first Earl Howe, she married in 1869 the Marquis of Hamilton, eldest son of the first Duke of Abercorn. Lord Hamilton was early attached to the household of the Prince of Wales.

Aberdare of Duffryn, second Baron. See Bruce, Henry Campbell.

Adamson, Colonel Agar, Canadian army officer, died in England, Nov. 21, 1929, at the age of 65. He was educated at Trinity College School, Port Hope, Ontario, and at Corpus Christi College, Cambridge University, served with the Southrons Horse in South Africa, and at the outbreak of the World War was an officer in the Princess Patricia Canadian Light Infantry. In 1915 he was made a Companion of the Distinguished Service Order, and in 1916 became commander of the "Princess Pats." He was promoted to a staff position in corps headquarters in 1918.

Adamsen, William Charles. See **ADAMS**.

Adelsward, Baron Theodor. A Swedish statesman, died Sept. 28, 1929. He was born Oct. 13, 1860. From 1910 to 1914, he was Minister of Finance. He was for many years head of the Interparliamentary Union.

Agramonte, Charles Horace Montgomery, y Arsen, William Appleton, American manufacturer, died Nov. 7, 1929, in Norwich, Conn. He was born in Manchester, Vt., Apr. 18, 1853, and was educated in public and private schools in Massachusetts. Appointed to the U. S. Military Academy, he failed to finish the course because of ill health, and went into business. He was acting assistant paymaster of the U. S. Navy in 1861-6, and quartermaster-general of Connecticut in 1862-65. After the Civil War, he was president of the Norwich Nickel and Brass Company.

Alkins, Sir James (Albert Manning)

Allen, Edwin West.

Allen, Hamilton Ford, American educator, died in Durham, N. H., Aug. 14, 1929. He was born in Lafayette, Ind., July 7, 1867, and was graduated from Williams College. He studied also at the universities of Berlin and Leipzig, the American School of Classical Studies at Athens, the University of Chicago, and the McCormick Theological Seminary at Chicago. He was professor of Greek at Washington and Jefferson College, 1902-05, at Princeton, 1905-07, professor of Latin and Greek at the University of Illinois, 1907-09, professor of Greek at Washington and Jefferson, 1909-22, and professor of modern languages at the University of New Hampshire after 1922. He conducted the University Travel School at Leumont, Celin, France, in the summers of 1926-28.

Allen, The Rev. Sturgis Protestant Episcopal clergyman, died in Liberia, Africa, in April, 1929. He was born in Hyde Park, N. Y., June 26, 1850, and was graduated from the College of the City of New York and the General Theological Seminary, being ordained in 1882. In 1881 he was curate at Kansas City, Mo., and from 1881 to 1883, at Newburgh, N. Y. He was with the Holy Cross Mission Church in New York, 1884-89, and served as rector in the Episcopal Order of the Holy Cross, 1891-1907. In 1923 he went as a missionary to Liberia, where he taught in the mission schools.

Almeida, Antonio José de, Portuguese statesman, died Oct. 31, 1929, in Lisbon, at the age of 64. He was appointed Minister of Marine in the provincial government of Portugal in 1910 and was Premier from 1913 to 1917. In 1919 he became president of Portugal, and served in that capacity until August 1923. He played a leading part in the overthrow of the monarchy in 1910.

Alston, The Rt. Hon. Sir Beilby Francis, British Ambassador to Brazil, died in London, June 29, 1929.

He was born Oct. 8, 1868. After a private education in England and on the Continent, Sir Cecil entered the Foreign Office as a clerk in 1890. His first appointment in South America was to the position of acting secretary and chargé d'affaires at Buenos Aires, 1896-97. After service in Japan and China he was returned to South America in 1923 as Minister to the Argentine Republic and to Paraguay and in 1925 he was made ambassador to Brazil. Sir Bailly was knighted in 1920 and in 1925 was elevated to the Privy Council.

Alva, Frederico Garcia y, American editor, died Nov. 7, 1929, in Los Angeles, Calif., at the age of 56. He began his journalistic work as a young man in Mexico City, later becoming editor of the *Los Angeles Mexican Herald*. At the time of his death he was publisher and editor of *Mexico*, a Los Angeles Spanish language periodical.

Alamonta, Lizardo Peruvian jurist, died March 10, 1929, at Lima, Peru. He was formerly president of the Supreme Court of Peru.

AMARAL, MARSHAL Antonio Ferreira do Brazilian physician, died Feb. 18, 1929, in Etyva, Brazil. He was formerly at the head of the Army Central Hospital, where he found the first school for nurses in Brazil, director of the Medical Corps and representative of the Brazilian Red Cross at the First and Second Pan-American Red Cross Congresses. He retired in 1924.

Andover, Marie Henri

Andrassy, Count Julius

Andrews, William Symes An Anglo-American electrical engineer, died in New York City, July 1, 1929. He was born in New York City, Sept. 10, 1847, moving to America in 1875. In 1879, he entered Thomas A. Edison's laboratory at Menlo Park, N. J., and became Edison's assistant just after the incandescent lamp was invented, so that much of Andrews' early work had to do with that invention. He held executive positions with various electrical companies, and at the time of his death, was consulting engineer to the General Electric Company.

Appel, Daniel Frederick An American insurance executive, died Nov. 23, 1929, in Boston, Mass. He was born in Cumberland, Md., June 24, 1857, and was educated in the public schools. He was in the fire-insurance business from 1875 to 1885, when he became associated with the New England Mutual Life Insurance Company, where he served successively as superintendent, secretary, vice president, and, after 1924, president. Mr. Appel was a member of the executive committee of the Association of Life Insurance Presidents and a director of the Old Colony Trust Company.

Appleton, Daniel American publisher, died March 15, 1929. He was born in New York City, Feb. 24, 1852, the son of Daniel Appleton, founder of D. Appleton & Co. Daniel Appleton entered Appleton's in 1871, becoming a member of the firm in 1879 and, later, vice president. He retired in 1913. He was a member of the 7th U. S. Congress, in which he served as colon from 1861 to 1862, when he was retired with the rank of brevet major general.

Armstrong, Hamilton American silk manufacturer, died Oct. 20, 1929, in New London, Conn. He was born Dec. 10, 1843, and entered upon his business career as a bookkeeper in the Williams Silk Company of New York. In 1867 he formed with James P. Brainerd the firm of Brainerd & Armstrong, which was merged in 1923 with the Monocuck Silk Company under the title of Continental Silk Company. Mr. Armstrong became president in 1904 of the National Bank of Commerce in New London, and for 35 years was president of the Board of Water Commissioners. He was an incorporator and first president of the New London Memorial Hospital and in 1926 he established a trust fund of \$100,000 for charitable and needy medical needs in New London.

Araozola, Enrique J. Colombian statesman, died March 28, 1929. At the time of his death, he was Minister of the Interior.

Atherley Jones, Llewellyn Archer English judge and former member of Parliament, died June 15, 1929. He was born in 1852 at Oxford, England, and was educated at Balliol College, Oxford. Called to the bar in 1875, he became a benchet of the Inner Temple and joined the North-eastern Circuit, where he represented the miners in many industrial cases. From 1885 to 1914, he was a Liberal member of Parliament for Northwest Durham. After 1905 he was recorder at Newcastle and after 1918, judge of Mayor's Court of London Court and Commissioner of Central Criminal Court. In addition to articles on social and political subjects, he wrote *Manual* (1882), *The Miners' Handbook* (1887), *Commerce in War: a Treatise on International Law* (1914), *Lord of Olden and Young Persons: Looking Back* (1925), *The Fall of Lord Paddockslake*, and other novels published anonymously.

Auer, Karl von Welsbach

Ault, James Percy An American magnetician and commander of the nonmagnetic ship, *Carnegie*, lost his

life at Apia, Samoa, when his ship burned following a gasoline explosion, Nov. 29, 1929. He was born Oct. 26, 1881, in Olathe, Kan., and was graduated from Baker University in 1904, where he acted as magnetic observer for the U. S. Coast and Geodetic Survey. After being graduated, he became associated with the department of terrestrial magnetism of the Carnegie Institution of Washington. Captain Ault commanded the *Carnegie* on cruises in Arctic and Subantarctic regions (1914-17), the purpose of which was to make magnetic observations. In 1919 he was made chief of the ocean work section of the Carnegie Institution. On September 4, the *Carnegie* left San Francisco, to continue the three-year cruise begun in 1928, and had reached Apia when the explosion occurred.

Aultman, Brig Gen Dwight Edward

Austin, Chellis A.

Austin, Leonard S. An American mining engineer, died in Los Angeles, Calif., Oct. 29, 1929. He was born in Stratford, Conn., Feb. 26, 1846, and was graduated in 1868 from the Sheffield Scientific School of Yale, later doing post graduate work at Yale, Columbia, and the Colorado State school of Mines. He was engaged in mechanical engineering work until 1877, when he became a chemist for the Exploration Company on the eastern coast of Patagonia, South America. During 1880-81 he was chemist and foreman of the Guano Lead Works and until 1902 superintendent of various smelting works in the United States. He was professor of metallurgy and ore dressing in the Michigan College of Mines from 1903 to 1909, when he began to practice privately. Among other works, he wrote *Metallurgy of the Common Metals* (1906, 5th ed., 1920) and *The Fire Assay* (1907).

Avebury, Baron See Lubbock, John Kirkbeck

Avery, Elizabeth An American educator, died at Flushing, L. I., N. Y., Aug. 11, 1929. Miss Avery was born in Petrolia, Pa., and was educated at Forestville Academy, Forestville, N. Y., and Cornell University.

After taking a B. S. degree from the University of Wisconsin, U. S., she went to London University, and New York University, she taught in the high schools of Flushing, Rochester, and Gouverneur, N. Y. In 1923 she became head of the spoken English department at Smith College. Miss Avery was a writer and lecturer on phonetics and speech.

Ayres, Steven Beckwith American real estate operator, and former Congressman, died in New York, June 1, 1929. Born in Fort Dodge, Iowa, Oct. 27, 1861, he attended Syracuse University. He entered the real estate business in New York in 1887, retiring after the World War. Although he had not been active in politics, Mr. Ayres, a Democrat, was elected to the House of Representatives, from the eighteenth New York district, serving 1911-13. Besides numerous historical articles, he wrote *Genealogy of the Ayres Family* (1901), *Bridge* (1909), *Building an American Merchant Marine* (1913), and *Our U. S. Postal Service* (1913).

Bader, Prince of Sax-Maria, Prince of Baden

Baez, Ramon Porfirio President of the Dominican Republic, died Mar. 3, 1929. Having served in the Dominican Congress, he was elected provisional President on Aug. 27, 1914, and held office for two months. At the time of his death, Dr. Baez was a director of the Padre Billini Caballero Hospital. He was a knight of the French Legion of Honor.

Bailey, Joseph Weldon

Balfour, Sir Graham English educator, died Oct. 26, 1929, in Oxford, England. He was born Dec. 2, 1858, and was educated at Balliol College, Oxford, and at Worcester College, Oxford.

He was a barrister at law in the Inner Temple. From 1885 to 1895, he traveled widely, spending three years in Samoa, where he met his cousin, Robert Louis Stevenson, whose official biography he published in 1901. Sir Graham was assistant secretary to the Delegacy of Oxford Local Examinations (1899-1902), director of technical instruction, Staffordshire County Council (1902-03), and director of education in Stafford (1903-26). He was chairman of the Association of Directors and Secretaries of Education (1908), a member of the Committee on the Position of Science in Education (1916-17), a member of the Reconstruction Committee on Adult Education (1917-19), director of education in the Lines of Communication, France (1918-19), and a member of the consulting committee of the Board of Education (after 1926). He was knighted in 1917. He wrote also *Educational Systems of Great Britain and Ireland* (1898).

Balfour, Sir Robert A. British shipowner, died in London, Nov. 4, 1929. He was born in Pilmuir, Fife shire, Scotland, in 1844 and was educated at Madras College. Sir Andrew's father was the managing agent of the shipping firm of Balfour, Williamson & Co. From 1906 to 1922, he was a Liberal member of Parliament from the Patrick Division of Glasgow. In 1911 he was created a baronet.

Ball, James Moore American ophthalmologist and educator, died in St. Louis, Mo., March 1, 1929. Born

In West Union, Iowa, Sept. 4, 1863, he was graduated from the medical school of the State University of Iowa in 1884, continuing his studies in New York and Europe. He was professor of diseases of the eye at the National University, Washington, D. C., and served as chief of the Eye Hospital, Honolulu, Hawaii, and as professor of Ophthalmology at one time, and wrote a textbook, *Ball's Modern Ophthalmology* (1904), and *Andreas Vesalius, the Reformer of Anatomy* (1910).

Ballou, Sidney (Miller) American lawyer, died Oct. 29, 1899, in New York City. He was born in Providence, R. I., in 1827, and graduated from Harvard in 1853. Admitted to the bar in 1855, he went that year to Hawaii, where he attained success in the practice of law. He was one of the members of the Supreme Court there in 1894. He was elected to the U. S. Senate in 1897. He compiled the code of civil and penal laws of Hawaii, and in 1897 proposed the Act of Congress organizing the Territory of Hawaii. Mr. Ballou was general counsel for the California and Hawaiian Sugar Refining Corporation and executive secretary of the Sugar Institute During the World War, he served as lieutenant in the Coast Artillery, and afterward as chief of the Hawaiian Division of the U. S. Naval Academy. He wrote many magazine articles on military and economic subjects.

Barnard, Otto Tremont
Barnard, The Rt Hon Sir Colville English diplomat,
died June 3, 1929, in London He was born Sept 17,
1869, the youngest son of Sir Colville Barclay He
entered the British Diplomatic Service as an attaché
in 1894 and was steadily promoted, becoming Coun-
sellor of Embassy at Washington in 1913, and Minister
Plenipotentiary there in 1914 He was sent to Sweden
in 1919 as Minister and was transferred to Hungary
in 1924 In the latter year he was appointed Ambassa-
dor to Portugal Sir Colville was knighted in 1922 and
sworn of the Privy Council in 1928

Baring, John deo Revelatoe, Second Baron of Barington, Sir Henry English member of Parliament, died in Farnham, Cheshire, Feb 22, 1929 Born Dec 11, 1870, he attended Christ Church, Oxford, and was called to the bar of the Inner Temple Instead of practicing, however, he engaged in farming in Cheshire and took an active part in public affairs Joining the Earl of Chester's Yeomanry Cavalry, he was com-missioned Captain and served in the South African War, 1900-1902, and in the Boer War, 1914-1915 and fought in the World War Having been elected a Conservative member of Parliament from the Eddisbury Division of Cheshire in 1910, he was controller of the household and party waf, during 1921-24, and from November, 1924, until his retirement in January, 1928

Barringer, Daniel Moreau. An American mining engineer and geologist, died Nov. 30, 1939, in Haverford, Pa. He was born in Raleigh, N. C. May 25, 1860, and graduated from the University of Virginia in 1880. He took special courses in geology at Harvard University in 1889, and in chemistry and mineralogy at the University of Virginia in 1890. He began the practice of law with his brother in 1882, but in 1888 left it to become a geologist. He was a member of the American Association of Professional Geologists, and in 1907 was president and director of several mining companies. In 1905 he discovered that the origin of the Meteor Crater in Arizona was the impact of a meteoric mass. He wrote *The Law of Mines and Mining in the United States* (1907) and *Minerals of Commercial Value* (1907).

Barton, Esther (Mrs Frank D Nelson) An American actress, known on the stage as Esther Barton, died in West Haven, Conn., Sept. 30, 1929, at the age of 70. She appeared in dramatic and vaudeville productions and had connections with the McCaul, Holman, Katherine Lewis, and Lucia Nola opera companies. After 1916 she was manager of the "Nelson Duo," a vaudeville act.

Bassett, William Austin. American engineer, died May 16, 1939, in Cambridge, Mass. He was born in Boston, Mass., Sept. 29, 1876, and was graduated from Harvard with a degree in civil engineering. During 1901-04 he was with the engineering corps of the Pennsylvania Railroad and from 1905 to 1907 in the office of the engineering department of the Pennsylvania Railroad in Pittsburgh. In 1908 he became a member of the faculty of Carnegie Institute of Technology in Pittsburgh, where he remained until 1910. He was assistant editor of the *Engineering Record*, 1911-12, after which he was consulting engineer of the New York Bureau of Municipal Research. Mr. Bassett was a contributor to the *Engineering Record* on many of the state problems relating to engineering. He wrote *Problems of Road Administration* (1917).

Bates, Katharine Lee
Bauer, Colonel Max
Bax-Ironside, Sir Henry (George Outram) English
diplomatist, died in London, Apr 16, 1929 Born Nov
15, 1859, he was educated at Eton and Oxford. In

1883 he joined the diplomatic service as private secretary to Sir William White, and later was sent to many capitals as chargé d'affaires. He was Minister to Bulgaria 1910-15, and acquired a wide knowledge of Turkish, Persian, and Arabic languages.

Baxter, George W. Former Governor of the Territory of Wyoming, died Dec 18, 1899, in New York City. He was born in Hendersonville, N. C. and was graduated from the University of North Carolina. He was given a commission in the 3rd United States Cavalry, he was assigned to duty in the Territory of Dakota and took part in campaigns against the Sioux Indians. He was promoted to Major and was a successful campaigner. He was several times a member of territorial legislatures and in 1886 he was appointed Governor of Wyoming Territory, serving for one year. He was a successful legislator and drafted the Mule Comutation for Wyoming in 1899.

Bazalegette, Louis French literary critic, died in Paris, Jan. 3, 1929, at the age of 55. He was the first to translate Walt Whitman's writing into French, publishing *Leaves of Grass* in 1909, and at various times translating the poet's critical essays. He also translated Carl Sandburg's *Rootabaga Stories*. He wrote many books on French authors and a critical biography of Thoreau.

Beal, Alvin Casco
Beaulieu, Montagu of See Montagu, John Edward

Douglas Scott
Beer Walbrunn, Anton
Bergie, Harold

Belavsky, Sergei Ruslan railway official, died in New Haven, Conn., Aug. 26, 1949, at the age of 57. He was graduated from the classical gymnasium and the Imperial Institute of Ways and Communications in Pétrograd and he was in charge of the traffic department of the Southwestern Railway of Russia from 1905 to 1911. During the World War he was general traffic manager of the Eastern Front, where he directed the building of 200 miles of railway under fire. In the United States he was in charge of the work for the New Haven Railroad as chairman and member.

Mr. Charles James Bell (Charles), an American banker, died in New York City, Oct. 1, 1929. He was born in Dublin, April 12, 1858, and educated there. In 1873 he went to Canada and from 1875 to 1880, was with the Imperial Bank of Canada in Toronto. On leaving there he came to New York City, where he was elected to the Chamber of Commerce in 1881. He was elected to the telephone in 1881, however, he returned to banking, in which he remained actively interested all his life. Mr. Bell was elected President of the American Security & Trust Co. in 1893, an office which he held until he retired in 1924.

Mr. Bell, Graham Ardrie Canadian Minister of Railways and Canals, died Jan 13 1929, in Ottawa, Ont. He was born in Perth, Ont. Aug. 1, 1874, and was educated at the Collegiate Institute there. He began his governmental work as a clerk in the Post Office Department in 1891, and in 1894 he was transferred to the Railway Department, in which he was advanced to the position of deputy Minister of the Department of Railways and Canals in 1912, and appointed director of the Canadian National Railways in 1922. He was a member of the 43d Regiment in Ottawa in 1900, and was serving in the 1st Light Infantry in 1915 he was in England and France on special duty for the Canadian Government.

Hell, Sir James Scottish banker and yachtsman, died on K... .. and, Dec 13, 1929. He was director of the Bank and of the Midland Bank, and vice lieutenant and deputy lieutenant of the County of the City of Glasgow. Sir James at one time contested the America Cup with his yacht, *Thistle*.

Beckett, Robert Augustus, London editor and author, died Aug. 26, 1929. He was born in London, May 18, 1855, and educated at Oxford. From 1884 to 1891, he was on the staffs of the *Times* and the *Star*. After 1899 he was editor of *Truth*. He published with R. M. Freeman *A Diary of the Great War by Samuel Pepys, Junr., Esquire* (1916), *A Second Diary of the Great War* (1917), and *A Last Diary of the Great War* (1919).

Benenson, The Rev. Dr. Franklin Thomas American Methodist Protestant clergyman, died in Baltimore, Md., Apr. 6, 1929 Born in Queen Anne County, Md., Aug. 23, 1863, he was graduated from Western Maryland College in 1884, receiving the A.M. degree in 1886 and the D.D. from Western Maryland College and Theological Seminary in the same year Ordained into the Methodist Protestant ministry in 1888 he served as pastor at Washington, 1886-88, Wilmington, 1889-90, West Baltimore, 1891, Elizabeth, N. J., 1892-1893, Centerville, Md., 1898-1901, Baltimore, 1902-1906, Danton, Md., 1901-02, and Grinstead, Md., 1903-1906 and Grinstead, Md., 1907-1911

his death Dr Benson was a trustee of Western Maryland College. Kansas City University conferred on him the D. D. degree in 1914

Benz, Karl
Berger, Victor L
Berliner, Emile
Berry, Rear Admiral Robert Mallory
Bickerton, Alexander William
Bigelow, Henry Forbes. American architect, died in Beverly Farms, Mass. Aug. 12, 1929. He was born in Clinton, Mass., May 12, 1867. After receiving his B. S. degree from the Massachusetts Institute of Technology in 1888, he practiced in Boston as a member of the firm of Bigelow & Wadsworth. Mr Forbes designed the Shawmut National Bank, the Tremont Building, and the Hotel Tuscania in Boston.

B. J. Charles, First Viscount of Mersey
B. J. C. Howard American public official, died suddenly in New York, Feb. 1, 1929. Born in Burlington, N. J., Sept. 5, 1875, he attended a business college and worked at Burlington in the carriage manufacturing business, 1892-13. A personal friend of Woodrow Wilson's, he contributed to his political career, serving as a military aide, 1913-13. After Wilson became President, he appointed Colonel Birch Minister to Portugal, Sept. 10, 1913, a position which he held for a number of years. On his return to the United States, he became active in several movements to increase the use of Spanish speaking countries and Colonels Birch received his rank while in the New Jersey National Guard. He wrote a *Giant Among Nations* (1926).

Birkhead, The Rev. Dr. Hugh An American Protestant Episcopal clergyman, died at his birthplace, Newport, R. I., July 9, 1929. Born Sept. 7, 1876, he was graduated from Columbia University in 1899, and from the Episcopal Theological School, Cambridge, Mass., in 1902. Ordained deacon in the latter year, he became priest in 1901. After being assistant at St. George's Church, New York, 1902-06, and rector, 1906-12, he went to Emmanuel Church, Baltimore, Md., where he remained until his death. Dr. Birkhead went to Europe in June, 1917, as special investigator for the American Red Cross remaining in England to speak under the auspices of the Foreign Office on the American view of the World War. On his return to the United States, he spoke throughout the country in behalf of the Red Cross and the Liberty Loan campaigns, and for the committee on public information. He received the M. A. degree from Columbia in 1906 and the D. D. degree from his theological school in 1910.

Birge, Cyrus Albert Canadian financier and manufacturer, died Dec. 11, 1929, in Hamilton, Ontario. He was born in Oakville, Ontario Nov. 7, 1847 and was educated at the public schools there with one year's study at the Victoria School of Medicine. He started in business for lumber in 1870 and during 1872-82 he was an accountant in the engineering department of the Great Western Railway, after which he became manager of the Canada Screw Company of Dundas. He reorganized this concern and moved it to Hamilton. In 1908 he acquired the entire capital stock of the American Screw Company of Providence, R. I., forming a new company of which he was made president. Mr. Birge was also president of the Sovereign Fire Assurance Company of Canada and of the Mercantile Trust Company.

Blacklock, Maj. Gen. Sir William English army officer died May 16, 1929, at Dinard, France. Born in Seattle, York, Oct. 6, 1841, he entered the British Army in 1863, became captain in 1870 and lieutenant colonel in 1900. His foreign service included appointments to Afghanistan, China, and South Africa. He received many honors in the course of his career—Knight Commander of the Bath, Commander of St. Michael and St. George, and the Order of the Rising Sun. In 1912 he was made director of monuments at British Army Headquarters, a position which he held during the World War and from which he was retired with rank in 1920.

Blakesley, Thomas Holmes
Blach, Maurice Leader of the Democratic Party in the New York State Assembly died Dec. 5, 1929, in New York City at the age of 39. He was born in New York City and was educated at the College of the City of New York and at the New York Law School. On leaving law school, he formed a law partnership with John A. Mullen. He became a member of the New York Assembly from the 16th district of New York County in 1913, and after 1923 he was also minority leader.

Bolon, Rev. Dr. Revolutionary leader in Haiti died in Paris, France Dec. 2, 1929, at the age of 56. In 1914 he led a revolt against the President of Haiti and became himself provisional president, but in 1918 he resigned his insecure position. He was an opponent of American intervention in the affairs of Haiti.
Bode, Wilhelm von,

Bolton, Benjamin Meade

Bond, Edward Austin
Booth, General (William) Bramwell
Booth Tucker, Frederick St. George de Lautour
Bouchor, Maurice Victor A French writer, died in 1929. He was born in Paris, Nov. 16, 1855, and was educated at the College Sainte-Barbe. His works include *Les Chansons joyeuses* (1874), *Les Poemes de l'Amour et de la mer* (1876), *Les Symboles* (1887), 3 vols., *Les Mysteres d'Eleazar* (1894), *Conte de Noel* (1895), *Les Chants populaires pour les écoles* (first series, 1895; second series, 1902; third series 1907), *Les Poemes de la vie humaine*, four series (1902-06), *Chans de poesies* (1908).

Bourdelle, Emile Antoine
Bowen, Robert Hall American college professor, died at North Dartmouth, N. H., Aug. 19, 1929. He was born at Medina, N. Y., May 24, 1892, and was educated at Colby College and Columbia University, receiving the Ph. D. degree from the latter in 1920. After 1920 he was in the zoology department of Columbia, becoming a professor in 1928.

Bowly, Sir Anthony Alfred A British surgeon, died Apr. 7, 1929. He was born May 10, 1855, and was educated at Durham School and at St. Bartholomew's Hospital. During 1920-23 he was president of the Royal College of Surgeons. At the time of his death he was Surgeon in Ordinary to the King of England, and consulting surgeon at St. Bartholomew's Hospital and to the Foundling Hospital. He was in South Africa in 1900 in charge of Potlond Hospital, and in the World War he was advisory consulting surgeon to the British soldiers in France with the rank of major general. He was knighted in 1911, and in 1921 was created a baronet.

Boydall, Frank E. English astronomer, died Oct. 30, 1929, in Cambridge, England, at the age of 61. He was graduated from the Royal College of Science, London, and in 1888 became connected with the solar Physics Committee under Sir Norman Lockyer. His work consisted in the observation of sunspots and their reduction to determine chemical origin and variation during sunspot cycle. Later with improved instruments, he began to take part in night observations making photographs. He began the tabulation and correlation of the celestial and terrestrial spectra, publishing papers giving the results of his investigations. In 1911 the observatory was moved to the University of Cambridge, where Mr. Boydall continued his work.

Boyd, James An American horticulturist, died in Havford, Pa. Dec. 2, 1929. He was born in Boston, Mass., Feb. 1, 1858. In 1901 he organized the Electric House & Rubber Company of Wilmington, Del., of which he was president until 1915, and from 1908 to 1917, he was president of James Boyd & Brother, Inc. of Philadelphia. Mr. Boyd was an enthusiastic horticulturist, being director of a number of horticultural societies and the recipient of two gold medal awards for the advancement of horticulture.

Boyd, William Cowper An American lawyer died in Chicago, Ill., May 30, 1929. Born in Sheffield, Ill., Apr. 6, 1864, he was graduated from Harvard in 1886, and from its law school in 1889. Immediately after his admission to the bar, Mr. Bowen commenced practice in Chicago, which he continued until his death. He became president of the Chicago Bar Association in 1926, and a director of the Central Trust Company of Illinois, the Sullivan Machinery Company, and the Liquid Carbonic Company. The League of Red Cross Societies appointed him Commissioner General to Poland in 1920, and he was decorated with the Order of Polonia Restituta. He was an overseer of Harvard, 1911-17, 1919-23, and from 1923 until his death, he was also president of the Harvard Alumni in 1922.

Brabazon, Reginald Twelfth Earl of Meath English diplomat and philanthropist died in London, Oct. 11, 1929. He was born on July 31, 1841, and was educated at Eton and in Germany. In 1863 he became a clerk with the Foreign Office in 1867, the Duke of Hamilton's private secretary in 1870, he was transferred to the Foreign Office in 1871. In 1870 he was transferred to the Foreign Office in 1871. In 1871 he returned to England and devoted his time to philanthropic work. He was active in numerous social and civic enterprises, among them the Hospital Saturday Fund, of which he was first honorable secretary in 1874, the Duke of Hamilton's Movement, the Young Men's Friendly Society, and the Metropolitan Public Gardens Association. His name was popularly associated with the Empire Day Movement. Chiefly through his initiative, Queen Victoria's birth day, May 24, came to be celebrated as Empire Day. He was at one time president of the Christian Union for Social Service, and he was first president of the British Institute of Social Service and the Dublin Philanthropic Reform Association. He was elected a senator of the Parliament of Southern Ireland by the members of the Irish Privy Council. In 1920 he was created a Knight of the Grand Cross Order of the British Empire and in

1923 a Knight of the Grand Cross of the Royal Victorian Order. He was the author of a number of books on social subjects and of two volumes of reminiscences, *Memories of the Nineteenth Century* (1928) and *Memories of the Twentieth Century* (1924). In 1928 he edited *Diaries of Mary, Countess of Meath*.

Bradfield, Wesley American archaeologist died in Santa Fe, N. Mex. November 10, 1914. He was born in Waite, Mich., Oct. 25, 1876, and was educated at Alma College and the University of Michigan. From 1917 to 1927, he was curator in archaeology at the New Mexico Museum and the School of American Research. He was in charge of archaeological excavations in New Mexico and Guatemala. In 1927 he became director of the San Diego Museum.

Bradford, Oscar Edwin American agriculturist, died Mar. 25, 1929, in Xenia, Ohio. He was born Jan. 21, 1864, near Cedarville, Ohio. In 1887 he became a breeder of Aberdeen Angus cattle. He was an organizer of the International Live Stock Exposition in Chicago in 1890, and served as director. He was a member of the White House Industrial Conference called by President Wilson in October, 1919, and a member of President Coolidge's Agricultural Conference Commission in 1924. From 1919 to 1922, he was president of the Ohio Farm Bureau Federation and during 1922-23 of the American Farm Bureau Federation.

Bradley, William Elgar American foreign service official, died Sept. 17, 1929, in New York City. He was born in Galena, Ill., June 4, 1848, and was graduated from Yale University in 1872. He was American consul in Nice, France, 1889-93, in Tunstall, France, 1897-1903, and in Manchester, England, 1903-07, where he was consul general, 1905-06, and consul again, 1906-07. He was a Montreal, Canada, from 1907 to 1917.

Breck, Edward

Brent, The Rt. Rev. Charles Henry

Briett, Robert George Canadian physician and statesman, died Sept. 6, 1929, in Calgary, Alberta. He was born Nov. 16, 1851, in Strathroy, Ont., and studied medicine at Toronto University, and in New York, Philadelphia, and Vienna. He practiced medicine at Akron, Ontario, from 1874 to 1879, and was one of the founders of the Manitoba Medical College, becoming professor of materia medica and therapeutics there, and later emeritus professor of obstetrics and gynecology. In 1886 he established the Banff Sanatorium, of which he was medical director, and in 1909 founded the Briett Hospital at Banff, of which he was senior surgeon. He entered politics as a member of the Legislative Assembly of the Northwest Territories, 1888-91, and was president of the Executive Council, 1899 to 1901. He was appointed Lieutenant-Governor of Alberta in 1915, and reappointed in 1920. He was honorary colonel of the 82d Overseas Battalion.

Breuer, Ilans

Bridgeman, Admiral Sir Francis (Charles Bridge man)

Bridgman, Howard Allen American editor and educator, died Mar. 17, 1929. He was born in Northampton, Mass., Aug. 20, 1860. He received the A. B. degree from Amherst in 1883, the B. D. degree from Yale Divinity School in 1887, and the D. D. degree from Oberlin in 1908. He was editor of *The Atlantic* from 1911 to 1921, and after 1925 was head master of the Bridgman School in Shirley Center, Mass.

Brodsky, Adolf

Brooks, Howard K. American business executive, died Sept. 15, 1929, in New York City, at the age of 75. In 1882 he entered the American Express Company as a clerk in the financial department of the Milwaukee office. He was later transferred to Chicago to assume charge of the money order department for the Western division, and in 1905 he was made fiscal agent of the Western financial department of the company with headquarters in Chicago. In 1913 he came to New York City as vice president of the company. Mr. Brooks was an authority on foreign exchange and the author of a book on the subject which is used as a college text. He was active in developing the sale of travelers' checks when they were first produced by the American Express Company in 1891, and in establishing and popularizing the company's travel, and foreign trade departments.

Broughton, Urban Hanlon English engineer and capitalist, died in London, Jan. 30, 1929. Born in Worcester, Apr. 12, 1857, he was graduated from the University of London in 1875, and for the next three years studied with Low & Thomas, civil and mining engineers, he also studied for a time at the Institution of Civil Engineers, winning the Miller Prize in 1877. Employed on railway, drainage and dock work in England and Ireland, 1878-87, he was made an associate member of the institute in 1883. Moving to the United States in 1887, he engaged in various engineering and commercial projects. He was president and director of the Virginian Railway Company, vice president, director, and

general manager of one of the largest copper-distributing firms in the world, the United Metals Selling Company, president and director of the Utah Consolidated Mining Company and of the Shomo Company, and an officer of other mining and financial corporations. Mr. Broughton also served as British juror at the World's Columbian Exposition, 1892. Retiring from active business, but retaining his directorship in several American firms, he returned to England in 1912. Associating himself with the Conservative party, he represented Preston in Parliament, 1915-18, subsequently founding the Bonar Law College and donating Ashbridge Park to his party.

Brown, Charles American cancer specialist, died Sept. 27, 1929, in New York City. He was born at the age of 56. He was graduated from the New York Homopathic Hospital in 1895, and began soon after to specialize in the treatment of malignant diseases. He wrote many papers on the subject and discovered a method of X-ray treatment. He gave more than \$25,000 worth of radium to be used by people unable to afford the treatment. Dr. Brown was among the first physicians of New York to use radium in the treatment of cancer and other malignant diseases, and was the founder of the Brooklyn Cancer Institute. He was radiologist for Carson Peck Memorial, Wyckoff Heights, Jamaica, and Cumberland.

Brown, Horace Manchester American surgeon, died in Milwaukee, Wis., Jan. 18, 1929. Born in New Bedford, Mass., Oct. 12, 1857, he was a member of the University Medical College of Yale University in 1880, and continued his medical studies in London, Paris, Munich, Prussia, and Berlin. Having first practiced in Milwaukee in the years of his graduation, he carried on his work in that city until his death. He acted as surgeon for the Chicago, Milwaukee & St. Paul Railway for 41 years. He owned the Lakeside Hospital, which he built, for 26 years, and he became surgeon at the Columbia Hospital in 1915, when his own institution closed. During the World War, he was chief of the surgical section of Advisory Board Number 2 and, having aided in the organization of the Volunteer Medical Service Corps, he served as its chairman. After the War, he spent the greater part of his time in research work. Besides belonging to numerous medical associations, Dr. Brown was a director of the Physicians' Radium Association, and president of the Tri State Medical Society. He was one of the editors of the *Journal of the American Medical Association* and wrote the English version of the *Songs of Hilife* (1904). His various translations include *De Venenis of Albinus*, and *Anatomia of Modinus*.

Brown, William Liston American iron manufacturer, died Nov. 1, 1929, in Pasadena, Calif. He was born in St. Joseph, Mo., Aug. 23, 1842, and was educated in Garden City Academy, Chicago. In 1857 he became clerk in a board of trade commission house in Chicago. After serving in the Civil War with the Chicago Mercantile Battery Light Artillery from 1862 to 1865, he returned to Chicago as bookkeeper in a firm, which in 1883 was reorganized, with Mr. Brown as a partner, under the name Lukens, Brown & Co. In 1890 the firm was organized and became president of the Chicago Shipbuilding Company and in 1899, of the American Shipbuilding Co.

Bruce, John English philanthropist, died in London, Feb. 20, 1929. He was born Henry Campbell Bruce, son of the first Baron of Aberdare, June 19, 1851. After attending Rugby, he prepared for the diplomatic service at Berlin, but retired to the country in 1880, where he interested himself in sports and in various civic activities. On succeeding to the title in 1897, he established his residence at Duffryn, Glamorganshire. Lord Aberdare was an old-time president of the University of Wales and at the time of his death was president of the National Museum of Wales. His second son, Clarence Napier Bruce, succeeded to the title.

Brunner, Sir John English political leader and capitalist, died Jan. 16, 1929, in London. He was born on Jan. 24, 1840, and was educated at Cheltenham, the Polytechnic School of Zurich, and Cambridge. He was a member of the British Parliament from Lancashire, 1906-10, from Cheshire, 1910-18, and from Southport, 1921-24. He was chairman of the Madeley Collieries, Ltd., and Park Hall Colliery, Ltd., and director of the Shrewsbury Colliery Ltd., and of the Oxford and Ship-ton Cement Co. Ltd.

Brush, Charles Francis

Buchner, Edward Franklin American physicist, died in Munich, Germany, Aug. 22, 1929. He was born in Paxton, Ill., Sept. 3, 1868. In 1893 he received the Ph.D. degree from Yale University. He was successively instructor, lecturer, and professor of philosophy, psychology, and pedagogy at Yale and other universities, and after 1908 was professor of education at The Johns Hopkins University, where in 1909 he was made director of the college for teachers. He was a member of the Psychological Bulletin and of the Journal of Educational Psychology (1910-1929).

20), and was editor after 1917, of *The Johns Hopkins University Studies in Education*. He wrote *A Study of Kant's Psychology, with Reference to the Critical Philosophy* (1897).

Buick, David D. American automobile manufacturer, died in poverty, Mar. 6, 1929, in Detroit, Mich. In 1901 he sold a plumbing factory in order to make automobiles. He not only spent all his money but ran into debt before he produced the Buick car, which was put on the market and popularized by others. At the time of his death, Mr. Buick was a clerk in a trade school in Detroit.

Bullard, Arthur (Albert Edwards)

Bulow, Bernhard, Prince von

Burgess, William, American manufacturer and pottery expert, died in Morrisville, Pa., Nov. 20, 1929. He was born Jan. 18, 1857, in Brooklyn, N. Y., and was graduated at Princeton University in 1877, studying later at the College of Physicians and Surgeons in New York. In 1877 he was assistant professor of chemistry at Princeton and in 1877-79 was assistant demonstrator in anatomy at the College of Physicians and Surgeons. He married in 1879 William Burgess & Co., importers of pottery. He was president of the International Pottery Company, Trenton, N. J., from 1879 to 1904, organizer (1902) and president of the Hudson Porcelain Company, American Consulate at Stoke-on-Trent, England, (1890-93), and representative of the pottery industry of the United States and customs administrative matters before the Board of General Appraisers after 1884. In 1921 he was appointed by President Harding to the U. S. Tariff Commission, from which he resigned in 1925, though remaining acting adviser on customs and tariff matters. During the World War, he was department head of the War Industries Board. Just prior to his fatal illness, he was before a Senate Committee investigating lobbying and was accused of perjury by Senator Cawaway of Arkansas. He appeared before the committee in his own defense.

Burney, Admiral of the Fleet Sir Cecil British naval officer, died June 15, 1929, in Ilfracombe, England. He was born May 15, 1858, the son of Captain Charles Burney and was educated at the Royal Naval Academy in Gosport. His first experience in warfare was in Egypt, where he was lieutenant of Oryford in 1882, and in 1884 he was in the Eastern Sudan. He was aide-camp to King Edward VII. in 1906-07. From the rank of rear admiral in 1909, he was steadily advanced through the various commands of vice admiral, second in command of the Grand Fleet, and second sea lord, to admiral of the fleet in 1920, from which he was retired in 1925. After the Battle of Jutland, where he was second in command of the Grand Fleet, he was mentioned in dispatches and was given the G. C. M. G. In 1921 he was made a baronet, a title which passed to his son, Commander Charles Dennistoun Burney, R. N., a designer of airplanes.

Burrows, The Rt. Rev. Winfrid Oldfield, Bishop of Chichester

Burton, Theodore Elihu

Butler, Sir Geoffrey. English conservative member of Parliament, died in London, May 2, 1929. He was born in London, Aug. 15, 1887, and was educated at Cambridge University, with which he was afterward continuously associated. From 1920 he was a paleontologist in diplomatic history there and after 1923 was a conservative member of Parliament, representing Cambridge University. In 1917 he was a member of the Ralston mission to the United States and was director of the British Bureau of Information in the United States during 1917-19. For this service, he was knighted in 1919. Sir Geoffrey was an authority on international law and the author of books on that subject, among them, *Handbook to the League of Nations*.

Butler, Louis Fatio. An American insurance executive, died Oct. 23, 1929, in Hartford, Conn. He was born in Hartford, July 23, 1871, and was educated in the high school there. In 1890 he began work for the Travelers Insurance Company. He was a member of the Assistant Secretary of the company (1904), secretary (1907), vice president (1912), and president (1915). Mr. Butler was also president of the Travelers Indemnity Company and director of the Travelers Fire Insurance Company, affiliated corporations. In addition, he was a director of various banks. He was a member of a committee appointed in 1917 by Secretary of the Treasury McAdoo to report on a plan of insurance for officers and men of the U. S. Army and Navy.

Buzdugan, Gheorghe Rumanian jurist and public official, died Oct. 7, 1929, in Bucharest, Rumania. He was one of the three regents appointed to rule during the minority of King Mihail, who succeeded to the throne of Rumania in 1927 at the death of his grandfather, King Carol I. Buzdugan was previously president of the High Court of Cassation.

Calero, Don Manuel A. Mexican statesman and lawyer, died Aug. 19, 1929, in Vera Cruz, Mexico, at the age of 69. He held a number of offices in the Mexican Gov-

ernment, having served as Under-Secretary of Agriculture, Minister of Justice, and Foreign Minister in several cabinets, and as president of the Chamber of Deputies (1910), Senator (1911), and during 1912-14 as Ambassador to the United States.

Cambridge, Marchioness of See Margaret, Marchioness of Cambridge

Camerlynck, Gustave Henri. French interpreter, died in Paris, Feb. 11, 1929, at the age of 69. Born in French Flanders, he specialized in English at the universities of Lille and Paris. His native English at various provincial schools. He was appointed to the lycée of St. Louis University, Paris, and subsequently lectured on French, German, and English philology at the Sorbonne. During the World War, he served as interpreter with a British artillery regiment. He was the chief interpreter at the Peace Conference, 1919, and he rendered similar service at nearly every important international conference from that time until his death, being at Geneva with the League of Nations, at Paris, Berlin, and London with the Reparations Commission and the Dawes Commission, and at various meetings at Spa, San Remo, Washington, Locarno, Cannes, and Genoa. M. Camerlynck, with Mme Camerlynck, wrote several textbooks on the oral method of teaching French and English.

Canales, Felipe Sub-Secretary of the Mexican Department of the Interior, died Dec. 25, 1929, in Mexico City, at the age of 34. As president of the National Tourist Commission, he encouraged and simplified travel for visitors from the United States.

Candler, Asa G. (riggs). American capitalist, died in Atlanta, Ga., Mar. 12, 1929. Born near Villa Rica, Carroll County, Ga., he worked in a drug store at Cartersville, Ga., 1870-73, and at Atlanta, 1873-78. He then founded a business, which he sold in 1899. He had a large share in the manufacture of Coca-Cola in April, 1888, and although in the first year only 500 gallons were sold, he devoted his time and capital to the undertaking, and on Feb. 22, 1892, organized the Coca-Cola Company, of which he was president. The firm succeeded by his son in 1911. Mr. Candler was active in numerous public affairs, being a founder and president of the Central Bank and Trust Corporation of Atlanta, and president of the board of trustees and chairman of the finance committee of Emory University, to which he donated \$1,000,000.

Capitan, Louis

Carrington, Rupert Clement George, Fourth Baron of Carrington. British soldier and former member of Parliament, died Nov. 11, 1929, in London. He was born Dec. 18, 1852, and was educated at Eton. In 1871 he entered the Grenadier Guards, served in the Zulu War in 1879, and commanded the New South Wales Imperial Bushmen in South Africa in 1901-02, for which he was made a companion of the Distinguished Service Order. From 1880 to 1885, he was a Liberal member of Parliament for Buckinghamshire.

Carmalt, William Henry

Carmen, (William) Blas

Carpenter, Edward

Carrington, Baron of See Carrington, Rupert Clement George

Carrington, John Bennett. American newspaper publisher, died at his birthplace, New Haven, Conn., Jan. 21, 1929. Born Apr. 2, 1849, he attended the old Huesell Military School, and entered the Carrington Publishing Company, owners of the New Haven *Journal Courier*, as a printer. Shortly after the death of his father in 1881, he inherited the business, becoming president, a position which he retained until his death. Mr. Carrington was also a director of the State of Connecticut and the New Haven & Westville Railroad, remaining with the latter concern after it had consolidated as the Connecticut Company.

Carry, Edward Francis. An American manufacturer, died in Chicago, Ill., Apr. 24, 1929. Born in Fort Wayne, Ind., May 16, 1867, he moved to Chicago in 1888 and began his business career as a stenographer at the Wells & French Car Co. When that concern was consolidated with the American Car and Foundry Company in 1890, Mr. Carry was made a district manager in the new firm. Having become first vice president and general manager,

he undertook the presidency of the latter concern.

Car Co. In 1922 the Pullman Company

purchased Mr. Carry's firm and elected him president.

He was also a director of a number of other concerns. During the World War, Mr. Carry did emergency transportation work being vice chairman of the Shipbuilding Labor Adjustment Board, September, 1917, director of the operations of the U. S. Shipping Board, September, 1917-October, 1918, trustee of the Western Pacific Corporation, August, 1918-January 1919, and chairman of the Port and Harbor Facilities Commission of the U. S. Shipping Board, March, 1918-January, 1919.

Carter, Charles David. Former United States Congressman, died in Ardmore, Okla., Apr. 9, 1929. Mr.

Carter, a Chickasaw Indian, was born in Boggy Depot, Indian Territory, Aug. 18, 1858. After attending the Chickasaw Manual Labor Academy at Tahomingo, Ind., he worked on a ranch and as a clerk in a store. He was made auditor of public accounts for the Chickasaw Nation in 1892, and superintendent of schools for Indian Territory in 1894. He became a member of the Chickasaw Council in 1897, and from 1900 to 1904 served as a mining trustee for Indian Territory. Mr. Carter was the first secretary of the Democratic Executive Committee of the proposed State of Oklahoma from June until December, 1906, and after the State's admission to the Union, he represented the Third Oklahoma District in Congress from 1907 to 1927. He joined the fire insurance firm, Curtis & Cannon in 1905, and was a director of the City National Bank of Ardmore.

Case, J. F. An American engineer, died Dec. 14, 1929, in New York City. He was born Sept. 21, 1868, in Wisconsin, and after he was graduated from the University of Wisconsin in 1890, went to Oregon as engineer for the construction of railroads. He served in the Philippines during the Spanish American War, and afterward, in Manila, had a part in the renovation of the harbor and the construction of a drainage system, becoming in 1908 director of public works there. In 1916, as a member of the staff of the American International Corporation, he went to Spain and later reported on the situation there. Later, associated with Ulen & Co., he was in Poland for the construction of waterworks for Athens, and was sent by the League of Nations to report on the transportation system of Poland. In 1927 he became head of the Paris office of Stone & Webster, Inc.

Casey, John J. American Congressman and president of the Pennsylvania Federation of Labor, died in Baltimore, the Canal Zone, May 6, 1929. He was born in Wilkes-Barre Township, Pa., May 26, 1875, and learned the plumbing trade. He was president of the local plumbers' union and international. He was the Journal of Plumbers' Gasfitters' Union of the United States and Canada (1895-1914). In 1907-08 he was a member of the Pennsylvania House of Representatives, and he served as a Democratic Representative in Congress from the 11th Pennsylvania district during 1913-17 and 1919-21, and from the 12th district after 1927. Mr. Casey was Commissioner of Conciliation in the United States Department of Labor in 1917, and a member of the advisory council to the Secretary of Labor in 1918. During 1918-19 he was labor adviser to the industrial relations division and director of the labor adjustment board in the Emergency Fleet Corporation of the United States Shipping Board.

Casady, Mars American horse race starter, died Oct. 19, 1929, in Hollis, N. Y. For 35 years he was known on the race tracks of the United States, directing the starting of horses there as well as in Mexico and Cuba.

Chamberlain, Eugene Tyler American artist and professor of drawing, died in Ithaca, N. Y., July 16, 1929, at the age of 61. He was graduated from Dartmouth College and Cornell University, and studied art at the Art Students' League of New York. For 25 years he was professor of drawing at Cornell University. He was on the board of control of the Art Students' League in New York and was known as an illustrator and cartoonist.

Chamberlain, Henry E. American public official, died Dec. 21, 1929, in Concord, N. H., at the age of 75. He entered politics in 1902, when he became a city clerk of Concord, N. H. In 1919 he retired from that position to become mayor the following year. He was appointed State Treasurer in 1925 and reappointed in 1927 and 1929.

Chermode, Lt. Gen. Sir Herbert Charles British general, died in London Sept. 25, 1929. He was born in Wilton, England, July 31, 1850, and was educated at Eton. In 1868 he entered the army, receiving a commission as lieutenant in the Royal Engineers in 1870. He served in the Russo-Turkish War, 1877-78, in the Egyptian Army, 1884-88, as Governor-General of the Red Sea Littoral, 1884-88, and (Governor of Queensland, 1901-05. He was knighted in 1897 and retired in 1907.

Chickster, Bishop of See Burrows, The Rt. Rev. Winfred Oldfield.

Chinds, Count Suteini

Chirul, Sir Valentine

Chittenden, Frank Thilbut

Chivers, Cedric English public official and book binder, died in Bath, England, Jan. 30, 1929, at the age of 75. Following his father's trade, he established a book-binding factory in Bath. At the request of American librarians he went to the United States in 1904, and in 1907

Chivers Bookbinding Company, Inc., was his time between the English and American concerns. In connection with his work, Mr. Chivers made a thorough inspection of American

libraries. He returned to England in 1924, and devoted himself to politics. A leader in the Liberal party, he was elected Mayor of Bath six times.

Clapp, Moses Edwin

Clark, A. Schuyler An American physician and surgeon, died in New York City, Mar. 22, 1929. He was born July 20, 1874, in New Brunswick, N. J., and was graduated from Rutgers College in 1895 and from the College of Physicians and Surgeons at Columbia in 1899. He was professor of dermatology at the New York Post-Graduate Medical School and Hospital, attending physician at the New York Skin and Cancer Hospital, and consulting physician for several hospitals in New York and New Jersey. During the World War, Dr. Clark was a lieutenant colonel in the Medical Reserve Corps, and was placed in command of U. S. General Hospital 29, at Fort Snelling, Minn.

Clayton, Brig Gen. Sir Gilbert

Clayton, Henry Delamar

Clifford, George

Clifford, Lucy Lane (Mrs. William Kingdon)

Close, Stuart American homoeopathist, died in Brooklyn, N. Y., June 26, 1929. Born in Oakfield, Wis., Nov. 24, 1860, he attended, for a time, the University of Pacific Medical Department, San Francisco, and was graduated from the New York Homoeopathic Medical College in 1885. He then commenced practice in Brooklyn, N. Y., as a consulting physician at Prospect Heights. He was a professor of homoeopathy in 1909, he taught there and at the New York Homoeopathic Medical College in 1913. Dr. Close was one of the founders of the Brooklyn Hahnemannian Union, 1896, and he was at one time president of the International Hahnemannian Association. Besides editing the department of homoeopathic philosophy of *The Homoeopathic Recorder*, Dr. Close wrote *The Genesis of Homoeopathy* and *Lectures and Essays on Homoeopathy* (1931).

Cochran, Alexander Smith American manufacturer, yachtsman and yachting writer, died at Saranac Lake, N. Y., June 19, 1929, at the age of 56. After graduation from Yale University in 1896, he entered Alexander Smith & Sons, a carpet and rug business owned by his family in Yonkers, N. Y. He worked in all branches of the business, beginning with the mechanical and technical side, and accumulating a large fortune, from which he contributed to charity. He gave paintings and tapestries to the Metropolitan Museum of Art in New York City and many rare books to Yale University. He was also a yachtsman, entering his yacht *Yankee* in 1914 against Sir Thomas Lipton's *Namurco* for the America Cup. In 1914-15 he investigated the needs of the people of Belgium. In 1917 he for the United States, entered the World War, he joined the British Navy and was put in command of the steam yacht *Warrior*, which he had given to the British Government.

Cockburn, Sir John Alexander English author and former Prime Minister of South Australia, died in London, Nov. 26, 1929. He was born in Corsbie, N. B., Canada, Aug. 27, 1870, and was educated at R. B. College in London. Moving to South Australia in 1875, he held numerous offices there. He was mayor of James town, a member of the House of Assembly for Burra in 1884 and for Mount Barker in 1887, Minister of Education during 1885-87, Premier and Chief Secretary in 1889-90, Chief Secretary in 1892, and Minister of Education and various international and European congresses. He was the International Commercial Congress in 1899, the Colonial Congress, Paris, 1900, the Festival of the Postal Union, Bern, in 1900, and international congresses of workmen's insurance. Dusseldorf (1902), Vienna (1905), Rome (1908), The Hague (1910). In 1900 he was knighted. He wrote *Australian Federation* (1901), *Builders of Empire*, *Vindication of Verulam Symbolism of Architecture*.

Cole, Maj Gen. Eli Kelley

Coleman, Charles Philip American engineer, and manufacturer died in Washington, D. C., Apr. 13, 1929. Born in Baltimore, Md., Mar. 28, 1865, he was graduated from the engineering school of Lehigh University in 1888. He worked in various positions with the Lehigh Valley Railroad from that time until 1897, when he was made purchasing agent, and assistant to the president of the Bethlehem Steel Company. He returned to the Lehigh Valley Railroad in 1898, as general purchasing agent. While secretary-treasurer for the Singer Sewing Machine Company, 1901-10, he had charge of the construction of the Singer Tower, which was then one of the tallest skyscrapers in America. On leaving the Singer Company, Mr. Coleman served as president of the Maurer Motor Company, 1910, and of the International Motor Company, 1911-13. Being vice president of the International Steam Pump Company when it failed, he acted as receiver, 1914-16. When the firm was organized under the name of the Worthington Pump & Machinery Corporation, 1916, Mr. Coleman

again became vice president, and handled large government contracts during the World War. He was made president in 1918. Mr. Coleman undertook the presidency and active direction of the Mount Hope Bridge Company in 1927, and was supervising the construction of the bridge at the time of his death. He was also president of the Sandusky Bay Bridge Company, the Worthington Company, Inc., and Henry E. Worthington, and a director of The Foundation Company, Worthington Simpson, Ltd., and Anderson, Meyer & Company. He belonged to the American Society of Mechanical Engineers and the American-Russian Chamber of Commerce.

Conecha, José Vicente. A statesman of the Republic of Colombia, died in Rome, Italy, Dec. 8, 1929. He was born Apr. 21, 1867, in Bogotá, Colombia, and was graduated in law and political science from the National University there. Later he was professor of law at the National University. During his long political career in Colombia, he held judicial, executive, legislative, and diplomatic positions. He was Attorney-General, Minister of War, Minister of Government, and Minister of Foreign Relations for Colombia. In 1902 he went as Minister to the United States and later to France. From 1914 to 1918, he was President of the Republic of Colombia, and from 1919 to the time of his death, Ambassador to the Vatican. He founded a newspaper, *El Día*, and his legal treatises are used as textbooks in Colombia.

Cone, Clariel. American pathologist and art collector, died in Lausanne, Switzerland, Sept. 20, 1929. She was born in Tennessee and studied at the Women's Medical College in Baltimore, Md., and at the University of Pennsylvania. She became a resident physician in a Philadelphia hospital, but returned to Baltimore to be professor of pathology at the Women's Medical College. She did research work in Baltimore, and also in Germany and at the Pasteur Institute in Paris. Dr. Cone was a collector of modern French paintings, a feminist leader, and a member of the Equal Suffrage League.

Conners, William James

Copper, Henry Ernest

Cornell, George Bird-sall. American civil and mechanical engineer, died Mar. 14, 1929, in New York City at the age of 74. He was graduated from the Columbia College School of Mines in 1877 and became successively assistant engineer on the Brooklyn Elevated Railway, assistant engineer with the New York, Chicago & St. Louis Railway, and locating engineer for the Rochester & Pittsburgh Railway. He was also in the bridge department of the West Shore & Buffalo Railway. Returning to the Brooklyn Elevated Railway, he became chief engineer. Under his direction, the first elevated trains to cross Brooklyn Bridge were installed during 1895-98. He was an adviser to the New York Edison Electric Company, and was a consultant for various utility corporations. In 1927 he retired.

Cort, John. American theatrical producer and manager, died Nov. 18, 1929, in Larchmont, N. Y., at the age of 69. At 17 he and another young man made a vaudeville tour billed as Cort and Murray. In 1884, in the West Mt. Cort built the first of the vaudeville circuits. Selling this circuit, he operated the Imperial Music Hall in Chicago. Later he became head of the Northwestern Theatrical Circuit, at one time controlling 150 theatres. In 1905 he came to New York and began the production of musical plays, which included *The Princess Fae*, *Flo-Flo*, *Shuffle Along*, and *Chorus Line*. The Cort Theatre was opened in New York in 1913 with Laurette Taylor in *Peg O' My Heart*. He was also connected as owner or operator with the Park Theatre (later the Cosmopolitan), the Frazee (later Wallace's), the Opera House, the Standard, and Daly's.

Courtieline, Georges (Georges Moineau). French humorist and author, died in Paris, June 25, 1929. He was born in Tours, France, June 25, 1860, the son of Jules Moineau, a humorist, and was educated at the College of Mieux. As a young man, he went to Paris where he was a time a waiter in a restaurant. He then entered military service, which he found irksome. A weekly newspaper, *Paris Moderne*, founded by him in 1881, existed two years. After several years in newspaper work, he began writing the humorous sketches, novels, and plays, for which he was famous. Among his works are *Les gâtés de l'acadron* (1886), *Le Train d'8 1/2* (1888), *Meilleurs les ronds de cuir* (1893), *Boulevardier* (1893), *La pau, chez soi* (1895), *La conception d'Alcide* (1905). He was a Commander of the Legion of Honor, and in 1927 was elected to the Académie Goncourt.

Cowan, John Francis. An American surgeon and professor, died Mar. 17, 1929, in Los Angeles, Calif. He was born in Lansing, Mich., Nov. 30, 1879, and was graduated in 1902 from Stanford University, where he received the M.D. degree from Cornell in 1910. He was acting instructor in physiology at Stanford, and in 1909-10 at the medical college of Cornell University. He was an interne at the New York Hospital (1910-12)

and resident surgeon (1912-13). Returning to Stanford, he was promoted to instructor in physiology and surgery. He was also surgeon at the Lane Hospital in San Francisco. He was lieutenant surgeon with the U. S. Naval Reserves. He wrote many articles on surgery for journals of the profession and, with Leonard A. Ely, *Bone and Joint Studies* (1916).

Cowin, Col. William Benton. American army officer, died in New Orleans, La., Oct. 3, 1929. He was born in Ohio, Jan. 27, 1874, and was appointed from Nebraska. He was a veteran of the Philippine Insurrection, and was with the American forces sent to the relief of Peking during the Boxer Rebellion, and the Pershing Expeditionary Force in Mexico in 1916. He was lieutenant-colonel of Infantry in the National Army, and in the last year of the World War, 1918, became colonel of infantry. He was assigned to the Quartermaster Corps in 1919-20, and again in 1923. For two years before his death, he was commanding officer of the New Orleans Supply Base. Colonel Cowin was cited in order of the War Department of the American Expeditionary Forces.

Cowles, Alfred Hutchinson. American engineer, died in Newarun, N. J., Aug. 13, 1929. He was born in Cleveland, Ohio, Dec. 8, 1858, and educated at Ohio State and Cornell universities. With his brother, Eugene H., he was a pioneer in electric smelting, being the first to reduce silica lime and alumina directly in the electric furnace, thus producing aluminum cheaply. In order to develop this process, Cowles and his brother, in 1885, organized the Electric Smelting & Aluminum Co., of which he was president after 1895. He was awarded the Elliott, Cresson and John Scott Legacy medals by the Franklin Institute in 1886 and the gold medal of the Paris Exposition in 1889.

Creelman, George Christie. Canadian agriculturist, died Apr. 18, 1929, in Beamsville, Ontario. He was born in Collingwood, Ont., May 9, 1869, and was educated at the Collingwood Collegiate Institute, the Ontario Agricultural College at Guelph, and the University of Toronto, from which he was graduated in 1888. He later studied at Cornell University, the University of Wisconsin, and the Michigan Agricultural College. In 1889 he became assistant professor and in 1893 professor of biology at the Mississippi Agricultural College. From 1901 to 1920 he was president of the Ontario Agricultural College in Guelph, and for the latter part of that time was also Commissioner of Agriculture in Ontario. He became agent general for Ontario in London in 1920, but returned to Canada after two years because of ill health. After serving for a short time as head of the Canadian Colonization Association and of the Soldiers' Settlement Board, he retired in 1922.

Crittenden, Frances. N. American Young Women's Christian Association executive, died Sept. 15, 1929, in New York City. She was born in Clinton, Mich., in 1875. She began her work with the Y. W. C. A. in 1907, as an educational secretary in Omaha, Neb., and became general secretary of the Y. W. C. A. in Minneapolis, Minn., and then head of city secretaries for the Central States, with headquarters in Chicago. In 1922 she went to New York City to assist in organizing the Y. W. C. A. National Retirement Fund, of which she became executive secretary in 1925.

Crosse, William Michael. American naval officer, died in San Diego, Calif., Apr. 4, 1929. Born in Green castle, Ind., Feb. 8, 1867, he attended DePauw University, 1882-84, and was graduated from the United States Naval Academy in 1886. He served on the *Wheeling* during the Spanish American War, 1898, and on Mar. 3, 1899, was commissioned lieutenant. Rising through the successive grades, he was major commander, Oct. 15, 1909, and the following year was appointed Governor of American Samoa and commander of the naval station there. Returning to the United States in 1913, he was assigned to the Navy Department at Washington, and later in the year was made captain of the Navy Yard, Mare Island. Commissioned captain July 1, 1914, he commanded the *Albatross* from 1915-16 and the *North Dakota* 1916. Toward the close of the World War, Captain Crosse was placed in charge of the Naval Training Station, Hampton Roads, Va., and on Dec. 20, 1920, was given command of the naval base at Cavite, P. I. He retired Feb. 8, 1923. Captain Crosse was awarded the Philippine Campaign Medal, the Spanish and World War medals, and the Navy Cross.

Cross The Rev. Dr. George. American Baptist clergyman and educator, died in Rochester, N. Y., Jan. 19, 1929. Born in Rudwell, Ont., Canada, Sept. 21, 1862, he attended Woodstock College, 1883-85. Ordained into the Baptist ministry in 1888, he served as pastor at Onondaga, Ont., 1887-89, Calgary, Alta., 1889-92, Carleton Place, Ont., 1894-97, and Avon, Ont., 1898-1901. He was then appointed professor of history at McMaster University and in 1909 transferred to the Newton Theological Institution, where he remained until assigned to a similar position at the Rochester Theological Seminary in 1912, teaching in that capacity

until his death. Dr. Cross also lectured at the summer sessions of the University of Chicago, and in 1918 was the Nathaniel W. Taylor lecturer at Yale. He received the A.B. degree from the University of Toronto in 1888 and the B.Th. degree from McMaster University in 1891, the A.M. degree in 1895, and the D.D. degree in 1907, and the Ph.D. degree from the University of Chicago in 1900. Besides contributing to magazines and encyclopedias, Dr. Cross wrote *The Theology of Schleiermacher* (1911), *What is Christianity?* (1918), *Creative Christianity* (1922), and *Christian Salvation* (1925).

Csewones, Count A. Hungarian royalist, died Feb. 22, 1929, in Budapest. He was a leader in the movement to restore the throne to Archduke Otto, the pretender.

Culin, (Robert) Stewart

Curtis, Fayette N. An American railroad official, died in Boston, Mass., Feb. 15, 1929. Born in Oswego, N. Y., Dec. 16, 1841; he at first worked with the Albany & Schuylkill Railroad Co. in 1862, and later was with the New York & Hudson River Railroad Co. Appointed chief engineer of the New York, New Haven & Hartford Railroad Co. in 1886, he became vice president in 1900. He resigned in 1907 to become president of the Old Colony Railroad Company, a post which he held until his death. Mr. Curtis also served as chairman of the board of trustees of the Boston Terminal Company, and as president of the Union Freight Railroad Company.

Curtis, Ralph Hamilton

Curzon, Richard George Penn, Earl of Howe. An English member of Parliament, died in Mayfair, Jan. 10, 1929. Born Aug. 28, 1851, he attended Christ Church, Oxford. As a Conservative, he represented the Southern Division of Buckinghamshire in Parliament, 1885-1900, being also treasurer of Her Majesty's Household 1890-1900. He served as Lord in Waiting to Queen Victoria, 1900-01, and to King Albert, 1901-03, and was Lord Chamberlain to Queen Alexandra from 1901 until his death in 1929. Earl Howe was a member of the Royal Commission for the St. Louis Exposition 1904. In 1914-15, he was honorary treasurer of the Allied Forces. He received numerous decorations, including the Grand Cross of the Royal Orders of the Savior, Greece, the White Eagle of Poland, the Dannebrog of Denmark, the Star of the North of the King of Sweden, and of Charles Third of Spain, also of the Order of the Red Eagle of Prussia, and became Grand Officer of the French Legion of Honor and of the Royal Victorian Chain, 1925. Earl Howe was succeeded by his son, Viscount Francis Richard Henry Penn Curzon.

Cusack Smith, Sir Barry

Cust, Sir Lionel

Da Costa, Marshal Manoel de Oliveira Gomes. A Portuguese soldier and statesman, and for a short time dictator of Portugal, died Dec. 17, 1929. He was born in Lisbon, Portugal, in 1868. In 1899 he served in India as a staff officer, and in 1909 he directed successful campaigns in East Africa. He commanded the 1st and later the 2d Portuguese Divisions during the World War. He joined with General Carmona and Commandant Cabecadas in a bloodless revolution against Portugal's existing form of parliamentary government in May, 1926, and in the cabinet then formed Marshal da Costa was War Minister. There was disagreement within the triumvirate and he emerged as chief of the State. In July of 1926, General Carmona, who had been dismissed from the Foreign Ministry, caused da Costa's arrest and exile. Da Costa returned in 1927 only to be ordered again to leave the country in 1928. He went to live for a short time in Rome, after which he was allowed once more to go to Portugal.

Dagnan-Bouveret, Pascal Adolphe Jean

Dana, John Cotton

Dannat, William T. (urner)

Duby, Edwin Tyler. American dentist and college professor, died Dec. 11, 1929, in Lansdowne, Pa. He was born in N. Y., Aug. 21, 1848, and was graduated from the University of Dental Surgery in 1865. He was professor of operative dentistry in the Pennsylvania College of Dental Surgery during 1876-78, and professor of operative dentistry and dental histology at the University of Pennsylvania from 1878 until 1919, when he became professor emeritus. In 1923 Dr. Darby retired, after a practice of 60 years.

Davidson, Hon. Sir Charles Peers.

Davis, William Horace. American statistician, died in N. Y., Jan. 8, 1929. Born in Holyoke, Mass., Jan. 21, 1871, he attended Amherst, 1889-90, and was graduated from Harvard in 1895, and from the medical school in 1897, continuing his studies in Vienna in 1899. Before going to Europe, Dr. Davis had been the surgeon house officer at the Massachusetts General Hospital, and on his return in 1900, he practiced in Boston until 1916. Having also supervised the vital statistics of the Boston Health Department, 1908-

16, he was appointed chief statistician for vital statistics of the U. S. Census Bureau on Sept. 16, 1916, a position which he retained until his death.

Dawkins, Sir William Boyd

Deady, Charles. American physician and educator, died May 6, 1929, in New York City. He was born in New York, Aug. 27, 1850, and was educated in a high school there, later studying medicine. In 1876-78 he was a visiting physician at the College Dispensary in New York and at the same time assistant surgeon in the New York Ophthalmic Hospital. In 1880 he became a lecturer in the college of the New York Ophthalmic Hospital, and he was professor of ophthalmology and secretary of the faculty for six years, until for 21 years, and director and surgeon of the hospital for five years. He was also professor of otology in the Homeopathic Medical College and Hospital in New York for 13 years; he edited the *Journal of Ophthalmology, Otolaryngology*. He was the author of numerous articles on the eye and ear.

Dean, Arthur Walsley. English agriculturalist and member of Parliament, died in London, Feb. 7, 1929. Born in 1857, he attended Trent College, Derbyshire. He farmed on a large scale, exporting sheep to Argentina. Entering politics as a Conservative, Mr. Dean served on the Kesteven County Council and was elected an alderman. He entered national politics in 1906, and in 1918 defeated the Rt. Hon. Herbert H. Asquith in the Eastern Fife, which the Liberal had represented in Parliament for 32 years. Mr. Dean returned to the House of Commons from the Holland and Boston division of Lincolnshire in 1924, the first Conservative to defeat a member of the Labor party there.

Deems, Edward Mark. American lawyer and trade

author, died in Washington, D. C., Feb. 1, 1929. Born in Goshen, Elkhart County, Ind., Apr. 10, 1858. He attended Earlham College, Richmond, Ind., and Northwestern University, Evanston, Ill., and was admitted to the Indiana bar in 1880. Moving to Chicago in 1888, he practiced law and became associated with various municipal and commercial activities. He was made president of the Windermere Company, vice president of the Civic Federation, 1912-14, director of the Chicago Legal Aid Society, 1912-13, and president of the Chicago Association of Commerce, 1914. He became vice president of the U. S. Chamber of Commerce the following year and chairman of the executive committee, 1918-19. In 1920 he was elected president of the organization. Resigning in 1921, he took part in the President's Conference on Unemployment in that year and was appointed by President Harding to the United States section of the Inter-American High Commission of the First Pan American Financial Congress, 1921-22. Besides belonging to numerous legal and commercial societies, Mr. Deffres was vice president of the Illinois State Bar Association in 1910, and president of the Chicago Bar Association, 1909-11. He was made a chevalier of the French Legion of Honor.

Delacroix, Leon. Belgian statesman, died suddenly Oct. 15, 1929, at the age of 62, in Baden-Baden, Germany, where he was attending the conference for organization of the Bank for International Settlements. Until 1914 he was a lawyer, but after the World War he was an active participant in public affairs. At the request of King Albert, he formed a national union government composed of the three principal parties of Belgium, and served as premier for two years. After resigning from the premiership, he became Belgian member of the Reparations Commission. In 1920, as a member of the Brussels International Financial Conference, he presented the first concrete plan for the organization of an international clearing house for commercial exchanges. For his work with Lloyd George in an effort to adjust the French and English differences after the reparations settlement, he was decorated by King George with the Grand Cross of the Order of the Bath.

Delhrick, Hans.

Denby, Edwin

Denison Pender, Sir John. Denison See Pender, Sir John Denison Denison

Devereux, William. American public official and lawyer, died in Chicago, Ill., Sept. 3, 1929. He was born Mar. 13, 1862, in Woburn, Mass., and received his legal training at the Chicago College of Law and Northwestern University. He was first with his father in the leather manufacturing business at Woburn, 1881-

84 In 1890 he began the practice of law in Chicago. He was five times elected alderman of the seventeenth ward of Chicago, 1905-10, was judge of the superior court of Cook Co., Ill., 1910-16, and justice of the Illinois Appellate Court, 1916-23. From 1923 to 1927, he was mayor of Chicago, attracting national attention by his war on crime in that city. After 1927 he was vice president and trust officer of the Bank of America in Chicago.

Devrient (devr'yan), Max An Austro-German actor, died June 14, 1929, in Chur, Switzerland. He was born in Hanover, Germany, Dec. 12, 1857, was educated at the Royal Conservatory in Berlin, and studied dramatics with Heinrich Oberlander. His first appearance was in the Dresden Theater in 1878 as Ericson in *The Maid of Orleans*. In 1881 he appeared in the Ring-theater at Vienna. He signed a life contract with the Burgtheater in Vienna, and in 1920 became chief administrator of this theatre. His principal roles were Philipp II, Gessler, Talbot, etc. He was married to Alha Petrichow, and Rockness in Sudemann. He was a member of the Imperial German Academy of Sciences.

Dubois, Roy Floyd An American biographer and educator, died in New York City, Dec. 3, 1929. He was born May 12, 1887, in Portland, N. Y., and was graduated from Clark College in 1912, receiving the Ph.D. degree from Columbia University in 1921. In 1916 he became an instructor in English at Columbia University, and after 1925 taught extension courses there and was assistant professor of English at Hunter College. His last illness was realistic in treatment. He was married to Alice W. Tour (1912), *Strenuous Americans* (1923), *John L. Sullivan* (1925), *Mohammed* (1928), *Martin Luther* (1928), *Charles H. H. An American music publisher, died in New York City, Dec. 1, 1929. He was born in Boston in 1845. In 1865 he entered the publishing house of Oliver Ditson, of Boston, founded by his father in 1815, and two years later came to New York as manager of the branch, which after a few years became an independent firm as Charles H. Ditson & Co. On the death of his father in 1898, he became sole owner of the Boston house, and in 1907, president. In 1886 he founded *The American*, a monthly musical journal.*

Dodd, Anna Bowman (Mrs. Edward William) An American author, died in New York City, Dec. 29, 1929. She was born in 1855 in New York. She wrote for the *Tribune* and the *Evening Post*, but in the early twenties she moved to Paris. She wrote for the most part on French historical and political subjects. Her first successful book was *In and Out of Three Normandy Inns* (1892). She also wrote *Cathedral Days: A Tour in Southern England* (1897), *The American Husband in Paris* (1901), *In the Palace of the Sultan in Paris*, *In and Out of a French Country House* (1910), *Heroin France* (1915), *Up the Seine to the Battlefields* (1920), *Talleyrand and the Training of a Statesman, 1754-1834* (1927). For her services during the World War, she was decorated by the French Government.

Donnelley, Reuben P. An American publisher, died in Chicago, Ill., Feb. 1, 1929. He was born in Ontario, Canada, in 1864, he attended the University of Chicago. Joining the Chicago Stock Exchange, he became president of a financial company, later becoming a partner of Knight Donnelley & Co., members of the New York Stock Exchange. After his brokerage firm failed, June 16, 1905, Mr. Donnelley returned to Chicago and entered the publishing business, in which his father was engaged. He was vice president of R. R. Donnelley & Sons Co., and of the Reuben H. Donnelley Corporation, printers of the telephone Red Book, positions which he held until his death. He was elected president of the Associated Advertising Clubs of America in 1920. During the "Thousand" (1914-15) was an American cartoonist, died May 2, 1929. He spent his boyhood in San Francisco, Calif., and attended the schools there. He began his work in the art department of the San Francisco Bulletin, becoming chief artist in 1897. In 1903 he went to New York as political cartoonist for the New York Journal. He was best known, however, for his sports cartoons, especially for his drawings of pugilists.

Duke, Rear Admiral Franklin Jeremiah American naval officer, died in Washington, D. C., Jan. 30, 1929. Born in Yates, N. Y., Mar. 4, 1846, he was graduated from the United States Military Academy in 1868. Entering the Navy, he was successively promoted, until he retired with the rank of rear admiral, Dec. 10, 1906. After serving at various posts, he was commissioned inspector of torpedo boats, 1888, and inspector of ordnance, 1892-95. He next did special duty at the Chicago World's Fair, 1893, and in the same year was made commandant of the Boston Navy Yard, serving until 1894. He was executive officer of the Oregon, 1896, and he commanded the Navy Yard at Mare Island until 1900. He then commanded the *Culson*, 1900-01, and was in charge of the naval station at Cavite, 1901-03, returning to his former post at Mare Island, 1903-05. His final commission was that of commander of the *Wacon-*

son, from which he retired in 1906. Admiral Drake served as technical expert at the Hague Tribunal, 1913-15, and in the operations division of the Navy, 1918-20.

Dubois, Cardinal Louis Ernest Duffield, Walter Geoffrey Duke, Benjamin Newton

Duncan, John Hemmingway An American architect died Oct. 18, 1929, at Highland Beach, N. J., at the age of 76. He designed the tomb of General Grant on Riverside Drive in New York City. His work includes the Brooklyn Arch at the entrance of Prospect Park in Brooklyn, N. Y., the Trenton Battle Monument at Trenton, N. J., and buildings and civic groups in Havana and Cuba. He was a member of the American Institute of Architects and the Architectural League.

Dundas, Lawrence, First Marquess of Zetland An English statesman and sportsman, died Mar. 11, 1929, in Yorkshire. He was born Aug. 16, 1844, and was educated at Harrow and Trinity College, Cambridge University. In 1872-73 he was a member of Parliament for Richmond, Yorkshire. He was Lord in Waiting to Queen Victoria in 1880 and, from 1889 to 1892, he served as Viceroy of Ireland. In 1895-06 he was mayor of Richmond. Lord Zetland succeeded to the earldom of Zetland at the death of his uncle in 1873. He was created in 1892 Marquess of Zetland and Earl of Ronaldshay, Orkney and Shetland. In 1900 he was created a Knight of the Order of the Thistle. He was a retired lieutenant of the Royal Horse Guards, and, after 1894, an honorary colonel of the 1st Western Division of the Royal Artillery. Lord Zetland was well known as a sportsman and race-horse owner.

Dunne, The Rt. Rev. Edmund M. American bishop of the Roman Catholic Church died Oct. 17, 1929, in Peoria, Ill. He was born in Chicago, Ill., Feb. 2, 1864, and was educated at St. Ignace College in Chicago and at Niagara University. He also studied abroad at the Seminaire de Fieffe and Louvain University in Belgium and the Gregorian University in Rome. In 1887 he was ordained a priest of the Roman Catholic Church. He was first assistant pastor of St. Columbkille's Parish in Chicago, 1890-98. In 1898 he founded the Italian parish, the Guardian Angel in Chicago, and while there, 1898-05, built a church and rectory. He was appointed chancellor of the Chicago archdiocese in 1905 and in 1909 was appointed and consecrated Bishop of Peoria, Ill.

Dunning, Carrie Louke An American pianist died in New York, Sept. 8, 1929. She was born in Mount Morris, N. Y., in 1860, and studied with William Mason in New York and with Leschitzky in Vienna. While teaching her own children, she developed an original system, which gradually spread and became widely known as the Dunning System. At the time of her death, more than 3000 teachers in the United States and Canada had adopted the new method.

Dunville, Laet Col John British sportsman died in London, June 10, 1929. Born in Redburn, County Down, Ireland, in 1866, he was political private secretary to the Eighth Duke of Devonshire, 1890-1908, and was a sportsman for years, being master of the Cam bridge 1886-87, and master of the Meath hounds, 1911-12. His hobby was ballooning.

Duquesne, Eugene Joseph Almand French architect, died in Paris, in October, 1929, at the age of 61. Before going to the United States as professor of architectural design at Harvard University, Professor Duquesne was in charge of architectural work for the French government. He supervised the reconstruction work at Versailles in 1908. In 1914 he resigned his professorship at Harvard University and returned to France to give his services to the government during the World War. He received the Grand Prix de Rome from the Institute des France in 1897.

Durand, Henry Strong American physician, died in Paris, France, May 8, 1929, at the age of 67. He was born in Cincinnati, Ohio, and was graduated from Yale University in 1881. While in college he wrote the well-known Yale song, *Bright College Years*. He studied medicine at Yale and Harvard universities, and after serving as interne in the Massachusetts General Hospital, began practice in Rochester, N. Y. In 1891 there until 1898, during which time he invented a surgical bandage machine. With George Eastman, American camera manufacturer, he planned and gave to the city of Rochester the extensive Durand Eastman Park.

Durham, Earl of See Lambton, Frederick William Durston, John Hurst An American editor, died in Anacosta, Mont., Nov. 5, 1929. He was born Feb. 19, 1842, in Syracuse, N. Y., and was educated at Yale University, the University of Heidelberg, where he received the Ph.D. degree, and in Paris. He was instructor, then professor in Syracuse University, 1871-78, and edited the *Syracuse Standard* (1846-77), the *Anacosta (Mont.) Standard* (1889-1913), and the *Butte Daily Post* after 1913. He was the dean of newspapermen in

Montana, and the oldest active member of the Associated Press in point of service, his work covering a period of 50 years.

Dwight, Edward Harris Coy) An American actress, died in New York City, Oct. 3, 1929. She was born in Kansas City, Mo., June 26, 1884, and was educated in the public schools there. She first appeared on the stage at the age of 7 as *Puck* in *Middlemarch Night's Dream*, and she made her New York debut in *Jumping Jupiter* at the New York Theatre in 1911. It was as the creator of Sadie Thompson in the play *Rain* that she was best known.

Earl John Arthur, an American Baptist clergyman and editor, died May 15, 1929. Born in Bathurst, Scotland, May 6, 1866, he went to the United States in 1883, and was graduated from Des Moines College in 1892, later attending Rochester Theological Seminary. He was ordained in the Baptist ministry in 1887, serving as pastor in Guthrie Center, Iowa (1887-89), in Pilot Mound, Iowa (1890-91), in Greece, N. Y. (1892-95), in Waterloo, Iowa (1895-1906), and in Chicago (1906-11). He became president of Des Moines College in 1911, but returned in 1921 to the active ministry, being pastor in St. Paul, Minn., from 1921 to 1923. In the latter year he became editor of *The Baptist*.

Eddinger, Rear Admiral Edward Walter, died in Pittsburgh, Pa., Jan. 8, 1929. Born in Albany, N. Y., July 14, 1881, he appeared on the stage at an early age and was the first to play the part of Little Lord Fauntleroy, in 1888. Although he continued in numerous other roles, Mr. Eddinger attended the Columbia and the Hamilton institutes in New York City, and entered Columbia University with the intention of becoming a mining engineer. He returned to the stage, however, and repeated his early success, in such plays as *Officer 666* (1913), *Seven Keys to Baldpate* (1915), *Captain Applejack* (1922), and *And so to Bed* (1928).

Edinburgh, Bishop of See Walpole, The Rt. Rev. George Henry Somerset, died in London, England, Jan. 1, 1929.

Edwards, Albert See Bullard, Arthur Elmdorff, Dwight Lathrop, American lecturer, died in New York City, May 6, 1929. He was born in Brooklyn, N. Y., Mar. 13, 1859, and was educated at Princeton. For 15 years he was a teacher of the deaf and after 1897, was a lecturer. He traveled widely in Africa, Asia, and Europe. Having an interest in photography, he went to Cuba during the Spanish American War, where he took many pictures of Theodore Roosevelt and the Rough Riders. He wrote *Lantern Slides How to Make and Color Them* (1894), *A Camera Grande* (1912).

Elverson, James A., an American newspaper publisher, died Jan. 21, 1929, in Philadelphia, Pa., where he was born in 1869. He attended schools in America, Paris, and Berlin. Returning to the United States, he solicited advertising for his father's paper, the *Philadelphia Inquirer*. He later worked in various positions, acquiring an intimate knowledge of the details of publishing before he assumed the position of president of the paper at his father's death in 1911. Mr. Elverson encouraged the building of the \$15,000,000 Art Museum in Philadelphia in 1928. Always affiliated with the Republican party, he was particularly influential in his support of Herbert Hoover's presidential campaign. He served as lieutenant colonel on the staffs of Governors Daniel H. Hastings, William A. Stone, Edwin S. Stuart, and John K. Tener.

Eschtruth, Mathilde von, a German writer of popular books, died Feb. 1, 1929. Her works, chiefly of a religious nature, were published under the pseudonym Mathilde von Eschen. They include *Mädchenheute* (1899), *Auf der Wege nach Erkenntnis* (1902), *Frühling, Blumen spiel für Kinder, Parabel und Faust, eine Studie*.

Eustis, John Edward, an American lawyer, died in New York, June 21, 1929. Born in Jameck, N. Y., Jan. 17, 1847, he served in Company M of the 20th New York Cavalry during the Civil War, 1864-65, after which he attended Wesleyan University, Middletown, Conn., graduating in 1874. Three years later he was graduated from the Dwight Law School, New York, and on being admitted to the bar, commenced a practice in New York which he continued until his death. Mr. Eustis was also secretary director of the Babcock and Wilcox Company, and the Pelham Rod Elevating Company, and director of the Manhattan Mortgage Company. Active in public affairs, he served as school trustee of the twenty-fourth ward of New York (1882-85), school inspector (1895-96), school commissioner (1896-99), park commissioner of Bronx Borough (1902-04), and public service commissioner of the first district of New York (1907-14). Mr. Eustis was trustee of the New York Skin and Cancer Hospital and of Wesleyan University.

Faber, Leslie English actor, died in London, Aug. 5, 1929. He was born in Newcastle on Tyne, Aug. 30, 1879, and was educated abroad. He first appeared on the stage in 1898 as a member of the F. R. Benson's Company,

and he made his first London appearance with this company in 1900 at the Lyceum Theatre, when he played the Duke of Westmoreland in *King Henry V*. He went to New York in 1906, appearing at the Hudson Theatre in *The Hypocrites*. Except for the World War period, a part of which he spent as a prisoner, he played alternately in the United States and in England for the remainder of his life.

Faelsch, Ernst P., a German diplomat and consular official, died in Dresden, Sept. 9, 1929. He was born in Hohenstein Br., July 18, 1859, and in 1893 entered the German consular service. After serving the Foreign Office in Berlin, he went as acting consul to Madrid. He served as consul in Montreal, Havana, Rio de Janeiro, Paris, Athens, Barcelona, and in New York. At the time of his retirement in 1924, he was Minister to Venezuela. In 1928 he published *Before America's Entry into the World War*, an attack upon German methods of propaganda during the War.

Fant, John Clayton, an American college president, died Nov. 8, 1929, in Columbus, Miss. He was born near Macon, Miss., Jan. 15, 1870, and was graduated from Emory and Henry College in 1889, studying later at the University of Mississippi and at New York University. He was principal of schools in Newton, Miss. (1889-93), superintendent of schools in Water Valley, Miss. (1893-96), and in Meridian, Miss. (1896-1910). From 1910 to 1929, he was professor of secondary education for Mississippi and at the same time dean of the school of education at the University of Mississippi. In 1920 he became president of the Mississippi State College. With Mrs. Fant, he wrote *Fant's History of Mississippi*.

Farnam, William Whitman, a former treasurer of Yale University, died June 28, 1929, in New Haven, Conn., where he was born April 6, 1814. He was graduated from Yale in 1836, received the J. D. degree from the University in 1868, and the LL. B. degree from the University in 1871. He served as fellow of the Yale corporation (1885-89) and as treasurer (1888-99). He was a member of the New Haven park commission from 1880 until 1914.

Farnum, Dustin Pasquhar, John Nicol Faulkner, Charles James, an American lawyer and former United States Senator, died Jan. 13, 1929, near Martinsburg, W. Va., where he was born Sept. 21, 1847. He was educated in England and Switzerland, and returning to the United States, entered the Virginia Military Institute in 1862. Being at the academy during the Civil War, he served with the Cadet Corps in the Battle of New Market, he later became a general in the Confederate Army. Graduated from the University of Virginia in 1868, he was admitted to the bar in the same year, and practiced in Martinsburg until 1880, when he was appointed judge of the thirteenth judicial circuit of West Virginia. Elected to the United States Senate, he took office in 1887, and served until 1899, being active in the successful struggle against the Force Bill, intended to give voting rights to Southern Negroes. He also participated in the British American Joint High Commission (1898). Besides being a permanent chairman of the Democratic State Commission (1888-92), Senator Faulkner was chairman of the Democratic Congressional Committee in 1894, 1896, and 1898.

Fauntleroy, Lieut. Col. John Champion, British sportsman, died in Lucknow, India, Dec. 4, 1929. He was born May 30, 1872, and was educated at Russell School and Balliol College, Oxford. He joined the Indian Civil Service in 1892 and at the opening of the World War entered the British Army, where he served as lieutenant colonel and general staff officer of the Second Intelligence Staff in 1917. In 1918 he went to the United States on a war mission, and he returned as a member of the British Embassy in Washington (1919-20). He became a commissioner for the Indian Division, India, in 1920, but retired in 1925 to give all his time to game hunting. His trophies included many rare Asiatic mammals. The American Museum of Natural History contains many of his specimens, and, because of the expedition made to India in 1923 by him and Arthur S. Vernay, the Museum has collected one of the most complete exhibits of Asiatic fauna in the world. Colonel Fauntleroy was decorated by the Government of India for his war services. He was made aide de camp to the King in 1923.

Fawcett, Thomas Muniment, English leader of the woman suffrage movement, died Aug. 5, 1929. She was born June 11, 1847, in Aldbrough, Suffolk, England. She was always allied with women's causes, beginning when, as the wife of Henry Fawcett, a Cambridge professor, she aided him in his efforts to extend university education to women. With her sister, she was also associated with the movement to open the medical profession to women. The work for which she is chiefly known, however, is the political enfranchisement of women. She wrote and lectured for the cause and was recognized as one of its most important, if conservative, leaders. In addition to books on political economy and woman suf-

fringe, she wrote several biographies, mostly of women, and an autobiography, *What I Remember* (1924). In 1925 she was created a Dame of the Order of the British Empire.

Ferran, Jaime A Spanish bacteriologist, died Nov 22, 1929, in Barcelona, at the age of 77. For many years he worked to develop a serum against typhoid and tuberculosis. His anti-cholera serum brought him wide

Fine, R. A American engineer, died in Buffalo, N. Y. 1929. He was born on a farm near Springfield, N. Y., and remained there until he was 20, part of the time teaching in a rural school. After working as a surveyor for the Erie Railroad, he turned to bridge building. He was a member of the Union Bridge Company, which, before its sale to the American Bridge Company in 1900, constructed the cantilever bridge over the Hudson at Poughkeepsie and the Hawkensbury Bridge in Australia. He was connected with the Guggenheim Exploration Corporation, he was engaged in the exploration and development of copper mines in Chile.

Finch, John Burghard American preparatory school head master, died July 24, 1929, in Princeton, N. J. at the age of 46. He was born near New York City, and was the principal of the Princeton Preparatory School and remained there until retirement in 1928. He was the brother of the late Henry Burghard Finch, dean of the department of science, Princeton University.

Finlay, Robert Bannatyne, Viscount of Nairn. Finnegan, The Rev. Hugh American chaplain, died in Milwaukee, Wis., Nov. 26, 1929. He was for 20 years chaplain of Marquette University and for 13 years a missionary in Montana and Oregon. He also served as pastor in Detroit, Mich., as science teacher at St. Ignace College (later named Loyola University) in Chicago and as the second president of Creighton University in Omaha, Neb.

Finty, Tom Jr. An American journalist and lawyer died in Dallas, Tex. Apr. 26, 1929. He was born at Xenia, Ill. Oct. 1 1867. Commencing work in a general store in 1880, he held various positions. While a court stenographer in 1892 he commenced the study of law and was admitted to the bar in 1894. Subsequently he became a specialist in oil law. He joined the Galveston (Tex.) Tribune as a reporter in the same year later becoming city editor. In 1897 he transferred to the A. H. Belo Corporation publishers and served as city editor of the Galveston News until 1910, afterwards editor of the same paper, and of the Dallas News 1901-11 and from that time until his death, as editor of the Dallas Journal and editorial executive and legal counsel for the corporation. He was made a director of the firm in 1919. Mr. Finty wrote *The Farmer and the Wolf* (1908), *The Pendulum Nation of Texas* (1909), *Anti-Trust Legislation in Texas* (1915), *Texas Home-Side Exemption Law* (1918), and an analysis, *Texas Educational Survey* (1921).

Fiske, Hales

Fitzhugh, William M. An American geologist and mining engineer, died in San Francisco, Calif. May 18, 1929, at the age of 75. He was graduated from the University of California and became soon after city surveyor of San Francisco. As an assistant to the California State engineer he surveyed many roads in the vicinity of Yosemite National Park. He went to Central Asia and Mexico in a search for mineral wealth, but with little success. Going to Wyoming, however, he discovered oil and had an important place in the oil and mining industry there for 40 years. In 1911 he retired because of ill health and returned to San Francisco, where he spent his remaining years collecting works of art.

Flinn, John Joseph American editor and lecturer, died in Glencoe, Ill., Nov. 27, 1929. Born Dec. 5, 1851, in Clonmel, Ireland, he moved to the United States and after a public school education, began work at 21 as a reporter. In the same year, he became night editor of the St. Louis Globe and later was afterward correspondent for the *Globe Democrat* in the Missouri legislature and the Constitutional Convention. He was appointed in 1882 United States Consul in Chemnitz, Saxony, where he served for two years, during which time he contributed a series of humorous letters to the *Chicago Morning News*. He was associate editor of the *Chicago Daily* for several years, later becoming managing editor for the *Chicago Mail* and the *Chicago Times*. From 1898 to 1908, he was editorial writer on the *Chicago Inter Ocean* and, from its founding in 1908 to 1914, editorial writer for the *Christian Science Monitor*. While with the *Monitor*, he began lectures on Christian Science and in 1921 was appointed a member of the Christian Science Board of Lectureship. During 1911-14 he was reader for the First Church of Christ, Scientist, in Winchester, Mass.

Flinn, Frank Putnam

Flood, Marshall Ferdinand

Fodor, Stephen Hungarian engineer, died Nov. 5, 1929, in Budapest, Hungary, at the age of 73. Mr.

Fodor was a friend of Thomas A. Edison, becoming acquainted through a telephone improvement which Mr. Fodor made. He was made chairman of the Continental Edison and supervised electrical developments in Russia, Belgium, and Holland.

Folwell, William Watts

Folbush, Edward Howe An American ornithologist, died in Westboro, Mass., Mar. 8, 1929. He was born in Quincy, Mass., Apr. 24, 1858. Having been director of the ornithological division of the Massachusetts Department of Agriculture, 1893-1908, he was made State ornithologist in June of the latter year, serving until 1911. Mr. Folbush belonged to several scientific organizations, and was one of the founders of the Massachusetts Audubon Society. He wrote and lectured frequently on ornithology. Mr. Folbush's published works include *The Gypsy Moth*, with Charles Henry Fernald (1896), *Useful Birds and Their Protection* (1907), *Game Birds*, *Wild-Foot and Shore Birds* (1911), *Birds of Massachusetts and Other New England States*, vol. 1, *Water Birds*, *Marsh Birds and Shore Birds* (1925), and *Land Birds*, from *Bob White to Quackles* (1927).

Forepaugh, Charles American circus owner, died in West Berlin, N. J., July 17, 1929, at the age of 91. With his brother Adam, Charles Forepaugh owned and operated Forepaugh's Agricultural Circus, popular show in the last quarter of the nineteenth century. They began as horse traders. Bringing with them the horses they owned, the brothers, at the end of the Civil War joined O'Brien's Circus. Later they bought this circus and Jerry Foster, twelve years manager, which together formed Forepaugh's Agricultural Circus. Charles Forepaugh a lion trainer, claiming to be the first man to stick his head into a lion's mouth, a feat which he accomplished in 1871. The brothers retired about 1890 and their circus became Forepaugh & Sells Brothers.

Foster, Dean An American physician, died Sept. 16, 1929, in Stamford, Conn., at the age of 59. He was graduated from the University of Kansas in 1896 and from the Yale Medical School in 1899. In 1900 he entered the New Haven Hospital as an intern, and the following two years was an intern at the Manhattan Eye and Ear Hospital, where he continued as a member of the staff until a short time before his death. In 1901 he opened an office in Stamford, Conn. Dr. Foster was an eye, ear, throat, and nose specialist, with an office also in New York City. A Democrat, he took an active part in the political life of his district. He was twice elected Representative and was a member of the Stamford Board of Public Safety.

Foster, Irving Lyndael American professor of Romance languages, died in Philadelphia, Pa., June 1, 1929. Born July 6, 1870, in Washington, D. C., he received A. B. and A. M. degrees from Brown University and studied also at the University of Leipzig and the Sorbonne. In 1891 he returned to Brown University as an instructor in French, leaving there to become an instructor in modern languages at Pennsylvania State College, where he became professor of Romance languages in 1905. Professor Foster was the coauthor of several books on the study of French, one of them a war manual *Practical French* (1917).

Fowler, Ellen Thorneycroft (Mrs. A. L. Felkin)

Francis, William T. United States Minister to Liberia, died July 15, 1929, in Monrovia, Liberia. He was born in St. Paul, Minn., and was graduated from St. Paul College in 1892. He was appointed by President Coolidge Minister and consul general to Liberia. He was the only Negro to hold the position of Minister in the United States Foreign Service.

Francis, Joao Pinto Castello A Portuguese statesman, died in Lisbon, Portugal, at the age of 74. A monarchist, he was actively opposed to the Republican party in Portugal. In 1908 when King Carlos and the Crown Prince were assassinated, he was head of the cabinet and virtual dictator. He died shortly after this, and on his return to Lisbon in 1910 was arrested for misuse of power during his term as minister. He was granted amnesty, but did not reenter public life.

Frankel, Harry Crawford

Francez, Harry Herbert American theatrical manager, died in New York City, June 4, 1929. He was born June 23, 1880, in Peoria, Ill. Leaving the public schools at the age of 16, he went on the road as an advance theatrical agent. He became a producer with the play, *Uncle Jack Perkins*, in 1902. Later he made a fortune in musical comedies, his most successful one being *Vo Vo, Annette* (New York 1924, London, 1925). He managed and built the Cort Theatre in Chicago and the Lenox in New York. Mr. Francez was also a baseball manager, being owner and president of the Boston American League Baseball Club.

Freemantle, Admiral Hon. Sir Edmund Robert

Fuchs, Emil

Galloway, Thomas Walton American biologist, died in New York City, July 16, 1929. He was born Nov. 2, 1868, in Columbia, Tenn. Following graduation from

Cumberland University in 1887, he became professor of natural history at Baird College. After two intervening years of graduate study at Harvard he went to Missouri Valley College as professor of biology, 1891-1902, and dean, 1899-02. From 1902 to 1915, he was professor of biology at James Milkhin University and, from 1915 to 1919, professor of zoology at Beloit College. In 1919 he became associate director of the department of education of the American Social Hygiene Association. As a professor, he had published textbooks on biology and, as a director of the American Social Hygiene Association, he continued the publication of books on social subjects. These later books include *See Factor in Human Life*, *The Amate Institute in Religious Education*, *Sex and Social Health*, *Parenthood and the Character Education of Children*.

Gamba, Cardinal, Archbishop of Turin. Italian Roman Catholic churchman, died Dec. 26, 1929, in Rome, at the age of 73. In 1901 he was elected Bishop of Biella, and in 1923 became Archbishop of Turin. He was created a cardinal in 1926.

Gamberale, Luigi. Italian professor and translator, died May 16, 1929, in Agnone, Italy, at the age of 90. He translated the poetical works of Walt Whitman into Italian.

Garber, Daniel A. An American engineer, died in Washington, D. C. Dec. 4, 1929, at the age of 69. After serving an apprenticeship in the building trades, he became a contractor in 1889. In 1904 he was made president of the North Eastern Construction Company of New York, Baltimore, and Winston Salem, N. C. He was the first president of the Associated General Contractors in 1911-19, and later became general manager. Among the buildings with which his name is associated are the administration, hospital, and entrance buildings on Ellis Island, N. Y. the original group of buildings for the College of the City of New York, and the McComas Street Terminal, the first unit in Baltimore's port development.

Gard, Warren. An American lawyer, died Nov. 1, 1929, in Cincinnati, Ohio. He was born in Hamilton, Ohio, July 2, 1874, and was graduated from the Cincinnati Law School in 1894. The same year he was admitted to the bar and from 1898 to 1903, was prosecuting attorney of Butler County, Ohio. From 1907 to 1913, he was a judge of the court of common pleas in the second judicial district of Ohio. He was a Democratic member of Congress from the third district of Ohio during 1913-21, and during the World War was a member of the House Judiciary Committee. After 1921 he resumed his law practice in Hamilton.

Gasquet, Francis Aidan, Cardinal.

Gates, Frederick Taylor.

George, Duke of Leuchtenberg. A Russian nobleman, died Aug. 9, 1929, at his estate near Lake Chiem, Bavaria, Germany. He was born in Rome, Dec. 10, 1872. In the World War he was a member of the Russian General Staff, and during the revolution of November, 1917, in Russia, he was a leader in raising a national militia to oppose the Bolsheviks.

Gerardy, Jean.

Gibbs, Louis D. American jurist, died in Watkins Glen, N. Y. Mar. 1, 1929. Born in Germany in 1880, he was taken as a child to New York, where he attended public schools. After having graduated from the New York Law School in 1906, he practiced in the Bronx and was active in the Democratic party. As a member of the New York State Legislature in 1913, he was influential in making the Bronx a separate county, and in 1914 he was elected first judge of the new county. He was elected to the State Supreme Court in 1924, serving until his death.

Gibson, The Rev. Frank Markey, American Protestant Episcopal minister, died in Baltimore, Md., Sept. 24, 1929. He was born in 1857, in Bedford Springs, Pa., and was graduated from Dickinson College in 1877 and in law from the University of Maryland in 1879. Before entering the church, he practiced law from 1879 to 1883. In 1884 he was ordained a priest in the Protestant Episcopal Church. He was curate of the Emanuel Church of Baltimore (1883-85), rector of the Church of Holy Innocents, Baltimore (1885-86), and of the parish in Elkridge, Md. (1886-93). Moving to Washington, he was curate of St. Paul's (1893-96), St. Andrew's (1896-97), and Trinity (1897-1904). From 1904 to 1912, he was a rector in Westminster, Md., leaving that position to edit the *Maryland Chieftain* (1912-14). At the time of his death, Dr. Gibson was librarian of the Maryland Diocesan Library.

Gibson, Maj. Gen. Sir John Morrison.

Gifford, Harold. An American ophthalmic surgeon, died in Omaha, Neb., Nov. 28, 1929. He was born in Milwaukee, Wis., in 1868, and was graduated from Cornell University in 1879, receiving the M.D. degree from the University of Michigan in 1882. He began practice in Omaha as an ophthalmic and aural surgeon in 1886. He was professor of ophthalmic and aural surgery at the University of Nebraska and ophthalmic and aural surgeon to the Methodist Hospital in Omaha.

Dr. Gifford contributed many articles to textbooks, journals, and reviews. He was widely traveled and shortly before his death made a trip to British Guiana to study the eyes of snakes and birds for the New York Zoological Society.

Gilbert, Alexander. American banker, died Dec. 20, 1929, in Plainfield, N. J. He was born Aug. 10, 1839, in Elizabeth, N. J., and worked as a boy in the non foundry of Tuttle & Bailey in Brooklyn, N. Y. In 1863 he became cashier of the Market and Fulton National Bank of New York, in 1890 vice president, and in 1897 president, holding the latter position until 1917. Mr. Gilbert was also director of the Irving Bank-Commerce Trust Company, New York City, the Irving Building, and Gardiner Building, and was secretary of the New York City Association in 1894-95 and president in 1895-96. He was a delegate to the Republican National Convention of 1892 and a presidential elector in 1908.

Gilbert, Charles Allan. American painter, died in New York City, Apr. 20, 1929. He was born Sept. 9, 1873, in Hartford, Conn. After attending the public schools there, he studied at the Art Students' League in New York and the Julian Academy in Paris. His illustrations, many of them humorous, appeared in the leading magazines, and his landscapes and portraits were exhibited at various times. During the World War, he spent much of his time camouflaging ships. At one time he was interested in motion pictures, inventing a combination of animated drawings and living actors. His published drawings are *Overheard in the Whittington Family*, *Portfolio of Great Artists*, *Collection of Heads in Color*, *Separate Drawing in Color*, *Women of Fiction*, *All ye Vanity, A Message from Mars*, *The Honeymoon*.

Gillilan, James. Treasurer of the United States under Presidents Hayes, Garfield, and Arthur, died in Colchester, Conn., Apr. 8, 1929, at the age of 93. He was educated at Williams College and entered the U. S. Treasury Department in 1861 as a clerk through the administrations of James Buchanan and part of that of President Grant, in whose administration he became cashier of the United States. Appointed by President Hayes as treasurer, he served from 1878 to 1883. At this time he was also Sinking Fund Commissioner for the District of Columbia.

Goldberger, Joseph.

Golder, Frank Alfred.

Good, James William.

Goodenough, George Alfred. American educator, died Sept. 29, 1929, in Urbana, Ill. He was born in Davison, Mich., May 1, 1868, and was graduated from the Michigan Agricultural College in 1891 and from the University of Illinois in 1900. He was instructor in mechanics at the Michigan Agricultural College (1891-91), text book writer for the International Correspondence Schools (1892-95), instructor in mechanical engineering at the University of Illinois (1895-97), and editor of the International Correspondence Schools as editor (1897-99). He was assistant professor of mechanical engineering at the University of Illinois (1899-1906), associate professor (1906-11), and professor of thermodynamics (1911-19). Professor Goodenough attracted popular notice by his decisions as chairman of the Western Conference faculty committee on athletics and head of the Big Ten eligibility board.

Goodrich, Frank. American educator, died in New York City, Apr. 29, 1929. He was born Apr. 21, 1846, in Dryden, N. Y. After graduation from Yale in 1860, he studied at the universities of Leipzig, Heidelberg, Berlin and Halle. After teaching German at Yale during 1887-91 and 1893-94, he went to Williams College as professor of German and European history 1894-1903, professor of German history, 1904-24, and, after 1924, professor emeritus. He edited *Prelinger's Dictionnaire* (1894) and *Goethe's Gotz von Berlichingen* (1898).

Gordon, The Rev. George Angier.

Goritz, Otto.

Goto, Count Shimppei.

Gounin, Sir Lomer.

Graham, Sir Hermann.

Gram, Gregers. Winther Wulfsberg.

Grant, Ulysses Simpson. American lawyer, second son of President Grant, died Sept. 25, 1929, at Sandberg Lodge, near Los Angeles, Calif. He was born in Bethlehem, Ohio, July 23, 1852, and was graduated from Harvard in 1874 and in law from Columbia University in 1876. He practiced law in New York until 1893, when he moved to San Diego, Calif., and continued his practice there. Mr. Grant was active in California politics, being a delegate-at-large to the Republican National Convention of 1896 and of 1890 and a presidential elector at large in 1904 and 1908.

Greeley, James Thornton. An American physician and surgeon, died Aug. 29, 1929, in Nashua, N. H., where he was born July 18, 1862. He was educated at the College of Hyacinthe in Canada, Dartmouth College, Massachusetts Institute of Technology, and the Uni-

versary of Maryland, from which he received the M.D. degree. He did "postgraduate" work in medicine at The Johns Hopkins Hospital with Jean Louis Faure in Paris, with Dr. Israel in Berlin, and in hospitals in London. In 1893 he began the practice of medicine in Nashua, serving as city physician in 1897, physician for Hillsboro Co. from 1896 to 1900, and member of the state board of Medical Examiners from 1897 to 1912. After 1902 he gave his attention to surgery of the abdomen. He also devoted much time to the improvement of surgical and medical appliances and to research work in surgery. During the Spanish-American War, he was major and surgeon with the 1st New Hampshire Volunteer Infantry, and in 1918-19, with the American Red Cross in France and Palestine. He was the inventor of the Givoley hypodermic unit used by surgeons of the Allied Armies during the World War.

(Green, Alice Sophia Amelia)

(Greene, Warwick An American executive, died in Boston, Mass., Nov. 18, 1929. He was born Dec. 18, 1874, in Washington, D. C., and was graduated from Harvard in 1901, receiving the law degree from that university in 1905. From 1910 to 1915, he directed the Bureau of Public Works in Manila, P. I., and in 1916 became director of the War Relief Commission for the Rockefeller Foundation. With the entrance of the United States into the World War, he joined the air service, having the rank of major (1917-18), then lieutenant colonel (1918-19). In 1919, he was chief of the relief mission to Finland, Estonia, Latvia, and Lithuania. Mr. Greene was president of the New England Oil Refining Company.

(Greiner, Richard German pacifist died in Berlin, Jan. 1, 1929, at the age of 76. He was one of the founders of the German Peace Society and, accusing Germany of responsibility for the World War in 1914, he was forced to escape to Switzerland to avoid imprisonment. While he was there, his book, *L'Accuse*, was published, receiving wide attention in the allied countries, and in the United States.

(Griest, William Wallen American member of the House of Representatives, died Dec. 5, 1929, in Mount Clemens, Mich. He was born in Christiansburg, Pa., Sept. 22, 1858, and was graduated in 1876 from Millersville State Normal School. He was editor of the *Lancaster Inquirer* (1885-95) and chief clerk in the county commissioner's office, Lancaster County, Pa. (1895-99), secretary of the Commonwealth of Pennsylvania (1899 to 1901), and a Republican member of Congress from Pennsylvania's tenth district (1903-29). He was also president of lighting and street railway companies from 1901 to 1927.

(Guevara, José Gutierrez former President of Bolivia, died Feb. 21, 1929, in Antofagasta, Chile. Before his election to the presidency of Bolivia in 1917, he was Minister of Finance and president of the Chamber of Deputies. He served as President of Bolivia from 1917 to 1921. He was one of the founders and a director of the Banco de la Nación Boliviana.

(Guth, William)

Hahermann, Baron Hugo von

Hadden, Briton An American publisher, died Feb. 27, 1929, in Brooklyn, N. Y., where he was born Feb. 18, 1898. He was graduated from Yale in 1920, and began newspaper work on the *New York World*, and later, on the *Baltimore News*. In 1923 with several of his associates, Mr. Hadden started a weekly news magazine, *Time*, which in six years attained a circulation of over 200,000. During that time, he alternated each year with Henry R. Luce in the positions of editor and publisher. While at Yale, Mr. Hadden was active in the Reserve Officers' Training Corps, and he was subsequently commissioned second lieutenant in the Field artillery.

Haines, Iann American writer on the science of government, died in Washington, D. C., Oct. 9, 1929. He was born in Waukegan, Minn., in 1876, and was graduated at Hamline University. He became a reporter in Appleton, Wis., and later wrote political articles for a Minnesota newspaper and two books for the Minnesota Legislature. In 1911 he went to Washington, D. C., as a newspaper correspondent, and from 1914 to its suspension in 1927, he edited *The Searchlight on Congress*. Mr. Haines belonged to the school of La Follette progressives. He organized in Washington the National Voters League for the study and improvement of government and wrote several books on the national government, the best known of which is *Your Servants in the Senate*.

Hall, The Rev. Charles, Mercer American Protestant Episcopal clergyman, died in Hartford, Conn., Nov. 28, 1929. He was born in New York City, Dec. 24, 1864, was a student at the General Theological Seminary there from 1888 to 1891, and received the M.A. degree from Mt. Stephen's College in 1903. Ordained in 1891, he became a missionary and rector of St. Barnabas Church, Camden, N. J., going in 1893 to New York as curate in the Church of the Beloved Disciple. He

became curate of St. John's Church and vicar of the Church of the Holy Cross in Kingston, N. Y., in 1894, and from 1895 to 1913 was rector of the latter church. He was rector of St. Mary's Church in Asheville, N. C., during 1914-25, and was a visiting chaplain to the Bishop of Western North Carolina in 1925, after which time he was rector of Trinity Parish, Bridgeport, Conn. Mr. Haines wrote *The Life of a Theologian* (1907), *Calvary Every Day* (1907), *The Little Valley* (1913), *Scriptural Use of the Blessed Sacrament* (1920).

Hamilton, William Angus An American college dean died in Richmond, Va., Mar. 14, 1929, at the age of 53. He was graduated from Harvard University, subsequently studying law at Cornell University and at New York University, where he received his law degree in 1907. Practicing law in New York City, he entered the United States Army, from which he was retired with the rank of major. In 1925 he became dean of the school of economics and business administration at the College of William and Mary.

Hamilton, William Peter

Hammond, Caleb S. American publisher of maps, died Dec. 14, 1929, in Garden City, Long Island, N. Y., at the age of 62. He was born in Rush, N. Y., but as a young man went to New York and founded a map publishing business in Brooklyn under the company name of C. S. Hammond & Company.

Hampson, Herbert

Hampson, Parker Douglas An American banker, died in New York City, Nov. 12, 1929. He was born Aug. 12, 1858, in Fairfield, Conn., and was graduated from Princeton University in 1879. From 1879 to 1887, he represented the firm of F. G. Gorras & Sons in the South-American trade. In 1887 he became head of the firm Handy & Harman, bankers and dealers in bullion and specie, and when the firm was incorporated in 1905, he was elected president, holding that office until 1927, when he became chairman of the board. In 1910 Mr. Handy was made a life trustee of Princeton University. He served in the 7th Regiment, N. G. M.

Hannay, Philip C. An American consul, died in San Diego, Calif., Feb. 17, 1929. He was born in Waterloo, Iowa, June 27, 1857, and attended public schools. He entered the consular service in 1891 and, while consul at La Guaira during the Crespo Revolution, the Venezuelan Government requested his recall but the United States endorsed his position by sending the White Squadron to his support and Mr. Hannay retained his post there until 1894. He was later stationed at Trinidad, W. I. (1897) and at San Juan, P. R. (1897-98). Appointed Consul General to Mexico Nov. 3, 1899, he organized relief work after the Monterey and North Mexican flood of August, 1909. When the United States troops landed at Vera Cruz in 1914, he was summoned by the Huerta government on the charge of sympathizing with the revolutionists. Mr. Hannay maintained special office headquarters at San Antonio, Tex., 1916-19, before his resignation from the service. He lectured on Latin America and international subjects. He was honored by various Mexican governments and decorated with the Venezuelan Order of the Libertad, and made honorary Consul of Venezuela.

Hannauer, George

Hansen, John Morrison American railroad official, died Dec. 13, 1929, at La Rochelle, France. He was born in Butler County, Pa., in 1861 and was graduated from the Western University of Pennsylvania (now the University of Pittsburgh). He became a draftsman in the Schoen Pressed Steel Company, and later chief engineer. On the merging of the company with the Pressed Steel Car Company, he was made chief engineer of the new concern and afterwards assistant to the president. In 1902 he organized the Standard Steel Car Company and became its first president. Although he resigned this office, he remained chairman of the board of directors until his death. He was also a director of the Baldwin Locomotive Works and president of the American Railway Car Institute. With Charles T. Schoen, he designed the first steel freight cars used in commercial service in the United States. They were first used on the Rosemead & Lake Erie road in 1896. During the World War, Mr. Hansen was in Washington as a member of the Council of National Defense. In this position he assisted in the ordering and designing of 100,000 freight cars for the United States Railroad Administration and he supervised the designing of 14,000 freight cars which the United States Government sent to France for the use of the American Expeditionary Forces during the World War.

Harding, J. Horace

Harding, J. Horace An American banker, died in New York, Jan. 4, 1929. Born in Philadelphia, July 31, 1863, he entered banking in 1883 and subsequently became senior partner in his father-in-law's firm, Charles D. Baines & Co. He retained that position until Jan. 1, 1919, then becoming a special partner. He was chairman of the board of the American Railway Express Company and a director of the American Exchange Trading Company, the American Express Company, the American Gas & Electric Co., the American Metal

Company, the New York, New Haven & Hartford Rail road, the Southern Pacific Company, and the U S Industrial Alcohol Company.

Harwood, Earl of See Lascelles, Henry Ulrick

Harmsworth, Sir Hildebrand Aubrey

Harris, Kenneth American journalist, died Dec 20, 1929, in Miami Fla., where he had gone from his home in Chicago. He was born in England in 1864. During the Spanish American War, he was a correspondent for the Chicago Record. He succeeded George Ade on the Chicago Daily News as conductor of a column called "Stories of the Streets and of the Town." Mr. Harris contributed stories to the Saturday Evening Post and was the author of a book *Half a Million Blue Eyed Women*, and a volume of short stories, *Meet Mr. Slegg*.

Harris, Nathaniel Edwin American lawyer and a former Governor of Georgia, died Sept 31, 1929. He was born in Jonesboro, Tenn., Jan 21, 1846. He enlisted in the Confederate Army in 1862, serving during part of the Civil War on the staff of the Army of northern Virginia. He was graduated from the University of Georgia in 1870. In 1872 he became a member of the Georgia bar. From 1874 to 1882 he was a member of the Georgia bar, and in 1912 he served as judge of the superior court on the Macon circuit. He was a member of the Georgia House of Representatives (1882-86) and of the Georgia Senate (1894-96). During 1915-17 he was Governor of Georgia.

Harrison, Charles Castus

Harrison, (Lovel) Buge

Harzold, Cyril Guy English naturalist and explorer, died Feb 1, 1929, in New York City. He was born in England, but for several years before his death he lived in the northwestern part of North America, where he made collections of birds and small mammals. Articles about these discoveries he published in *The Auk* and other scientific journals. As a contributor to the Sanford collection of North American birds, he was associated with the American Museum of Natural History in New York City.

Harshberger, John William

Hart Louis, Polkham American lawyer and former Governor of Washington, died in Tacoma, Wash., Dec 4, 1929. He was born in High Point, Mo. Jan 4, 1862, and was educated in the public schools. He studied law and was admitted to the bar in 1881, beginning to practice in Omaha. He moved to the State of Washington in 1889, continued his practice there, and was elected Lieutenant Governor of Washington in 1912. He was reelected in 1916, and in 1919, on the death of Governor Lister, succeeded to the governorship. On the expiration of this term, he was elected to the office, serving from 1921 to 1925, when he retired from public affairs. During his years as Governor, Mr. Hart brought about a recodification of the State administrative code.

Hart, William R. American educator, died in Santa Barbara, Calif., Oct. 20, 1929, at the age of 76. He was born in Greene County, Pa. As a member of the faculty of Massachusetts Agricultural College, he established a department to train teachers of agriculture. In 1924, he moved to Santa Barbara, where he became a member of the school board and was an organizer of the city's playground system.

Hart, William Canadian industrialist and public official, died Apr 1, 1929, in Kitchener, Ontario. He was born in County Middlesex, Ontario, in 1847, and was educated at Christian Brothers School and Reginald C. W. School.

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Hastings, Thomas

Haug, The Rev. Joseph An American Roman Catholic clergyman and educator, died in Baltimore, Md., Apr. 6, 1929. Born in 1850 in Hohenzollern, Germany, he moved to America at the age of 16. As a member of the Sulpician Society, he received his advanced education for the priesthood in Paris, where the headquarters of the society are located. For 45 years, he taught at St. Charles College, a Catholic seminary in Catonsville, Md.

Hawk, Minnie

Hawkes, McDougall

Hawley, James H. American lawyer and former Governor of Idaho, died Aug 13, 1929. He was born in Dulogues, Iowa, Jan. 18, 1847, and in 1869 moved to Idaho, where he engaged in mining. He was admitted to the Idaho bar in 1871, and at the time of his death was senior member of the firm, Hawley & Hawley. In 1870-71 he was a member of the Idaho House of Representatives, and in 1874-75 of the Idaho Senate. From 1879 to 1881, he was district attorney of the second district in Idaho, and from 1884 to 1887, United States Attorney for the State. He was Mayor of Boise in 1904-05 and Governor of Idaho in 1911-13.

Hayne, William Hamilton An American poet, died in Augusta, Ga., Jan. 8, 1929. He was born in Charleston, S. C., Mar. 11, 1856, and was tutored privately. He first

published poetry in 1879, and continued to contribute to various periodicals until his death. In 1892 he published *Sylvan Lyrics and Other Verses*.

Hayter, Brigadier General Ross John Finnis A Canadian soldier, died in London, England, Dec. 17, 1929. He was born in Toronto, Canada, Feb. 28, 1876, and was educated at Dover College and Upper Canada College in Toronto, and at the Royal Military College in Sandhurst. In 1895 he entered the British Army. During the South African War (1900-02) he served with distinction as aide de camp to the King. In the World War he was with the 1st Canadian Tunnelling Battalion from 1914 to 1919, rising from brigade major of the 10th Infantry Brigade to a brigadier general of the General Staff in 1918. In recognition of his services he was made a Companion of the Distinguished Service Order in 1915. From 1919 to 1923, he was at General Staff Headquarters, Western Command, Chester, England, from 1923 to 1927, he was in command of the Poetopore Brigade Area in India, and in 1929 he was put in command of the 5th Infantry Brigade at Aldershot, England. He was also made aide de camp to the King in 1929.

Heard, Dwight Bancroft American business man and publisher, died Mar. 14, 1929. He was born in Boston, Mass., May 1, 1869, and was educated in the public schools. He entered business with Hibbard, Spencer, Bartlett & Co., a wholesale hardware firm in Chicago, remaining until 1894. Going to Arizona, he entered the investment and loan business and, subsequently, besides holding the presidency of the Dwight B. Heard Investment Company, and several other companies, was president and publisher of the Arizona Republic, and of the Arizona Herald.

Heldren, John Calder American chemical engineer, died June 3, 1929, in Providence, R. I. He was born Dec. 22, 1862, in Colgate, Wis., and was graduated from Brown University in 1885. From 1885 to 1887, he was a chemist and dyer in the National and Providence Worsted Mills and Silver Spring Bleachery, following which he was resident agent, technician, and chemist with William J. Mather & Company and with the Casella Color Company (1887-1904). He was again a technician and chemist with A. Klupstein & Company (1904-09), vice president of F. E. Attaux & Company (1909-10), vice president and general manager of the Dyestuffs Company (1910-17), and of the Federal Dyestuff and Chemical Corporation (1917-17).

At the time of his death, he was president and general manager of the Dyeing Process Corporation and vice president of the Hidden Sugar Process Corporation. Besides his executive positions, Mr. Heldren practiced independently as a chemical engineer and consulting chemist. He was an expert on explosives and during the World War supervised their manufacture for the Ordnance Department.

Heller, Maximilian American Jewish rabbi, died in New Orleans, La., Mar. 30, 1929. Born Jan. 31, 1860, in Prague, Bohemia, he was graduated from a gymnasium in Prague in 1879, and then moved to New Orleans, where he received degrees from McMillon University and Hebrew Union College, both in Cincinnati, Ohio. From 1884 to 1886, he was associate rabbi of the Zion Congregation in Chicago, leaving there to go to Houston, Tex. In 1887 he went to New Orleans, where he was rabbi of the Sinai Temple until 1927. Rabbi Heller was also professor of Hebrew and Hebrew literature at Tulane University in New Orleans, from 1912 until his death. In 1896-97 he edited the *Jewish Ledger* of New Orleans, and from 1902 to 1914 he was a leader writer for the *American Israelite* of Cincinnati.

Helmolt, Hans Ferdinand

Henderson, Bernard William

Henderson, Theodor Sommer American Methodist Episcopal bishop, died in Cincinnati, Ohio, Feb. 11, 1929. Born in Milburn, N. J., May 14, 1868, he attended the Centenary Theological Institute, Hackettstown, N. J., 1885-88, and Wesleyan University, Middletown, Conn., 1888-90, and from the Drew Theological Seminary, Madison, N. J., in 1895. He was ordained into the Methodist Episcopal ministry in 1894, and subsequently served as associate pastor of James Church, Brooklyn, N. Y., 1894-96, and as pastor in Flushing, 1896-98, of the Simpson Church, Brooklyn, 1898-1904, of the East Side Church, New York, 1904, and in Stamford, Conn., 1905-06. He was then made field secretary of the General Conference Commission for Aggressive Evangelism, and in 1908 he was assigned to Hanson Place Church, Brooklyn. He was consecrated resident bishop for Ohio and Kentucky May 21, 1912, a post which he held until his death.

His wife, Helen, died in 1905. He was a member of the Wesleyan University, and Ohio Northern University. The honorary D. D. degree was conferred on him by Allegheny College in 1909, and the honorary LL. D. degree by Lawrence College, 1912, Nebraska Wesleyan, 1912, Connecticut Wesleyan, 1921, and Ohio Northern University, 1925. Henderson, The Rev. W. J. English Baptist educator,

died May 1, 1929. He was born Sept. 10, 1848, in Poplar, England. He studied for the ministry in Rawdon College, Leeds, and was ordained in Birmingham in 1868, and after preaching there until 1872, accepted a pastorate in Coventry, where he served 21 years. In 1893 he was made president of Bristol Baptist College, a post from which he resigned in 1922, remaining emeritus president. Dr. Henderson wrote many articles in religious magazines and newspapers, and was author of *Aspects of the Great Life*.

Henri, Robert

Henry, Prince of Prussia (Heinrich Albert Wilhelm) Hennshaw, Frederick William American judge, died in San Francisco, Calif., June 8, 1929, at the age of 71. He was graduated from the University of California in 1879. In 1894 he became associate justice of the Supreme Court of California, but resigned in 1917 to give his time to war work.

Hensley, Major William Nicholas, Jr. American army officer, died Mar. 21, 1929, in Rochester, Minn. He was born in Columbus, Ohio, Oct. 18, 1861, was graduated from the U. S. Military Academy in 1905, and was commissioned second lieutenant of cavalry. He was promoted through the grades to the rank of major of the Regular Army in 1920. In 1917 he organized the division of the National Guard in the Philippines, having the rank of colonel and chief quartermaster. In 1918-20 he was colonel of the U. S. Air Service, and in 1918-19, commander of the Army Balloon School in Pasadena, Calif. In 1921 he was appointed commander of the U. S. Air Station at Mitchell Field, on Long Island, N. Y. Having graduated from the Army War College in 1926, he was assigned to Fort Sam Houston, San Antonio, Tex., as air officer of the 8th Corps Area. Major Hensley had the distinction of being the first American to make a non-stop flight from America to Europe, going in 1919 as an observer on the return trip of the British dirigible R 34.

Heibette, Maurice

Henrick, Myron T.

Higgins, Charles M. American ink manufacturer, died Oct. 21, 1929, in Brooklyn, N. Y., at the age of 75. He went to the United States from Ireland as a youth and became head of the Charles M. Higgins Company, manufacturers of a drawing ink which he developed. For a time he was treasurer of the Anti Vaccination League of America.

Hildreth, Samuel C. An American trainer of horses, died Sept. 24, 1929, in New York City. His first knowledge of horse racing was gained from his father, a Kentuckian, who raced horses at meets throughout the Middle West at the close of the Civil War. At the age of 15, the younger Hildreth became a jockey in Philadelphia, but soon owned and raced horses of his own in the West. He quickly gained a reputation for successful training of horses. After years of racing his own horses and training for others both in the United States and in France (1910-11), Mr. Hildreth became trainer in 1917 in the Rancocas Stable of Harry F. Munhall. Here he trained *War*, the winner against the English horse, Papyrus, in an international match race at Belmont Park in 1923.

Hill, Arthur Turnbull American landscape, marine, and portrait painter, died Nov. 24, 1929, in East Hampton, N. Y. He was born in New York City, Apr. 26, 1868, and studied art with his father and George Inness, and at the Brooklyn Institute. He first exhibited at the National Academy of Design, New York, in 1895. His paintings are in the National Gallery of Washington, D. C., the Brooklyn Museum, and the National Art Club of New York. He was marine (amateur) under the United U. S. Shipping Board Emergency Fleet Corporation in 1918-19. To the *New York Times* he contributed "War" illustrations. He was a friend of George Inness and George Waldo Hill.

Hill, Henry Wayland American lawyer, died in Buffalo, N. Y., Dec. 6, 1929. He was born in Isle La Motte, Vt., Nov. 11, 1853, and was graduated from the University of Vermont in 1876. He taught in Vermont and New York from 1877 to 1883, and in 1884 was admitted to the New York bar. He was a member of the New York Constitutional Convention in 1894, and from 1906 to 1900 served in the State Assembly. During 1901-10 he was State senator. At the time of his death he was president of the New York State Waterways Association. Mr. Hill owned a library of rare books, and was a student of Horace and a contributor to the bibliophile edition of the *Odes and Epics of Horace*. He was also the author of *The Development of Constitutional Law in New York*, *An Historical Review of Waterways and Canal Construction in New York*, *Waterways and Waterways*, and *The Canal State of New York*, and articles on barge canal construction in the official *History of New York from Cleveland to Hughes*.

Hillis, Newe

Hines, Col.

Hines, Col. New York City official and an officer in the New York National Guard, died May 8, 1929, in New York. He was born in Nyack, N. Y.,

Aug. 21, 1869, the son of a builder, whom he succeeded as head of a building firm. He was in business upon appointment to the office of Superintendent of Public Offices and Buildings. In 1891 he enlisted in Company D, 7th Infantry, the National Guard. With the rank of lieutenant-colonel, he accompanied the 100th Regiment to France during the World War. He was commissioned colonel, commanding the 105th Field Artillery, in 1926.

Hirschberg, Michael Henry An American jurist, died Mar. 17, 1929, in New York City, where he was born Apr. 12, 1847. He was in a private office, was admitted to the bar in 1868, and was appointed special judge of Orange County in 1875. Becoming district attorney in 1889, he served for three terms. He was elected justice of the Supreme Court of New York in 1896, on the Republican ticket, being reelected in 1910 with the endorsement of both parties. Governor Theodore Roosevelt appointed him to the Appellate Division Second Department in Brooklyn, 1900, and Governor Odell made him presiding judge in 1904. Judge Hirschberg retired from the bench, Jan. 1, 1918, and from Jan. 12, 1918, until his death, he served in the Newburgh Courthouse as official referee of the ninth judicial district.

Hitchcock, Raymond An American comedian, died Nov. 25, 1929, in Los Angeles, Calif. He was born in Auburn, N. Y., Oct. 22, 1865, and lived there until he was 19, taking part in amateur performances given in the Auburn Academy of Music. In 1891 he had a minor role in *The Brigand*, played by the Carleton Opera Company. His first successful part was that of Bulwer Hardy in *Chamely's Hunt* in which he appeared on Broadway in 1893. He became popular as an actor in Gilbert and Sullivan operas. In 1901 he played the role of King Dodo, which he called his greatest part. He appeared for the first time in England in the title role of *Mr. Manhattan* in 1916. His first *Lulu* performance was given in 1917. He also entered the moving picture, starting in *Red Heads Preferred* and *Money Talks*. He was playing in Chicago in *Your Uncle Dudley* in May of 1929, when a severe heart attack forced him to retire from the stage.

Hodges, Maj. Gen. Henry Foote United States Army engineer, died Sept. 21, 1929, in Lake Forest, Ill. He was born Feb. 25, 1860, in Boston, Mass., and was graduated from the U. S. Military Academy in 1881. He was assigned to the Corps of Engineers and was on river and harbor duty from 1881 to 1888. Following this, he taught engineering at West Point, 1888-92, and then returned to river and harbor and fortification duty until 1898, when he was sent to Porto Rico. In 1901 he went to Cuba as chief engineer of the Department of Cuba, and in 1902 he was appointed chief of engineers of the U. S. Army. From 1907 to 1915, he was with the Isthmian Canal Commission, where he distinguished himself as to win the thanks of Congress and advancement to the rank of brigadier general. During the World War General Hodges commanded the 7th Division of the U. S. Army, for which he received the Distinguished Service Medal. In 1921 he was given the rank of major general of the Regular Army. He was retired in 1922.

Hofmannsthal, Hugo (Hofmann) von

Holland, Joseph W. American professor of surgery, died at sea, Sept. 2, 1929. He was born in Queen Anne's County, Md., in 1870, and was educated at Washington College and the University of Maryland, subsequently becoming senior professor of surgery at the latter institution.

Hollenhit, Heiman American engineer and inventor, died Nov. 17, 1929, in Washington, D. C. He was born in New York City in 1840 and graduated from the school of mines of Columbia University (1879). From Columbia, he received also the Ph.D. degree. In the same year, he patented his invention, an electric tabulating machine, which is used by the United States and other governments in tabulating census returns and for other accountancy purposes. The machine won the gold medal of the Franklin Institute of Philadelphia as the most outstanding invention of the year.

Holt, Arno

Honey, Frederick Robertson American educator, died in Hartford, Conn. Mar. 9, 1929, at the age of 81. From 1872 to 1890, he was instructor of mechanical drawing and descriptive geometry in Sheffield Scientific School and lectured on perspective in the art school at Yale University. He also taught perspective for 18 years in the art school of Smith College and was, as an instructor at Trinity College, from 1890 to 1911, when he retired.

Hooker, Henry Daggett An American horticultural chemist, died Oct. 26, 1929. He was born in Brooklyn, N. Y., Jan. 25, 1862, and was graduated from Yale University in 1912, receiving a Ph.D. degree in 1915. He was assistant in botany at Yale University in 1914-15 and instructor from 1915 to 1918. In 1917-18 he was assistant physiologist at the United States Bureau

of Mines. He was assistant professor of horticulture at the University of Missouri in 1910-20 and associate professor after 1920.

Horne, Gen Henry Sinclair, First Baron of Starok. Lieutenant-governor, died Aug 14, 1929, at St. John's, N. B. Wick, Calcutta. He was born Feb 19, 1861, and was educated at Harrow and the Royal Military Academy in Woolwich. In 1880 he was commissioned in the Royal Artillery, where he was rapidly promoted. He served as major in the South African War (1899-1902) and in 1912 became Inspector of the Horse and Field Artillery with the rank of brigadier general. At the beginning of the World War, he was sent to France as an artillery commander of the 1st Corps, and in 1915 he was put in command of the 2d Division. In that year, he went to Egypt to assume charge of the defense of the Suez Canal, but was recalled in 1916 to command the 15th Corps in France. Later in 1916, Lord Horne succeeded to the command of the 1st Army and was promoted to the rank of general. After his army was demobilized in 1919, he was chief officer of the Khatra Command, which he held until 1923. In 1926 he was retired. He was created Knight of the Grand Cross of the Bath and first Baron of Starok, both in 1919.

Hothkiss, Horace Leslie. American financier, died in San Antonio, Tex., May 10, 1929. He was born in Auburn, N. Y., Mar. 27, 1842, and was educated at the Auburn Academy. He served in the U. S. Navy during the Civil War, taking part in the Battle of Mobile Bay. In 1867 Mr. Hothkiss, with three others, organized the Gold & Stock Telegraph Co. and he became its treasurer. It was this company which put into operation the ticker system in the Stock Exchange. He was an organizer in 1871 of the American Life Insurance Co., and in 1873 he assisted in developing the Exchange Telegraph Company in London, of which he became a director. Mr. Hothkiss bought a seat in the New York Stock Exchange in 1874 and remained in the brokerage and banking business until 1902. From 1886 to 1901, he was treasurer of the Nicaragua Canal Construction Company, being active in securing the concession to build the canal, and losing heavily when the project failed.

Howard, Katherine Lane. An American author, poet, and illustrator, died in Cincinnati, Ohio, July, 1929, at the age of 69. She was born in New York and was educated at Drew Seminary. Mrs. Howard's *A Child's Book of Verse* was used as a reader in English schools. She illustrated some of the bird books of the naturalist Audubon.

Howe, Earl of See Curzon, Richard George Penn. Howland, Emily. American educator, died June 29, 1929, in Sherwood, N. Y., where she was born Nov. 20, 1827, of Quaker parents. Miss Howland was active in the anti-slavery campaigns before the Civil War. After the war she opened schools for Negroes in Northumberland County, Va., remaining there several years. In 1842 she assumed financial management of the Sherwood Select School in Sherwood, N. Y., a position which she kept until it was made a public school in 1927, at which time it was renamed the Emily Howland School. Miss Howland was known as an advocate of woman suffrage, temperance, peace, and education. In 1926 the University of the State of New York conferred upon her the degree of doctor of literature in recognition of her educational and humanitarian services.

Hubner, Charles William. American librarian and poet died Jan. 3, 1929, in Atlanta, Ga. He was born in Baltimore, Md., Jan. 16, 1835, and was educated in the public schools there, going later to study in Germany. He moved throughout the Civil War in the Confederate Army and after the war moved to Atlanta. From 1899 to 1919, he was assistant librarian in the Carnegie Library in Atlanta. Mr. Hubner was a poet and historian, the author of *Historical Souvenirs of Luther* (1872), *Modern Communism* (1880), *Representative Southern Poets* (1906), *A Sheaf of Sonnets* (1917), *Poems of Faith and Consolation* (1927), and others. In 1928 the Poetry Society of the South named him poet laureate of the South.

Huenefeld, Baron Ehrenfried Gunther. A Prussian nobleman, organizer of the first westward flight across the Atlantic, from Ireland to Labrador, in 1928, died in Berlin, Feb. 5, 1929. He was born in 1892 in Konigsberg, East Prussia. During World War, he was in the Foreign Office sent him to Constantinople and Sofia on confidential missions. As German vice consul at Maasricht, he received the Kaiser and the Crown Prince of Germany when they fled to Holland. On Apr. 12, 1928, with Captain Hermann Koehl, pilot, and Commandant James Fitzmaurice, copilot, he set out from Dublin, Ireland, in the airship *Bremer*. Because of unfavorable weather, they were forced to land on Grosvenor Island, off the coast of Labrador, April 13. The forced landing so damaged the plane that they were unable to go farther in it. Canadian and United States planes were sent to their relief, and in one of these they flew to New York. There, and in other cities of the United

States, they were given an enthusiastic welcome. The Distinguished Flying Cross was conferred upon them by President Coolidge. Baron Huenefeld was a poet and a dramatist. His *Eugen of Trouze* was acted in Bremen in 1927, and *The Dream of Good Luck* in Dresden in July, 1928.

Huffington, John C. An American marine painter, died May 3, 1929, on his houseboat in Rowayton Harbor near Norwalk, Conn., at the age of 65. His first marine pictures in oil and water colors received notice, and one of his paintings was hung in the National Academy of Design in New York. His works that followed, however, failed to attract attention until several years before his death, when Miss Anne Morgan, sister of J. Pierpont Morgan, became interested and aided their sale.

Huggins, Brig Gen Eli Lundy. American army officer, died Oct. 22, 1929, in San Diego, Calif. He was born Aug. 1, 1843, in Schuyler Co., Ill. In the Civil War he served in the 2d Minnesota Infantry and the 1st Minnesota Artillery. He was graduated from the Artillery School in 1872. Transferred to the Cavalry in 1879, he rose from the rank of captain to that of brigadier general in 1903, in which year he retired. He saw service in the Indian campaigns, receiving the surrender of Rain in the face, slayer of General Custer, and was awarded in 1894 the Medal of Honor for distinguished service. In the Spanish American War, he served as colonel of the 8th U. S. Infantry.

Huggins, Miller J. An American baseball manager, died Sept. 25, 1929, in New York City. He was born in Cincinnati, Ohio, Apr. 19, 1879. As a young man, he played baseball in St. Paul, Cincinnati, and St. Louis. From 1913 to 1917, he was manager of the Cardinals in St. Louis. He was assistant athletic director at the Pullman Bay Naval Station in 1918, helping to organize recreational sports programmes for enlisted navy men. The same year he became manager of the New York Yankees, and under his direction this baseball team won world championships in 1923, 1927, and 1928.

Hume, Robert Allen. American Congregational missionary, died in Brookline, Mass., June 24, 1929. He was born Mar. 18, 1847, in Bombay, India. After graduation from Yale University and the Yale and Andover theological schools, he began teaching two years in the United States. He was ordained in the Congregational ministry in 1874 and went to India as a missionary. In 1901 for public service in India, he was presented with the Kaiser's Hind Gold Medal by Queen Victoria. He was the Hyde lecturer on foreign missions at the Andover Theological Seminary, 1904-05, and author of *Missionary from the Modern View, An Interpretation of India's Religious History*.

Hupp, Frank Le Moyne. An American specialist in the treatment of cancer, died in Wheeling, W. Va., Dec. 26, 1929, at the age of 64. He was graduated from Washington and Jefferson College and, in 1889, from the College of Physicians and Surgeons, Columbia University. New York. He began practice in Wheeling and in the last year of his death was a member of the staff of the Ohio Valley General Hospital there. Dr. Hupp was a charter member of the first board of governors of the American College of Surgeons.

Hurd, George Arthur. An American banker, died Nov. 15, 1929, in New York City, where he was born Aug. 20, 1869. He was graduated from Yale University in 1890, and from the law school of Harvard University, in 1893. From 1895 to 1903, he was resident agent of the United States Mortgage and Trust Company, at Seattle, Wash., and in 1903-05 assistant secretary. He returned to New York as vice president of the Mortgage Bond Company in 1905, becoming president in the first firm in 1910. During the World War, he was a member of the American Defense Society and also of the Committee for Armenian Relief.

Hurlbut, Byron Satterlee. American professor, died in Cambridge, Mass., Dec. 5, 1929. He was born in Cambridge, Mass., Jan. 10, 1865, and was graduated from Harvard in 1887. He entered the English Department of Harvard in 1890, became an assistant professor in 1901, and after 1906 was professor of English. From 1902 to 1916, he was also dean.

Ivey, Robert Stewart. Inouye, Marquis Katsunobu. Japanese financier and diplomat, died Nov. 5, 1929, in Tokyo, Japan. He was born in 1861, and sent abroad to be educated by order of the Government of Japan. He spent three years studying in Europe and seven years in England. He was envoy to Berlin (1906-08) and Ambassador to Great Britain (1913-16). He succeeded to his title in 1915, being the adopted son and heir of his predecessor. Marquis Inouye wanted the title of Marquis last year in the interest of Manchurian industry. He was a director of the South Manchurian Railway, and a protagonist of the open door in Manchuria.

Inouye, Fleet Admiral Viscount Ryokei. Admiral in the Japanese Navy, died in Tokyo, Mar. 22, 1929. He

was born in 1845 and was graduated from the U S Naval Academy in the class of 1861, being among the earliest Japanese students there. Viscount Inouye was wounded in the bombardment of Kagoshima by a British squadron in 1871. He served in the Sino-Japanese War of 1894-95, and was promoted to the rank of admiral in 1908 and of fleet admiral in 1911. He was created a baron in 1887 and viscount in 1907.

Isaacs, John Dove. An American engineer, died Apr 26, 1929, in San Francisco, Calif. Born in Richmond, Va., Oct 6, 1848, he attended the University of Virginia during 1867-70. He was a draftsman in the maintenance of way department of the Southern Pacific Railroad from 1875 to 1885, when he was made assistant superintendent of bridges and buildings, becoming acting superintendent in 1890, second assistant engineer of the maintenance of way department in 1891, and assistant engineer in 1900. He became consulting engineer of the Union Pacific and Southern Pacific systems in 1905, but in 1913, on the dissolution of the merger of the two lines, he resigned, to be consulting engineer of the Southern Pacific. He retired in 1923. As a bridge engineer, Mr. Isaacs was responsible for the construction of the Sacramento River Bridge of the Southern Pacific and a number of viaducts in Washington.

Jackson, Roscoe B (Radbury). An American automobile manufacturer, died in Mentone, France, Mar 19, 1929. Born in Ionia, Mich., Jan 30, 1879, he was graduated from the engineering school of the University of Michigan in 1902. He started work as assistant superintendent of the Olds Motor Works, Lansing, Mich., in 1904, becoming assistant to the general manager in 1905, and in 1907 manager in 1906-07. He then joined as general manager, F. R. Thomas Motor Company, of Buffalo, N. Y., moving to Detroit. He aided in the organization of the Hudson Motor Company in 1909, becoming general manager of the firm, he was made president in 1921, which he held until his death.

Jacobs, Aletta. Dutch physician and suffragist leader, died Aug 10, 1929, at The Hague. She was 80 years old. When 30 years old she began the practice of medicine, being the first woman to do so in Holland. In 1894 Dr. Jacobs was instrumental in founding in Holland the Women's Suffrage Society. With Jane Addams she made a tour of Europe in 1915 and later established the Women's International League for Peace and Freedom. She also worked with Mrs. Carrie Chapman Catt for the cause of woman suffrage and in opposition to militarism. She visited the United States in the interest of her work in 1915, 1924, and 1925.

Jarnett, Walter. American surgeon and author, died Aug 30, 1929. He was born in Orange, N. J., Dec 4, 1851, was graduated from the College of Physicians and Surgeons at Columbia University in 1875 and took post graduate work at The Johns Hopkins University in 1892-93. During 1874-75 he was an interne in the Charity Hospital, New York, and was surgeon from 1875 to 1877, interne and house surgeon in the New York Hospital of Relief. He practiced in Cold Springs, N. Y., in 1877-82 in Georgetown, Colo., 1884-92, and then in Denver. Colo. Dr. Jarnett was professor of gynecology and abdominal surgery at the University of Colorado from 1894 to 1897 in the medical department of the University of Denver, 1897-1911, and returned to the medical department of the University of Colorado in 1911. In 1917 he was retired as emeritus professor. He served as first lieutenant in the Medical Reserve Corps of the U S Army (1913-17), major in the Medical Corps (17-18), and lieutenant colonel in 1918-19. He was the author of many articles published in medical magazines and wrote *The Healing Gods of Ancient Civilizations* (Yale University Press, 1925).

Jenkins, Stephen Rice. Canadian general surgeon, died Sept 15, 1929, in Charlottetown, Prince Edward Island. He was born in Charlottetown on Nov 12, 1858, and was educated at Peter's School, King's College, and the University of Pennsylvania, where he received the M.D. degree in 1881, following which he was interne in the Philadelphia Hospital for a year. Returning to Charlottetown in 1885, he practiced medicine there from 1885 to 1925. He was on the staff of the Charlottetown and the Prince Edward Island hospitals. From 1885 to 1919, he was medical officer of the 4th Regiment, C. G. A., and in 1915 he was the medical officer in charge of the Military Hospital, Halifax.

Jenks, George Charles. American author, died in Auburn, N. Y., Sept 13, 1929. He was born Apr 13, 1850, in London, England, and was educated in England before coming to Pittsburgh in 1873. He began his newspaper career in Pittsburgh with the *Pittsburgh Press*. Going to New York in 1895 he served as New York correspondent for the *Duputch and Gazette Times* of Pittsburgh, dramatic critic, short story contributor to *the New York* and playwright. He was the author of *the History of the Johnstown Flood* (1890), *The*

Olmas (1910), *The Deserters* (1911), and *Stop Thief* (1913). Mr. Jenks was popularly known as the creator of Diamond Dick, the perfect detective, who was the hero of some 250 of his stories in the early part of the century.

Jenks, Jeremiah Whipple. Halawar, H. H. Maharaja Rana Sir Bhawanji Lungh Bahadur, Ma. A Prince of India, died suddenly on board the steamer *Esperanza* near Bombay, in April, 1929. He was born in 1874 and was educated at Mayo College, Amre. Well known in scientific, artistic, and educational circles in the West, he introduced in his state many reforms, among them urban municipal self government, and the creation of a bicameral legislature on a broad electoral basis. During the World War, he organized weekly lectures for the information of his subjects. He did all in his power to promote cordial British Indian relations.

Johann II, Prince of Liechtenstein, Ik'ten-shfin Ruler of the principality of Liechtenstein lying between Austria and Switzerland, died in Trossau, Czechoslovakia, Feb 11, 1929, at the age of 88. He was born in Moravia, Czechoslovakia, and in 1858 began his reign, one of the longest in European history. Liechtenstein, one of the smallest independent states of Europe, became unique in other ways under the rule of Prince Johann, "the Good." After the army was abolished in 1868, there was no military service. The wealthy monarch bore the cost of all public buildings, and the necessity of taxes for a Diet of 15 members elected by direct vote was adopted, but at the request of his people Prince Johann continued as ruler. He lived the life of a recluse, giving elaborate entertainments in his palace at Vienna, but rarely himself appearing at them. A connoisseur of art, he gave his collection of 8000 pictures to Austria a few years before his death. He was succeeded by his brother, Prince Francis I.

Johnson, Cornelius. An American Indian chief, died in Buffalo, N. Y., Jan 1, 1929, at the age of 99. He was chief of the Iroquois Tribe and also an actor. His stage name was Chief Blackie.

Johnson, Jackson. An American shoe manufacturer, died in Daytona Beach, Fla., Jan 28, 1929. He was born in Ma Grange College, Ga., in 1859, and at the age of 19, entered the mercantile business in Mississippi. Moving to Memphis, Tenn., in 1892, he aided in the organization of Johnson Caruthers & Rand Co., being president of the concern for five years. At that time, the shoe industry centered entirely in New England, and in breaking down that monopoly by establishing the Roberts, Johnson & Rand Shoe Co., of which he was president, at St. Louis Mo. His company absorbed other firms and merged into the International Shoe Company, with Mr. Johnson serving as chairman of the board from 1912 until his death. He was also a trustee of Washington University.

Jones, Edward T. An American aeronautical engineer, died in September, 1929. He was educated at Cornell University and taught there for a time, after which he gained practical experience in aviation at McCook Field. At the time of his death he was chief engineer of the Wright Aeronautical Corporation.

Jones, E (neet) Lester. Jones, Henry Arthur. Jones, Richard J. An American industrialist and advocate of the adoption of Esperanto as the international language, died Jan 3, 1929, in Northport, Long Island, N. Y., at the age of 51. He was married many years and was a member of the U S Geological Survey. With his wife he founded the first free school of Esperanto in the United States at Lithopolis, Ohio. In 1927 he was a delegate to the International Esperanto Congress at Edinburgh.

Jones, The Rev. Dr. Robert Ellis. American Protestant Episcopal clergyman, died in Greenfield, Mass., July 19, 1929. He was born in New York City, Mar 18, 1858, and was graduated in 1879 from Williams College. In 1879-80 he was a student at the Virginia Theological Seminary, and in 1894-95 he studied in Berlin and Heidelberg. Before coming to the ministry, he was a topographer for the U S Geological Survey. Ordained a priest in 1884, he became rector of St. Luke's, Kalamazoo, Mich., going from there to Columbus, Ohio, in 1889. From 1894 to 1897, he was senior curate of Grace Church in New York City. In 1897 he became president of Hobart College, where he was until 1902. In 1905 he was made canon of the Cathedral of the Holy Divine, and served in that capacity until his death.

Josephthal, Louis Maurice. American naval militia officer and banker, died in New Rochelle, N. Y., May 28, 1929. He was born Oct 7, 1868, in New York, and was educated at the College of the City of New York. He was one of the organizers of the Naval Militia of

the State of New York in which he enlisted as a seaman in 1891, becoming in 1917 a master general and commodore. In 1918-19 he served in the U. S. Navy, but returned to the New York Naval Militia as commodore and chief of the bureau of Naval Militia. Later he was appointed commander of the Militia, with the rank of rear admiral. From 1900 to 1910, Mr. Josephthal was senior member of the firm Albert Loeb & Co., after which he formed the firm Josephthal, Louchens & Co. After 1916 he was senior member of Josephthal & Co., stock brokers of New York City.

Jouet, Cavalier Hargrave An American chemist, died Mar. 29, 1929, in Roselle, N. J. He was born Nov. 7, 1860, in Elizabeth, N. J., and was graduated from Columbia University in 1882. From 1882 to 1897, he was a chemist with various companies and then became instructor in chemistry in the Newark Technological School (1897-99), assistant in analytical chemistry at Columbia University (1897-1900), lecturer (1900-01), tutor (1901-10), and instructor (1910-12). In 1913 he entered the New York Department of Health.

Jung, Sir Chandra Shumshure General His Highness, Nepal Taradhiakh Maharaja An Indian in Nepal, India, in November, 1929, at the age of 67. In 1901 he was appointed Prime Minister of Nepal, and held the office until his death. He held the rank of general in the British Army.

Juhl, Niels An American lawyer and former representative from Illinois in Congress. Died Dec. 5, 1929. He was born Apr. 27, 1849, in Rudersdal, Denmark, and attended the Real (Royal) School there. Moving to the United States in 1880, he was first in the publishing business in Chicago, Ill. He was graduated from the law department of Lake Forest University in 1898, was admitted to the bar of Illinois in 1899, and began the practice of law in Chicago. From 1898 to 1914, he was a member of the U. S. Senate and during 1907-11 he was assistant attorney of the Sanitary District of Chicago. He was sent as a delegate to the Sixty-fifth and Sixty-sixth Congresses (1917-21). By appointment of President Harding, he served as collector of customs for the port of Chicago in 1921-22, after which he resumed the practice of law there.

Kasimbazar, Maharaja of, Sir Manindra Chandra Nandy An Indian public official and philanthropist, died in November, 1929, in Calcutta. He was born in 1860. A liberal in politics, he had a seat in the Bengal Legislature in 1910 and was elected to the Imperial Legislative Council in 1915. After 1921 he was a member of the Council of State. He was president of the Bengal Landholders Association in 1918-20 and of the British Indian Association at Calcutta in 1922-23. An owner of vast estates in Bengal and the United Provinces, he used much of his wealth for the promotion of education and the arts and sciences. He was founder of a chair in history at the Benares Hindu University and one of science in Sir Jagadish Chandra Bose's Laboratory in Calcutta. He published *Upanishads*, *Upanishads*, *The Indian Medico-Legal History of India*, *Philosophy*, *Upanishads*, *Upanishads*, *Part 10 of Sri Mathabhat, Fundamental Unity of India, History of Indian Shipping and Maritime Activity*. In 1915 he was created Knight Commander of the Indian Empire.

Katsenbach, Frank R. American judge, died Mar. 13, 1929, in Trenton, N. J. He was born in Trenton, Nov. 5, 1868, and was graduated from Princeton in 1889. In 1891 he was admitted to the New Jersey bar and began practice in Trenton. He was councilman at large in Trenton from 1898 to 1900, and mayor of the city from 1902 to 1905. In 1920 he was appointed associate justice of the Supreme Court of New Jersey.

Kearns, The Most Rev. James John

Keeffe, Daniel J.

Keenan, Frank American actor, died Feb. 24, 1929, in Hollywood, Calif. He was born in Dubuque, Iowa, Apr. 8, 1858. Following his appearance on the stage in Boston in 1880, he was for some years with the Boston Museum Stock Company. He then came to New York, and then toured the United States. He often played Shakespearean roles. Other plays in which he appeared were *Hearts of Oak*, *A Texas Steer*, *A Poor Relative*, *The Warrens of Virginia*. He was also a director, and when moving pictures became popular, he gave a part of his time to acting for the screen.

Kingsley, Cyril English American actor, died Aug. 14, 1929, in New York. He was born Nov. 10, 1875, in Wellington, New South Wales, Australia, and was educated in the grammar schools of New South Wales and of Victoria. He began the study of law in Adelaide, South Australia, but gave it up to go on the stage. He played first Cyril Kingsley, then Max, in Australia, and in 1890 toured the colonies with Albert Norman. His first London appearance was in 1902, when he played Max in *Magda*. In 1906 he toured with his own company, playing *His Stoops to Conquer* and *The School for Scandal*. Coming to America in 1908, he appeared at the Lyceum in New York in the role of Count André de

Juvigny in *Love Watches*. Thereafter, he played alternately in New York and London, though, in the latter part of his life, he was identified with the American stage. He preferred the parts Holapur in *Henry IV* and Mercutio in *Romeo and Juliet*.

Keith, Minor Cooper American capitalist, died in West Islip, Babylon, N. Y., June 14, 1929. He was born in Brooklyn, N. Y., Jan. 19, 1846, and entered the private business until 1870, when he bought a cattle ranch in Texas, remaining there two years. In 1872 he joined with his brother in the construction of a railway in Costa Rica, and after his brother's death, he continued the enterprise, financing it personally. Having previously started and developed a banana plantation in Central America, in 1899, with Andrew W. Preston, Mr. Keith organized the United Fruit Company. He was president of the International Railways of Central America, the Atlanta & St. Andrews Bay Railway Co., the St. Andrews Bay Lumber Company, and the Guatemala Central Railroad Company.

Kellogg, John E. An American actor, died June 6, 1929, in Yonkers, N. Y., at the age of 67. He was born in England and first appeared on the London stage in 1879. In 1883 he went to the United States. He appeared with Joseph Jefferson in *The Rivals* soon after going to New York, and in 1904 had a leading part in *The Doll's House*. His blanketed roles were his best known, especially his portrayal of Hamlet. He last appeared on the New York stage in the revival of *Treasure of the Wrecks* in 1927.

Kolman, The Rev. John Kemp, The Hon. Sir (Albert) Edward Canadian public official, died Aug. 12, 1929, in Hoboken, Ont., Canada. He was born in Clarnecville, Que., Aug. 11, 1858, and was educated at Lacelle Academy. He was a member of Parliament from East Toronto from 1900 to 1908 and again from 1911 to 1921. In 1911-15 and 1916-17, he was Minister without Portfolio, and in 1916-17 Minister of Militia and Defense. During 1917-20 he was Minister of Overseas Military Forces of Canada, and in 1921 he was appointed to the Senate. During the World War, he was also chairman of the Canadian War Purchasing Commission (1916-17) and member of the Imperial War Cabinet in 1918.

Kennedy, Charles E. An American journalist, died June 1, 1929, in Cleveland, Ohio, at the age of 78. From 1897 to 1907, he was editor of the Cleveland Plain Dealer and in 1907-09 editorial director of the Cleveland Leader. He was also at one time city editor of the Cleveland Herald and managing editor of the St. Louis Post Dispatch. At the time of his death, he was adviser and director of the Telling Book Company, a book company and a director of the National Refining Company in Cleveland.

Kennedy, The Rev. Geoffrey Ankettell Studdert

Kerr, Andrew A. An American anthropologist, died in Ordain, Utah, Aug. 15, 1929, he was born there on Sept. 29, 1877, was graduated from the University of Utah in 1907, and received the master's and doctor's degrees from Harvard University in 1917 and in 1921, respectively. In 1920-21, he was assistant in anthropology at Harvard, after which he went to the University of Utah as assistant professor of Western history and archaeology, becoming head of the department of anthropology in 1926. During 1917-27 he was in charge of archaeological expeditions sent out by the University of Utah to study the evidences of early cliff dwellers in the State of Utah.

King, Carrie Van Dusen An American actress, died in New York City, Apr. 17, 1929, at the age of 75. She made a name for herself in the role of Little Buttercup in *Gulliver* and *Henry VIII*. In 1910 she went to live in Paris, where she was correspondent for *The Morning Telegraph* and wrote for the *Paris Herald*.

King, Edward John United States Congressman died Feb. 17, 1929, in Washington, D. C. He was born July 1, 1861, in Springfield, Mass., and was graduated in 1891 from Knox College in Galesburg, Ill. Admitted to the Illinois bar in 1893, he became Galesburg city attorney (1893-94). He was a member of the Illinois House of Representatives from 1907 to 1914, and in 1915 was elected on the Republican ticket as representative from Illinois to the Sixty-fourth Congress. He was re-elected to each succeeding Congress.

Kingsley, John Sterling

Kinsolving, Lucien Lee An American bishop of the Protestant Episcopal Church, died Dec. 18, 1929, in Forest Hills, N. Y. He was born in Loudoun Co., Va., May 14, 1862, and was educated at the University of Virginia and the Virginia Theological Seminary. In 1899 he was ordained a deacon, and the following year a priest of the Protestant Episcopal Church. From 1899 to 1898, he was a missionary in the State of Rio Grande, Brazil. Elected Missionary Bishop for the Brazilian Episcopal Church in 1898, he became in 1907 Missionary Bishop of Southern Brazil. He retired in 1928.

Kirby, Frank E. An American naval architect, died in Mount Vernon, N. Y., Aug. 25, 1929. He was born July 1, 1864, in Cleveland, Ohio, and was educated at the Cooper Institute of New York, after which he studied shipbuilding in the United States and in Scotland. He was first on the engineering staff of the Allaire Works in New York, where he constructed machinery for sea vessels. In 1895, after 1893 he was with the Detroit Dry Dock Company, and as chief engineer he designed and directed the building of all the steamers in use by the Detroit & Cleveland Navigation Co., the Cleveland & Buffalo line, the Detroit & Windsor Ferry Co., the White Star line, and most of the car ferries for the New York Central, Penn.-Virginia, Erie-Marquette, Ann Arbor, and other lake lines. He designed and built more than 200 river and lake steamers in all, including ice-crushing ferries that were able to crush the ice by their weight. During the Spanish American War, he supervised the selection of ships for transport duty for the United States Government, and during the World War he was government consulting engineer, passing upon the Ford Eagle boats which were built at the River Rouge plant.

Kirkbride, Raymond W. An American educator, died in Baltimore, Md., Feb. 28, 1929. As professor of French at the University of Delaware, he originated the foreign study plan at that university, and spent some time in France directing the foreign study group. Shortly before his death, he was decorated with the ribbon of the French Legion of Honor.

Kies, Eugene

Kienzel, Julius

Knapp, Charles Luman. A former American Congressman, died in Lowville, N. Y., Jan. 3, 1929. Born in Harrisburg, N. Y., July 4, 1817, he was graduated from Rutgers College in 1839, later studying law at the Hamilton Law School. Admitted to the bar in 1873, he commenced practice in Lowville. He was elected to the State Senate in 1885, and while in office, 1886-87, he served on numerous committees. He was appointed consul general at Montreal in 1889, where he remained until returning to his law practice at Lowville in 1891. Mr. Knapp was elected representative to the United States Congress, Nov. 3, 1901, upon the death of Representative A. D. Shaw. He was twice re-elected from the twenty-eighth district, retiring in 1911.

Kreutzer, George C. An American economist, died Nov. 21, 1929, in Washington, D. C., at the age of 45. From 1910 to 1916 he was consulting engineer in agricultural economics for the Rivers and Water Supply Commission of the Province of Victoria, Australia. In 1925 he became director of reclamation economics in the Reclamation Bureau of the Department of the Interior in Washington.

Krome, William Julius. American civil engineer, died in Miami, Fla., Oct. 2, 1929. He was born in Edwardsville, Ill., in 1876, and was educated at Northwestern, De Paul, and Cornell universities. In 1899 he was locating engineer of the Atlantic, Valdosta & Western Railway, and in 1900 was resident engineer for the Georgetown & Western Railway. As assistant engineer of the Cape Sable Colonization of the Florida East Coast Railway, he made the first survey across the Florida Everglades in 1902-03. Transferred to the Key West extension of the railway in the position of chief assistant engineer in 1903, he became consulting engineer in 1905, and at the time of his death was engaged in the construction of the railroad from the Florida mainland to Key West.

Kuhn, Oscar. American educator and author, died in Middletown, Conn., Aug. 20, 1929. He was born Feb. 21, 1856, in Columbia, Pa., was graduated from Wesleyan University, Middletown, in 1885, and graduated further studies at universities of Berlin, Göttingen, Paris, Bonn, and Florence. In 1890 he became professor of Romance languages at Wesleyan University. Professor Kuhn was an authority on Dante and the author of a large number of books. Among them are *Selections from Ugo Foscolo* (1887), *The Development of Nature in Dante's Divine Comedy* (1897), *The German and Swiss Settlements of Colonial Pennsylvania* (1900), *Studies in the Italian Poets* (1901), *Dante and the Italian Poets* (1901), *Switzerland, Its scenery, history and literary associations* (1910), *One Sided Autobiography* (1913), and *The Precious Life* (1917).

Kunfi, Sigmund. Hungarian Socialist leader, died in Vienna, Nov. 18, 1929, at the age of 50. He had a part in the organization of the Social Democratic party in Hungary and in the publication of the workingman's journal, *Arbeiter*, and the Socialist party organ, *Sozialismus*, after the disruption of the Austro-Hungarian monarchy in 1918. He was made Minister of Public Welfare in the new government of Hungary headed by Premier Karolyi. Again, after the Bolshevik Revolution of 1919, he became People's Commissar for Education in the ensuing Communist government. When this government fell a few months later, he fled to Vienna.

Kuni, Prince. A general in the Japanese Army, and

father of Empress Nagako, died Jan. 27, 1929, in Atami. He was born June 23, 1875, and was graduated from the military college in Tokyo in 1897. He was appointed second lieutenant. He served as major of infantry, attached to General Kuroki's staff, during the Russo-Japanese War. He became a lieutenant colonel in 1908, a general in 1923, and was posthumously promoted to field marshal and invested with the grand necklace of the Order of Chrysanthemum in recognition of his service. Kuni, The Rev. O. J. United States Congressman, died in a fire at his summer home near Battle Lake, Minn., Sept. 10, 1929. He was born Feb. 6, 1869, in Decorah, Iowa, was graduated from Luther College in 1890 and did postgraduate work at Luther Seminary and the University of Chicago. In 1899 he was ordained minister in the Lutheran Church. From 1894 to 1917, he was pastor in Ottumwa, Wis., and from 1917 to 1923, in Bonson, Minn. In 1923 he was elected a representative to Congress from the seventh Minnesota district, receiving both Democratic and Farmer-Labor endorsements.

LaFlamme, N. K. A Canadian lawyer and senator, died at his summer home near Montreal, Aug. 10, 1929, at the age of 61. He began the practice of law in Montreal in 1891. In 1907 he was appointed a King's Counsel. A member of the Liberal party, he was appointed in 1927 to fill a vacancy in the Senate caused by the death of L. O. David.

Lambert, Alexander

Lambton, Frederick William, Fifth Earl of Durham. Former member of the British Parliament, died at Lambton Castle, Durham, England, Jan. 11, 1929. He was born the Honorable Frederick William Lambton, second son of the second Earl of Durham, June 19, 1855. After serving as a Liberal in the House of Commons from South Durham, 1880-85, he was defeated in the Berwick-upon-Tweed division of Northumberland in 1886, and again when a Liberal Unionist candidate in Sunderland in 1890. He was elected however, by South-East Durham in 1900, and retained his seat in Parliament until 1910. He succeeded his twin brother to the earldom in 1928. His heir was his eldest son, Captain John (Fredrick) Lambton.

Lanciani, Rodolfo Amedeo

Langlois, Charles Victor. A French author and historian, died in 1929. He was born in Rouen, May 26, 1861, and was educated at Ecole des Chartes. In 1912 he became director of the National Archives. He was elected to the Académie des Inscriptions et Belles-Lettres (1917) and was a member of the commission of French Literary History. His published works include *La Rome de Philippe III le Hardi* (1887), *Les Archives de l'histoire de France* (1891-93), *Introduction aux études historiques* (1897), *Instruments bibliographiques* (1896), *Evolution de moyen âge* (1901), *L'Inquisition* (1902), *La Préparation professionnelle d'un savant* (1902), *Questions d'histoire et d'enseignement* (1903), *La Société française au 18 siècle* (1901), *Manuel de bibliographie historique* (1904), *Histoire de l'édition en France* (1905), *Introduction aux études historiques* (1905), with Seignobos.

Langtry, Mrs. Lillie

Lincolnton, Sir Edwin Ray

Lancelotti, Henry Ulrick, Fifth Earl of Harewood. An English peer, died Oct. 6, 1929, in Yorkshire, England. He was born Aug. 21, 1846, and was educated at Eton. He was a retired captain in the Grenadier Guards and was aide-de-camp to King George IV. In 1878 he was attached to a special mission to Spain. He was created knight Commander of the Royal Victorian Order in 1908 and Knight of the Grand Cross of the Royal Victorian Order in 1922. Lord Harewood was one of the wealthiest landowners of England and was father in law of Princess Mary, the only daughter of King George and Queen Mary. His husband died in 1912.

La Thangue, Henry Herbert. An English painter, died in London, December 1929. He studied at Dulwich College, the Royal Academy Schools, and the École Nationale des Beaux-Arts in Paris, and exhibited his first picture at the Royal Academy in 1874. In 1898 he was elected an associate of the Royal Academy and in 1912 a Royal Academician. He painted chiefly rural, and later Mediterranean, subjects. His *The Man with the Scepter* is in the Tate Gallery, London.

Lauter, Gen. Ludwig von. A German army officer, died Aug. 8, 1929, in Heidelberg. He was born Aug. 23, 1875, in Nuremberg. General von Lauter commanded the German heavy artillery during the World War and in 1918 directed the shelling of Paris by the famous 'Big Bertha' from a distance of 70 miles.

Lavallière, Eve. A French actress, died July 11, 1929, at her home in the Vosges Mountains. Eugénie Penoglio, who had been Eve Lavallière's stage name, was born in Toulon in 1868, and appeared on the Paris stage at the age of 25. She played in light comedy, and in the last years of the nineteenth century and the years preceding the World War, she was a successful and popular actress. She played in *Belle Hélène*, *La Reine*, *Le Bouc Saccré*, and *Le Roi*. During the World War, she became

ill and mentally depressed. Leaving the stage, she became a Franciscan nun, gave her wealth to the church, and for a time did missionary work in Africa.
Lastard, Ivan, a Russian actor, died in Chicago, Ill., Oct. 27, 1929, at the age of 52. He was born in Saratoff, Russia, and went to the United States in 1922 with the Moscow Players, playing parts in *Lower Depths* and *Tsar Feodor*. He remained in the United States as director of the Chicago Art Theatre. For 20 years he was a member of the Moscow Art Theatre.

Leatherwood, Elmer O. An American Congressman, died in Washington, D. C., Dec. 24, 1929. He was born in Waverly, Ohio, Sept. 4, 1872, and was graduated from the Kansas State Normal School in 1894, receiving a degree in law from the University of Wisconsin in 1901. In that year he began the practice of law in Salt Lake City, Utah, and later became a member of the firm Straup, Nibley & Leatherwood. From 1908 to 1916, he was district attorney for the third judicial district of Utah. As a Republican from the second district of Utah, he was representative to Congress in 1921, and was returned at all subsequent elections. As a congressman, his chief interest was in legislation concerning reclamation and irrigation development in Western States.

Le Borne, Fernand, a French composer, died in Paris, in March, 1929. He was born at Charleville, March 10, 1862, and studied under Massenet, Saint-Saens and César Franck. His numerous works include three symphonies, two overtures, a *Symphony Concerto* for piano, violin and orchestra, several cantatas, two masses, many orchestral pieces and chamber music, besides the operas *Derfina* at Orléans (Brussels, 1895), *Hedda* (Milan, 1898), *Mudarra* (Berlin, 1899), *Les Oubliées* (Lyons, 1905), *La Catalane* (Paris, 1907), and *Gillette* (Rouen, 1914). *Néris* and *Les Bogues* have not been performed.

Lee, James Melvin

Lee, William, Greenville

Lee, The Most Rev. Harrington Olare

Leete, John Hopkin, An American educator, died in Ann Arbor, Mich., Oct. 13, 1929. He was born in Detroit, Mich., Nov. 6, 1868, and was graduated from Colgate University in 1894 and from Harvard in 1895. He became instructor in mathematics at Pennsylvania State College in 1895, assistant professor in 1898, and associate professor, secretary, and registrar from 1901 to 1906. He was registrar at the Carnegie Institute of Technology in 1906, assistant director the following year, and dean of the school of applied science there during 1908-17. In 1917 he became director of the Carnegie Library of Pittsburgh.

Lefèvre, André Joseph, a French cabinet officer and chemist, died Nov. 5, 1929, in Paris, where he was born June 17, 1869. Educated at the Collège Chaptal and the School of Mines, he was municipal councillor for the Neuilly district in 1895-96, and again in 1904, vice president of the Paris municipal council in 1906-07, and deputy for Houches du Rhone from 1919 to 1924. He became Minister of War in 1920 in the Millerand Government and was returned in the Leygues Government, retiring when the cabinet voted to limit military service. He was a chemist of repute, his discoveries in explosives. He was also a contributor to *La Petite République* and to *Petit Provençal*.

Lehmann, Lili

Lehmann, Rudolph Chambers

Lemaire, Gaston, A French composer of operettas, died in Paris. After he had been missing for two months his body was found in the Seine on January 9. He was a very prolific composer, whose works enjoyed great popularity in Paris.

Leni, Paul, A German motion-picture director, died in Hollywood, Calif., Sept. 2, 1929. He was born in Stuttgart, Germany, and was first a painter. He became an art director at Berlin motion picture studio, and later a producer. In 1926 he went to Hollywood. His best work was done in the creation of atmosphere. His pictures include *The Cat and the Canary*, *The Man Who Laughs*, and *The Last Warning*.

Lenker, The Rev. John Nicholas

Leuchtenberg, Duke of See George, Duke of Leuchtenberg

Levering, Albert, American illustrator, died Apr. 14, 1929, in New York City. He was born in Hope, Ind., in 1867, and studied architecture with his father and drawing in Munich, Germany. After practicing architecture for eight years, Mr. Levering became connected successively with the *Illustrated American*, the *Chicago Tribune*, and the *New York American*. He was also on the staff of *Puck*, *Life*, and *Harpers's Weekly*, and later, of the *New York Sunday Tribune*. He was the illustrator of many humorous books.

Levey, Charles, An American railroad official, died June 24, 1929, in New York City. He was born in Huron County, Ohio, July 27, 1858, and was educated in the public schools. After serving as telegraph operator, assistant, and superintendent of various Western

of the Missouri lines of the Chicago, Burlington & Quincy (1905-04), with headquarters in St. Louis. He was assistant to the president of the Northern Pacific Railway, and in 1905 was promoted to the position of third vice president, with headquarters in St. Paul. From 1909 to 1916, he was vice president and general manager of the Western Pacific Railway and when that road was reorganized in 1916, as the Western Pacific Railroad Company, became its president. Though he retired as president in 1927, he remained a director.

Levy Dorn, Max, A German scientist, died June 22, 1929, in Berlin, where he was born Aug. 1, 1863. He was a professor in the development of X ray science, establishing the first X ray laboratory in Berlin at the university there. His experiments furnished much of the basis for subsequent progress in X ray photography. His death was a result of the cell destroying qualities of the rays he studied. He was connected with the Institute of the University of Berlin as physician and physiologist.

Lewis, Paul Adin

Lewis, Wilfred, An American engineer and manufacturer, died at sea, off the coast of Egypt, December, 1929. He was born in Philadelphia, Pa., Oct. 16, 1854, and was graduated from the Massachusetts Institute of Technology in 1875. He was a merchant with William Sellers & Company, Philadelphia, during 1875-78, draftsman during 1878-82, and designer, assistant engineer, and director from 1883 to 1900. In the latter year he became president of the Tabor Manufacturing Company in Philadelphia, retiring in 1928. For his contributions to the design and construction of gear teeth, he was awarded the gold medal of the American Society of Mechanical Engineers in 1927.

Liang Chichao, A Chinese statesman and author, died Jan. 21, 1929, in Peking (the former Peking). He was associated with Dr. Sun Yat sen in the revolution of 1911, which transformed the old empire of China into a republic. The philosopher of the movement, he served as minister under Sun Yat sen. He was also a scholar and an author, writing books on history, education, philosophy, and literature, and translating into the terms of modern Chinese thought. It is his accomplishments of Europe, and the Renaissance.

Lobby, Edward Norton

Loeb John William

Loechtenstein, Prince of See Johann II, Prince of Leuchtenstein

Loehndorf, Friedrich

Lodish, Nathan, Whittman American lawyer and judge, died Dec. 5, 1929, in Pawtucket, R. I. He was born in Bridgewater, Mass., May 21, 1846, and was graduated from Dartmouth College in 1864. After three years of teaching school in Rhode Island (1871-74), he turned to law, receiving the J. D. degree from Boston University in 1876, and was admitted the same year to the Boston bar. The following year, he was admitted to the Rhode Island bar, and began practice in Providence. He was a member of the Rhode Island Senate (1897-98) and referee in bankruptcy for the district of Rhode Island (1898-1918). After 1925 he was judge of the probate court of Pawtucket. Littlefield was a member of a commission for revising the judicial system of Rhode Island in 1904-05, and in 1910, a member of a commission for dividing the State into representative districts. He was president of the Rhode Island Anti-Saloon League from 1911 to 1925, and at the time of his death he was honorary president of the national organization. He lectured on historical and political subjects.

Locher, Cyrus

Lodge, Cyrus, A leader and former United States Senator, died in Cleveland, Ohio, Aug. 17, 1929. He was born in Putnam County, Ohio, Mar. 24, 1878. He was graduated from Ohio Wesleyan University. He also studied at Western Reserve Law School, and practiced law in Cleveland. In 1908 he was appointed assistant city solicitor, and later, prosecuting attorney of Cuyahoga County. The Governor of Ohio in 1923 made him commerce director of the State and in 1928 appointed him to fill an unexpired term in the United States Senate. He was defeated when he sought renomination in the Democratic primary in the same year.

Lodge, Lady Mary Marshall, Wife of Sir Oliver Lodge, the English scientist, died Feb. 20, 1929, near Salisbury, at the age of 77. She was of Scottish descent and a portrait painter, but gave up art to aid Sir Oliver in his scientific research. She was converted to her husband's views on spiritualism, though refusing at first to take any part in a séance. Lady Lodge visited the United States with Sir Oliver in 1920, when he made a lecture tour of the country.

Loe Irons Simon

Loevenhart, Arthur Solomon, American educator, died in Baltimore, Md., Apr. 20, 1929. He was born Dec. 29, 1878, in Lexington, Ky., and was graduated from the Kentucky State University in 1898, receiving the M. D. degree from The Johns Hopkins University in

1903 From 1903 to 1908, he was successively assistant, associate, and professor of pharmacology and physiological chemistry at The Johns Hopkins University. In 1908 he became professor of pharmacology and toxicology at the University of Wisconsin. He was associate editor of the *Journal of Pharmacology and Experimental Therapeutics*. In 1918 Dr. Loevenhart was in the chief pharmacological section of the research division of the Chemical Warfare Service, American University.

Logan, John D. A Canadian educator and editor, died in Milwaukee, Wis., Jan. 24, 1929. He was born in Nova Scotia in 1869 and was graduated from Dalhousie University, later studying at Harvard University. After teaching at Harvard University and at Yarns College, he became in 1899 professor of philosophy and of English at the University of South Dakota. In 1902 he entered newspaper work, becoming editor of the *Toronto Sunday World*, editorial writer and dramatic and music critic for the *Toronto Daily News*, and later literary, dramatic, and music critic on the *Montreal Herald*. He became professor of English at Marquette University in 1926, and in 1927 he was appointed head of the department.

Longwell, Horace Craig American educator, died in Princeton, N. J., June 5, 1929. He was born in Santa Fe, New Mexico, in 1876. In 1916 he became associate professor of philosophy at Princeton University.

Lorimer, Sir Robert Stodart Scottish architect, died Sept. 13, 1929, in Edinburgh, Scotland. He was born Nov. 4, 1864, and educated at Edinburgh Academy and Edinburgh University. As architect of the chapel for the Knights of the Thistle at St. Giles Cathedral in Edinburgh in 1904, he came into public notice. In 1919 he was chosen to design the Scottish National War Memorial at Edinburgh Castle. The Department of Zoology on Blackford Hill and a chapel at Stowe School are among his later works. He was knighted in 1911.

Louhet, Emil, Low, Sir (lived) Maurice

Low, Sir Francis William A member of the British Parliament, died in Brighton, England, Nov. 12, 1929. He was born in Edgbaston, Birmingham, Jan. 8, 1852, was educated at London University, and was admitted to the bar in 1875. A Conservative member of Parliament from Edgbaston Division of Birmingham from 1898 to his retirement in 1929, he was, for several years, president of the Birmingham Conservative Association and, at the time of his death, joint president of the Birmingham Unionist Association. He was at one time also chairman of the Midland and of the National Union of Conservative Associations. He was knighted in 1905 and created a baronet in 1918.

Lowe, Walter Irenaeus An American historian and educator, died in Winter Garden, Fla., Feb. 22, 1929. He was born Jan. 30, 1867, in Ilion, N. Y., and was graduated from Yale University in 1890. From 1892 to 1900, he was instructor in history at the Sheffield Scientific School of Yale. In 1900 he became professor of history and political science at Wells College, where he remained until 1920 when he went to Colgate University as professor of history. In 1918-19 he was in France as director of the 7th Division of the Y. M. C. A. and as a member of the history faculty of the A. E. F. University at Iteuene.

Lubbock, John Birkbeck, Second Baron of Avebury, English banker, son of the naturalist, Sir John Lubbock, and grandson of Sir John William Lubbock, the astronomer, died in Farnborough, Kent, Mar. 26, 1929. Born Oct. 4, 1868, he became a director of Coutts & Company, the National Provincial, and the Union Bank of London.

Lucas, Frederic Augustus

Lucking, Alfred An American lawyer, died Dec. 1, 1929, in Detroit, Mich. He was born in Ingersoll, Ontario, in 1856, was educated at Michigan State Normal College, and received an LL.B. degree from the University of Michigan in 1878. He began the practice of law in Jackson, Mich. (1878-80). For many years, he was general counsel for the Ford Motor Company and the Henry Ford interests. Mr. Lucking was a representative in the Fifty-fifth Congress (1903-05) from the first district. He was chairman of the Democratic State Committee of 1903 and 1908, and in 1924 was delegate at large to the Democratic National Convention.

Lundin, Andreas An American marine engineer, died in Flushing, N. Y., Aug. 29, 1929, at the age of 60. He was born in Hernösand, Sweden, and there studied marine engineering. At 16 he went to sea and on one of his voyages went to the United States, later settling there as a marine engineer. He secured a six months' option on the American patents of the Wolin davit, a Swedish invention for lowering life boats, and established the Wolin Manufacturing Company. He himself designed other life saving equipment, including a decked life boat and a compact life preserver. He also built motor yachts, a life boat control of Lane & De Groot, a life boat for the company in Long Island City, N. Y.

Lyon, Henry Ware.

Lyon, James B. An American printer, died in Albany, N. Y., at the age of 70. He was educated at Masson College in Canada, and began selling books in Albany, N. Y., in 1876. In 1878 he opened in Albany a small printing shop, which became the J. B. Lyon Company, printers for New York State for many years, and one of the largest printing establishments in the United States. He withdrew from the company in 1916.

Macara, Sir Charles Wright

McCarthy, Charles J. A former Governor of Hawaii, died Nov. 26, 1929, in Honolulu. He was born in Boston, Mass., Aug. 4, 1861, and in 1881 went to Hawaii to become secretary of the Hawaiian Legislature in 1882, and later served as senator in territorial legislature, as harbor commissioner, as treasurer of the City and County of Hawaii, and as treasurer of the Territory. In 1918 he was appointed Governor of the Territory of Hawaii, a post from which he retired in 1921. After 1921 he was general manager of the Hawaiian Waterworks and represented the Honolulu Chamber of Commerce in Washington.

Macdonald, Sir Hugh John

McElroy, John

McEvoy, Charles An English dramatist, died in Bath, England, Feb. 17, 1929. Born in London, J. McEvoy joined the *Echo*, a periodical of the time. His first play, *David Ballad*, was produced in 1907, by the Incorporated Stage Society, and was followed by other realistic plays, *When the Devil was Ill*, *The Three Barons*, *The Young Wedding*, *All that Matters*, *The Situation at Newbury*, *Her Ladyship*, and *The Laker of Her* (1921). Mr. McEvoy also wrote several novels and short stories *Brass Fuses* (1912), *Private Affairs* (1914), and *The Paper Wedding* (1918).

McGrath, Sir Patrick Thomas

Mackay, Alexander Howard A Canadian educator, died in Banmouth, Nova Scotia, May 11, 1929. He was born May 19, 1848, in Pleasant Point, Nova Scotia, and was graduated from Dalhousie University in 1873 and from the University of Halifax in 1880. From 1873 to 1889, he was principal of Pictou Academy, and in 1889-90 of Halifax Academy. He lectured on biology at Dalhousie College and Halifax Medical School from 1890 to 1908. In 1890 he became superintendent of education for Nova Scotia, a position from which he retired in 1926. He assisted in founding the *Educational Review* in 1887 at St. John, New Brunswick, and edited it until 1891.

McLaughlin, Chester Bentone An American justice, died in Albany, N. Y., May 12, 1929. He was born in Moriah, N. Y., Feb. 10, 1856, and was graduated from the University of Vermont in 1879. He was from that time to 1881. He practiced at the bar (1881-96), during which time he was also county judge and surrogate of Essex County, N. Y. In 1895-96, from 1896 to 1899, he was justice of the Supreme Court of New York, and also from 1910 to 1917, when he resigned to fill a vacancy in the Court of Appeals of New York. Elected in 1918 to serve again as judge of the Court of Appeals, he held this position until 1926, when he resigned, becoming official referee for the State of New York and general counsel for the firm, McLaughlin & Royce. He received the honorary degree of LL.D. in 1901 from Middlebury (Vt.) College and in 1904 from the University of Vermont.

Maclean, William Findlay

Macleod, Malcolm, Herman Magnus The twenty third Chief of Clan Macleod, died in Iorham, England, Nov. 5, 1929. He was born July 27, 1839, and was educated at Harrow. In 1858 he joined the 74th Highlanders, from which he was retired with the rank of captain in 1872. From 1861 to 1865, he acted as aide-de-camp to General Sir Hope Grant, commanding the Chief of Macleods. He went to Africa in 1874 where he was a member of the Executive Council at Natal and protector of the immigrants. He visited Victoria Falls and hunted on the Zambezi River in 1875, and was political agent to the Swazis during the Zulu War (1878-79), commanding the Swazi Army in an attack on the British chief, Sekukuni. For these services he received the Zulu War Medal and was made Commander of St. Michael and St. George. He returned to Scotland in 1880, and in 1885 succeeded his father as head of the Clan Macleod and owner of Dunvegan Castle in the Isle of Skye.

McBee, Thomas Chipman An American lawyer, former Congressman and former Governor of Arkansas, died June 8, 1929, in Prescott, Ark. He was born in Mount Holly, Ark., Dec. 21, 1851, and was graduated from the Southwestern College of New Orleans, in 1869 and from Washington and Lee University, with a law degree, in 1872. He practiced law in Houston, Ark., from 1873 to 1877, moving then to Prescott, Ark., and continuing his practice there. He was a member of the United States House of Representatives (1877-79), served as a presidential elector in 1880, was a delegate to the Democratic National Convention in 1884,

and a member of the Democratic National Committee from 1896 to 1900. In 1885 he was elected to Congress from the third Arkansas district and was returned until he retired in 1901. Resuming the practice of law in Prescott, he remained there until he was elected Governor of Arkansas, he served two terms (1921-25). In 1925 he again resumed his law practice in Prescott.

Maher, Benjamin

Mahidol, Prince Somdet Chao Ya A Siamese prince, brother of King Prajadhipok and in line of succession to the throne of Siam, died in Bangkok, Sept. 25, 1929, at the age of 37. He studied in the United States at the Harvard Medical School and the Massachusetts Institute of Technology. He was formerly minister of Health in Siam, and he was on the staff of a hospital in Chungking, the northern capital, and a practicing physician of that city.

Mahon, Maj. Gen. Reginald Henry A British army officer, died in London, Feb. 23, 1929. Born May 5, 1859, he attended the Royal Military Academy, entering the army in 1878. He served as captain in the Ordnance Department in India, 1890-94, and as major in South Africa at the siege of Ladysmith, 1899-1900. Commissioned colonel in 1904, he was made consulting officer for India, and in 1906 was appointed director general of the railways with the rank of major general in 1911. At the outbreak of the World War, 1914, he joined the War Office, being sent on a special mission to Canada and the United States in the following year. General Mahon was made Companion of the Bath in 1907, and Companion of the Order of the Star of India in 1911. He also engaged in private business, being deputy chairman of the Calcutta Electric Supply Corporation, and chairman of Research Ltd. Generally, Ltd. He wrote *Life of Honorable James Murray, 4th Governor of Canada, The Indulgence of Mary Queen of Scots, and Mary Queen of Scots* (1924).

Maloney, Martin An American philanthropist, industrialist and Penna. born, died May 8, 1929, in Philadelphia, Pa. He was born Nov. 14, 1818, in Balinacree, Ireland, moving to the United States in 1854. After working for a time in a Pennsylvania coal mine and operating a grocery store in Scranton, Pa., he opened a plumbing shop. Here he devised a gasoline burner for lighting street lamps, an invention which brought him wealth. He became president of the Pennsylvania Heat, Light & Power Co. He was also one of the organizers of the United Gas Improvement Company, and was associated with the Pennsylvania Globe Gas Light Company and the Philadelphia Gas Improvement Company. His gifts to the Roman Catholic Church included contributions to the work of repairing the Church of St. John the Evangelist in Rome, the building of the Church of St. Catherine at Spring Lake, N. J., a memorial to his daughter, the Maloney Memorial Home for the Aged in Scranton, Pa., and the Maloney Chemical Laboratory at the Catholic University of America. He also contributed funds for the clinic to be built as a part of the medical center of the University of Pennsylvania. In recognition of his philanthropic work, he was made a Papal Marquis by Pope Leo XIII in 1903 and in 1904 was appointed a Papal Chamberlain by Pope Pius X. Mandelstewski, Viennese Austrian musicologist died in Vienna, July 15. He was born in Czernowitz, in 1857. In 1880 he became conductor of the Vienna Musikakademie and librarian of the Gesellschaft der Musikfreunde, and from 1900 he was professor of the history of music at the Vienna Conservatory. He edited the monumental complete editions of the works of Schubert and Haydn, published by Breitkopf & Hartel.

Migazzi, Marchioness of Cambridge Sister-in-law of Queen Mary of England died in London, Mar. 26, 1929, at the age of 55. She was the youngest daughter of the first Duke of Westminster and widow of the first Marquis of Cambridge, formerly Duke of Teich, whom she married in 1894.

Margulies, Anna Rono An American educator, died in New York City, July 7, 1929, at the age of 61. After studying in Italy with Mme. Montessori, she founded a school in New York City (now the Ann Rono School) in which she taught children by the Montessori methods and trained teachers to use the methods. Mrs. Margulies at one time conducted a school for deaf children.

Maria, Christina

Marshall, Alford An American business man and ornithologist, died in Mobile, Ala., Mar. 24, 1929. He was born Sept. 1, 1868, in Pittsburgh, N. Y., and was educated at the Polytechnic Institute of Brooklyn. From 1885 to 1892, he was in the machinery business in New York, going to Chicago in 1892 to be manager of the Pressing Tool & Supply Co., in 1898, he became president of the Marshall & Husehach Machinery Co., retiring in 1916. In 1917 he was a member of the expedition sent into Labrador by the Carnegie Institute of Natural History and the National Geographic Society. He was active in planning and financing the expedition, which was for the purpose of establishing the northern range of bird migration. He gave to the Linnean Society a collection of birds which is now in

the American Museum of Natural History. In Columbus, Ohio, Dr. Marshall financed both the protection and municipal development in 1918. In Texas, he was active in the reclamation of the delta of the Guadalupe and San Antonio rivers. At the time of his death, he was writing a book on Alabama game birds.

Marshall, Harry Taylor An American educator and pathologist, died in Paris, France, Nov. 8, 1929. He was born in Baltimore, Md., May 19, 1875, and was graduated in medicine from The Johns Hopkins University in 1898. He was an interne at The Johns Hopkins Hospital in 1898-99, assistant in pathology at The Johns Hopkins University during 1900-03, and instructor in medicine and pediatrics there during 1903-06. From 1906 to 1908, he was pathologist at the Bureau of Science of the Philippine Islands and, at the same time, professor of pathology at the college of medicine in Manila. After 1908, Dr. Marshall was Walter Reed professor of pathology and bacteriology at the University of Virginia.

Marshall, Louis

Martin, Whitwell Pugh An American Congressman from Louisiana, died in Washington, D. C., Apr. 6, 1929. He was born in Assumption Parish, La., Aug. 12, 1867, and was graduated from Louisiana State University in 1888. In 1889-90 he was in the military academy at the Kentucky Military Institute and in 1890-91 a chemist for the Sugar Land Refinery of Texas. He studied law at the University of Virginia in 1891-92, being admitted to the Louisiana bar in 1892. From 1894 to 1900, he was superintendent of schools in the Parish of Lafourche, La. In 1900-01 he was district attorney for the twentieth district of the State, and judge in 1906-14. He was a Progressive representative from Louisiana to the Sixty-fourth and Sixty-fifth Congresses (1915-19), and a Democratic representative from 1919 to the time of his death.

Martin, Eduardo An American organist and composer, died in New York, June 7, 1929. He was born in Naples, in 1852. At the age of 15, he went to New York as a pianist and for many years toured the United States as accompanist to famous artists (Patti, Tetjens, Santet, Sarasati, and others). After that, he was organist at various churches in New York. His compositions include ten masses, four vespers, and numerous smaller compositions, for the church.

Mason, F. Stuart An American pianist and conductor, died in Boston Oct. 25, 1929. He was born in Weymouth, Mass., Oct. 21, 1881. After study in Boston, he was music director in the churches of Fungo, Philippe, and Worme (quatre) and Gedalge and Widor (composition). During 1919-27 he was conductor of the People's Symphony Orchestra in Boston, and in 1923 was invited as guest conductor of the Boston Symphony Orchestra. He composed several orchestral suites, piano pieces, and songs.

Mathew, The Most Rev. Oliver Archbishop of Regina. A Canadian Roman Catholic churchman died Oct. 26, 1929, in Regina, Saskatchewan. He was born in Quebec in 1851 and was educated at the Seminary of Quebec, at Laval University and at the Academy of St. Thomas in Montreal. From 1878 to 1899, he was professor of philosophy at Laval University, and rector from 1899 to 1910. In 1911 he was appointed Archbishop of Regina. Archbishop Mathew was a knight of the Legion of Honor and an Officer de l'Instruction Publique, both French orders. He was also made a companion in the English Order of St. Michael and St. George.

Mator, Gen. Antonio military leader and former cabinet minister of the Republic of Venezuela, died in Paris, France, May 27, 1929, at the age of 80. General Mator led the unsuccessful revolution of 1902 against President Castro of Venezuela. In 1910-12 he was Minister of Foreign Affairs.

Matthias (James) Brander

Max, Prince of Baden
Maxwell, Anna Caroline
Maxwell, General Rt. Hon. Sir John Grenfel
Maybach, Wilhelm
Maynard, Charles Johnson
McCall, Earl of Sea Breeze, Reginald
Meday, Milton Bennett
McIlbourne, Archbishop of See Lees, The Most Rev. J. J. Clare

McIntosh, Sir Vincent Canadian banker, died Feb. 24, 1929, in Montreal, Canada. He was born in London, Ontario, Feb. 28, 1850, and was educated there at Hellmuth College. In 1867 he entered the Bank of Montreal, becoming general manager in 1911, vice president in 1912, and president in 1913. Though resigning the presidency of the bank in 1928, he remained chairman of the board of directors. Sir Vincent had various other financial interests, being also president of the Royal Trust Company and the Royal Victoria Hospital, a director of the Canadian Pacific Railway Company, and a governor of McGill University. He was created a baronet in 1916.

Merrill, George Perkins

Murales, Theodore Frelinghuysen An American busi-

noss leader, died in Del Monte, Calif., Mar. 6, 1929. He was born in Jersey City, N. J., 1868. From 1881 to 1893, he was clerk for the Pennsylvania Railroad and the Trunk Line Association of New York City. He became manager and vice president of the Western Wheel Works, bicycle manufacturers of Chicago, in 1894, at a time when bicycle riding was popular. In 1899 he assisted in organizing the American Bicycle Company of New York, serving as its vice president until 1903. He was vice president and general manager of the National Cloak & Suit Co. (1903-21), a mail order house of New York, and he accepted the presidency of Montgomery Ward & Co., Chicago, in 1921. While remaining chairman of the executive committee of Montgomery Ward & Co. he became president of Johns Manville Corporation in 1927.

Mersey, First Viscount of See Biggam, John Charles Meux, Admiral of the Fleet, Sir Hedworth.

Meyer, The Rev. Frederick Brotherton English Baptist minister and Nonconformist leader, died on Mar. 28, 1929. He was born Apr. 8, 1847, and was educated at Brighton College and at Regent's Park Baptist College. After serving as minister in churches in Liverpool, York, and Leicester, he went to London, where he was alternately minister of Regent's Park Chapel (1898-92 and 1902-15) and of Christ Church, Westminster Bridge Road (1892-1907 and 1917-21). In 1921 he became minister emeritus of Christ Church. In 1901 and again in 1920, he was president of the National Federation of Free Churches. In 1906 he was president of the Baptist Union. Dr. Meyer preached and delivered addresses in the United States, Canada, and other countries. He was the author of a number of books of a didactic or religious nature.

Meyer, Hans
Michael Grand Duke of Russia See Mikhailovitch, Grand Duke Michael of Russia.

Michotti, Francesco Paolo
Middleton, Arthur An American concert baritone died in Chicago, Feb. 16, 1929. He was born in Logan, Iowa, in 1881. For 20 years, he was prominent as an alto singer, appearing with the foremost organizations in the United States. In 1922 and 1925, he made tours of Australia and New Zealand. For the three years previous to his death, he was head of the vocal department of the Bush Conservatory in Chicago.

Mikhailovitch, Grand Duke Michael of Russia Died in London, England, Apr. 26, 1929. He was born Oct. 1, 1861, in Peterhof, Russia, and began military service in the Cossacks at the age of 17. He was promoted to lieutenant in the 1st Artillery of the Russian Guard and the 11th Foot Guards, in later served in the Russo-Turkish War of 1877. He was exiled in 1891 because of amorganatic marriage to Sophie Nicolaitvna, who was Countess Merenberg and Countess Torby, and went to live in England where he and the Countess became well known in English society. Nicholas II, upon his accession to the Russian throne, revoked the banishment but Grand Duke Michael preferred to remain in England. During the World War, he served with the Russian Imperial War Commission to London.

Mills, Isaac Newton An American judge, died in Mount Vernon, N. Y., July 14, 1929. He was born in Thompson Conn. Sept. 10, 1851, was graduated from Amherst College in 1874 and from the law school of Columbia University in 1876. Admitted to the bar the same year, he practiced law in Mount Vernon and in New York City until 1906, also serving as judge of the Westchester County Court (1884-95) and as a member of the New York State Senate (1900-01). In 1907 he became justice of the Supreme Court of New York, the ninth district, and in 1915, associate justice of the Appellate Division, second department. In 1921 he retired from judicial office, becoming an official referee, and resuming his private practice.

Mills, Ogden An American capitalist, died Jan. 28, 1929. He was born in 1876 in Sacramento, Calif. and was graduated in 1878 from Harvard University. With offices in New York City, he was president of the Mills Estate Inc., and the Virginia & Truckee Railway and he was vice president of the Metropolitan Opera & Real Estate Co. and the Merchenthaler Linotype Company. He was a director of the Chicago Transfer & Charing Co. City & suburban Homes Co., and Farmers Loan & Trust Co.

Mitten, Thomas Eugene

Mocricke, Eduard A German operatic and orchestra conductor died in Berlin Mar. 16, 1929. He was born in Stuttgart in 1877. After being graduated from the Leipzig Conservatory, he filled positions as operatic conductor in Rostock, Kiel, Stettin, and Halle until, in 1920, he became conductor at the Deutsches Opernhaus and of the Philharmonie Orchestra in Berlin. In 1925 he was called to Dresden as conductor of the Philharmonic Society and the Singakademie. In 1923 he made a tour of the United States with the German Opera Company.

Mollison, William London English mathematician and

master of Clare College, Cambridge University, died Mar. 10, 1929, in London. He was born Sept. 19, 1851, and was educated at the University of Aberdeen and at Clare College, Cambridge University. He was examiner in the University of St. Andrews (1876-80) and a mathematical lecturer in Jesus College, Cambridge, (1877-82). He was a fellow of Clare College (1876), a lecturer in mathematics (1880), lecturer (1882), and senior tutor (1884). In 1915 he became master of Clare College. He was also a member of the council of the senate at Cambridge University (1892-1920), and secretary of the general board of studies (1904-20). Dr. Mollison was a well known mathematician and the author of a number of papers on mathematical subjects. Monis, Antoine Emmanuel Ernest French lawyer and former Premier, died May 27, 1929, in Châteaufort sur Chaienta, where he was born in 1846. From 1885 to 1889, he was in the Chamber of Deputies. As a member of the Radical Socialist party he was elected a Senator in 1891, and from 1899 to 1902, was Minister of Justice later becoming vice president of the Senate. In March, 1911, he became Premier of France, but after an airplane accident in May, was unable to perform the duties of his office. When the Chamber failed to vote confidence, his cabinet was forced to resign in June, 1912. He became Minister of Marine in 1913, but resigned in 1914. He served in the Senate until 1920 when he returned to the practice of law. In 1927 the French Government granted him, at the age of 80, a pension of 24,000 francs a year.

Monro, General Sir Charles (Carmichael)

Monson, Frederick Inman An American explorer and authority on the American Indian, died Nov. 10, 1929. Born in Bergen, Norway, July 8, 1865, he was educated under private tutors and also studied art. In 1910 he received the Ph.D. degree from the University of Christiania. In 1880 he came to America and began his investigations among the Indian tribes of Arizona, New Mexico, California and Mexico in 1896. He made many explorations in the southwestern part of the United States in Central America, South America, the West Indies and Alaska. He was a professional lecturer and writer on American history and exploration and on ethnological and geographical subjects. He was the author and illustrator of *Ethnographic History of the Indians of the Southwestern United States*.

Montagu of Beaulieu Second Baron, John Walter Pd. D. C. S. Montagu

Montvambert, Frederick A Canadian health official, died Nov. 2, 1929, in Ottawa, Canada. He was born Feb. 3, 1843, in Quebec and was educated at Upper Canada College receiving the M.D. degree from Edinburgh University. In 1866 he entered the public health service of Canada being stationed first at Grosse Ile Island as a quarantine officer. From 1894 to 1899, he was general superintendent of public health, and, after 1899, director general. He retired in 1919.

Moon (Frederick) Franklin

Moore, Hilda An English actress, died May 18, 1929, in New York City. She was born in London. The place in which she appeared in New York include *Hearts Breeze* and *Interference*. At the time of her death, she was rehearsing with Raymond Hitchcock (see obituary note above) in *Carle Dudley*. She was the wife of the actor, Austin Fairman.

Moore, John Frostwood

Moore, Adelleth An American lawyer died in Buffalo, N. Y., Sept. 2, 1929. He was born in Allen, N. Y., Nov. 22, 1851 and after studying at Genesee Normal School, attended the Albany Law School in 1875-76. He began the practice of law in Nunda, N. Y., in 1876 but moved to Buffalo where he was practicing at the time of his death. He was a member of the board of the Commission on Statutory Legislation that consolidated all general statutes of New York made from 1777 to 1909. He was president of the New York State Bar Association (1909-10). After 1912 he was agent of the University of the State of New York and after 1921 also vice chancellor.

Morishita, Toshiki A Japanese scientist, died in New Haven, Conn., July 1, 1929. A resident of Tokyo, he was graduated from the university there. In 1927 he entered the department of bacteriology at Yale University where he was pursuing research work in micro organisms, especially those associated with the decay of the teeth at the time of his death.

Moss, McKenzie An American judge, died in Washington, D. C., June 12, 1929. He was born in Christian Co., Ky., in 1866. He was a member of the Fifty-Seventh Congress (1901-03) from Kentucky. From 1910 to 1921 he was circuit judge of the 8th judicial district of Kentucky, and was one general counsel to the Allen Trevelyan. He was Deputy Commissioner of Internal Revenue for a short time before he was appointed Assistant Secretary of the Treasury by President Coolidge in 1921. In the latter capacity, he was interested in prohibition enforcement, going to Ottawa, Can., in 1923 as leader of an Ameri-

can delegation to arrange a treaty with Canada in regard to liquor and narcotic smuggling. In 1926 he was appointed judge of the Court of Claims by President Coolidge.

Mottet, The Rev Dr Henry American Protestant minister, died June 20, 1929, in Great Neck, N. Y. He was born May 20, 1846, and was brought to the United States by his parents. He was graduated from the College of the City of New York in 1869 and from the General Theological Seminary, New York, in 1873. Hobart college conferred upon him the degree of doctor of sacred theology in 1892. He was ordained a Deacon (1874) and a priest (1879). From 1873 to 1879, Dr Mottet was curate of the Church of the Holy Communion in New York City, and was rector from 1879 to his death. He was interested in Christian unity, and did much in an unofficial way to promote the movement. During the World War, he organized and conducted one of the most popular soldiers' and sailors' clubs and was on the commission of the Federal Council of Churches.

Murray, The Hon. George Henry
Murray, The Most Rev John Gardner
Murray, Thomas H. An American electrical engineer and inventor, died July 21, 1929, in Wicksapogue, Long Island, N. Y., at the age of 68. He was one of the organizers of the New York Edison Company and the United Light and Electric Power Company, and until his resignation in 1928 he was vice chairman of the board of directors of the New York Edison Company. He designed the electrical power plants that supply New York City. His researches and inventions were not confined to electricity. His inventions, more than 1100 in number, include a process for welding metal to glass, a welding process to increase the speed in automobile industry, and processes that facilitated the manufacture of munitions during the World War. For his electrical discoveries and safety appliance inventions he received the Longworth medal of merit from the Franklin Institute of Philadelphia.

Mustin, Ovide
Muthusen, Karl
Nairn, Viscount of See Finlay, Robert Bannatine
Nandy, Sir Manindra Chandra See Kaumbasaz, Maharaja of

Nebzat, Bey Turkish Minister of Education, died in Turkey, Jan. 2, 1929. He had been an important influence in the modernizing educational work of the Republic, dying shortly after the Government decreed that the Latin alphabet should replace the old Arabic one.

Nelher, Fred An American professor of chemistry, died in Princeton, N. J., Dec. 10, 1929. He was born in Troy, N. Y., Apr. 30, 1867, was graduated from Princeton University with the B. A. degree in 1889, and was a fellow at the University of Chicago during 1896-98. He was chemist for the United States Fish Commission in 1890, and in 1891 went to Princeton University as an assistant in chemistry, becoming an instructor (1892-98), assistant professor of organic chemistry from 1898 to 1903, and professor after 1903. During 1903-14 he was director of the department of chemistry at Princeton. Professor Nelher cooperated with the Bureau of Mines in war-gas investigations in 1917-18.

Nehling, Henry American horticulturist and ornithologist, died Nov. 22, 1929, in Orlando, Fla. He was born in Howard's Grove, Wis., May 9, 1853, and was graduated from Teachers' Seminary, Addison, Ill., in 1873. In 1887-90 he was deputy collector and in spectator of customs in Milwaukee and, from 1890 to 1901, was secretary and custodian of the public museum there. He then devoted himself to investigations in ornithology, botany and horticulture, and was collector in the Bureau of Plant Industry of the U. S. Department of Agriculture, and contributed to English, German, and American scientific journals. He was the author of *Die Nordamerikanischen Vogelwelt* (1891), *Our Native Birds of Song and Beauty* (2 vols., 1893, 1896) *Die Amaryllis* (1908).

Neumann, Franz
Niblack, Rear Admiral Albert Parker, U. S. N.
Nicholas (Nikolai Nikolaevitch), Grand Duke
Nichols, Charles Lemuel An American physician and antiquarian, died in Worcester, Mass., Feb. 19, 1929, where he was born May 29, 1851. He was graduated from Brown University in 1872, and from the Harvard Medical School in 1875, receiving the A. M. degree from Brown in the same year. He practiced at Worcester from 1878 until his death, becoming trustee of the Western State Hospital. Dr Nichols belonged to several historical associations and was secretary for the foreign correspondence of the American Antiquarian Society. He was also a member of the board of fellows of Brown University, and received the Litt. D. degree from that institution in 1918. He wrote *A Bibliography of Worcester, A List of Massachusetts Almanacs, and Isaac Thomas, Printer*, with a bibliography.

Nozman, Daniel C. An American archaeologist and

art dealer, died Jan. 10, 1929, in Newark, N. J. He was born in Armenia, but came to America in 1886. With William Hayes Ward, he made archaeological excavations in Mesopotamia. He also conducted an expedition sent out by the University of Pennsylvania to the site of Babylon, where he found many specimens of ancient glass now in the University of Pennsylvania Museum of Art in New York.

Norris, William American actor, died in Bronxville, N. Y., Mar. 20, 1929. He was born June 15, 1872, in New York City, and was educated in the schools of San Francisco. He made his first professional appearance with George Lederer's Stock Company in 1892. He appeared in many plays, among them *Children of the Ghetto* in which he made his London debut, *Francesca da Rimini*, *Tom Jones*, and *Maytime*. He joined the Cosmopolitan Productions Company to play in motion pictures in 1922, was in *White Wings* (1926), and made his last appearance in *A Connecticut Yankee in Notbrook*, Second Earl of (Francis George Harung). A former member of British Parliament, died Apr. 12, 1929, near Winchester, England. He was born Dec. 6, 1850. He was aide de camp to his father when the latter was Governor General of India (1873-76), and was a lieutenant in the Indian Brigade and Grenadier Guards. From 1889 to 1895, he was a Liberal member of Parliament for Winchester, and from 1896 to 1892 a Liberal Unionist for North Bedford. It was as an agriculturist and a stockowner that Lord Northbrook was best known, being closely associated with the Royal Agricultural Society and other organizations of this kind. He had a notable art collection, including Van Dyke portraits, some of which he sold to an American collector in 1927, at the reputed figure of £100,000.

Nourse, Edward Everett
Ochs, Siegfried
O'Connor, Thomas J. Power
O'Donoghue, John A. An American physician and educator, died in Washington, D. C., Feb. 13, 1929, at the age of 54. He was born in Washington, D. C., and was graduated from Rock Hill College in 1896 and in medicine from Georgetown University in 1900. He was a member of the staff of Children's Hospital, physician to the Catholic University of America, and for many years was professor of biology and medicine at the medical school of Georgetown University.

O'Neil, Harvey J.
O'Neil, Erskine
Olmstead, William A. An American educator, died Dec. 10, 1929, in Pomfret, Conn. He was born in New York City, Feb. 26, 1861, and was graduated in 1887 from Trinity College. From 1887 to 1897, he was master of St. Mark's School in Southboro, Mass., and after 1897 was head master of Pomfret School in Connecticut. He was ordained a priest of the Protestant Episcopal Church in 1909.

Ordofex, José Batlle y A former President of the South American Republic of Uruguay, died in Monte video, at the age of 73. He was elected President of Uruguay for a term of four years in 1903, and served a second term from 1911 to 1915. His administration followed his election in 1903, was ended the following year with the death of the rebel leader, General Matiaiva. In 1927, Dr Ordofex was named president of the newly created National Administrative Council.

Osborne, Thomas Burr
Oster, Gustav Sir William Dillon
Oudin, Maurice Angus An American electrical engineer, died Dec. 4, 1929, in Schenectady, N. Y. He was born in New York City, Mar. 11, 1866, and was graduated in 1885 from the College of the City of New York. He did post graduate work at Princeton University, receiving there the degrees of electrical engineer and master of science in 1891. In the same year, he became associated as an engineer with the General Electric Company, and at the time of his death was vice president of the International General Electric Company. He was decorated in 1911 by the Emperor of Japan with the Order of the Rising Sun, and in 1928 with the Order of Commander of the Crown of Italy.

Paget, Walburga, Lady (Countess Walburga Ekren-garde Helena) An English author, the widow of the British diplomat, Sir Augustus Paget, and the daughter of Charles Frederic Antony de Hohenhausen, a Count of the Empire, born May 3, 1839. A friend of Queen Victoria, and having a prominent part in the life of her reign, Lady Paget pictured that age in her writings. She wrote *Embassies of Other Days* (1923), *In My Tower* (1924), *The Livings of Life* (1928).

Paine, Henry Gallup American editor and agent for authors, died Jan. 20, 1929, in New York City. He was born in Albany, N. Y., Apr. 24, 1856, and was graduated from Columbia University in 1880. Mr. Paine was on the editorial staff of a number of magazines and papers, including *St. Nicholas* (1882-87), *Puck* (1887-94), *Harper's Weekly* (1893-1900), *New York Daily News* (1901-03), *Associated Sunday Magazines* (1903), *New*

York Tribune Literary Review (1904-07), *National Sunday Magazine* (1911-13). From 1922 to 1927, he edited the *Author's League Bulletin*. He was one of the founders of the *Columbia Spectator* (1877), the undergraduate newspaper of Columbia University. At the time of his death, he was treasurer of the Simplified Spelling Board, in which he had long been actively interested. He wrote *Handbook of Simplified Spelling* (1920) and *The Little Minute Man* (1924), and contributed articles, fiction, and verse to many magazines.

Pallen, Conde Benoit
Parker, Edwin B.
Parrington, Vernon Louis
Parrington, Richard Lantry. An American portrait painter, died in Philadelphia, Pa., June 3, 1929. He was born in England and studied painting with his father, J. H. E. Parrington, and with Sir John Everett Millais. Moving to the United States, he opened a studio in Philadelphia. His paintings include portraits of William C. Spruell, late Governor of Pennsylvania, and Mr. and Mrs. Cyrus H. K. Curtis of Philadelphia.

Patterson, Isaac Lee. An American physician, died in Salem, Ore., Dec. 21, 1929. He was born in Ore. Sept. 17, 1837. He was educated at Christian College (later Monmouth State Normal School). In 1892 he was chairman of the Republican Central Committee of Marion County, and during 1894-98 was a member of the State senate. From 1898 to 1907, he was collector of customs for Portland, Ore., and in 1919 and in 1921 he was again in the State senate. He was chairman of the Republican State Central Committee during 1924-26. In 1927 he was elected Governor of Oregon for a term of three years.

Peake, Arthur Samuel
Pender, Sir John Denison Denison
Pennington, Leigh II. An American educator, died Apr. 24, 1929, in Washington, D. C. He was born in Macomb, Mich., Oct. 26, 1871, and was graduated from the University of Michigan in 1907, receiving the Ph.D. degree there in 1909. He was assistant in botany at the University of Michigan in 1906-09, an instructor at Northwestern University in 1909-10, and assistant professor, 1910-12, and associate professor, 1912-14, at Syracuse University. In 1914 he became professor of botany at the New York State College of Forestry. He was granted a leave of absence in October, 1929, and at the time of his death was with the Federal Bureau of Plant Industry.

Percy, Leroy. An American lawyer and former United States Senator from Mississippi, died Dec. 24, 1929, in Memphis, Tenn. He was born in Waverly, Miss., Nov. 9, 1861, and was graduated from the University of the South in 1879, receiving a law degree from the University of Virginia in 1881. Admitted that year to the bar, he began the practice of law in Greenville, Miss., a practice continued until his death. From 1910 to 1911, he served in the United States Senate, filling the unexpired term of A. J. McLaughlin. He was a plantation owner in the Mississippi delta and a director of the Staple Cotton Cooperative Association.

Perkin, William Henry
Perth, Archbishop of See Riky, Charles Owen Leavelle
Petrolid, Joseph

Petzel, Federico Alfonso
Phillimore, Walter George Frank, First Baron

Phillips, John. An American physician, died in Cleveland, Ohio, from burns received in the fire destroying the X-ray laboratory of the Cleveland Clinic. He was born Feb. 19, 1879, in Welland, Ont., Can., and was graduated from the University of Ontario in 1903. In the same year, he moved to the United States, becoming instructor in medicine at the Western Reserve University in 1906, assistant professor in 1910, and assistant professor of therapeutics after 1919. He was also consulting physician of St. Johns Hospital after 1919. A founder and trustee of the Cleveland Clinic Foundation, he became in 1921 director of medicine at the clinic. He served in the World War as captain in the Medical Corps of the U. S. Army. He contributed to medical journals and wrote the section on diseases of pleura, mediastinum, and diaphragm in Cecil's *Textbook on Internal Medicine* (1927).

Pittet, Raoul Pierre
Piquet, Clemens, Baron von

Plesner, Gen. Hans Georg von
Poland, William George. An American professor of art, died Mar. 19, 1929, in Providence, R. I. He was born Jan. 25, 1846, in Goffstown, N. H., and was graduated from Brown University in 1868. He studied at the universities of Berlin and Leipzig (1875-76), at the Museum of Berlin (1876), and in France and Italy (1878-79).

After being principal of the Museum of Art for two years, he became associated with Brown University, first as instructor in Greek and Latin (1870-75), as assistant professor (1876-89), associate professor of Greek (1889-92), professor of the history of art (1892-1915), and after 1915, professor emeritus of the history of art. In 1891-92 he was a director of the American School of

Classical Studies at Athens and later a member of the managing committee. He was also president of the Rhode Island School of Design from 1896 to 1907 and a lecturer on the history of art at Boston University in 1901-02. He wrote several textbooks on the history of art and was the author of *Robert Fiske, the Early Newport Portrait Painter* (1907).

Pond, Rear Admiral Charles Fremont
Pope, Ralph Wainwright

Portman, Fourth Viscount, Claud Berkeley. One of London's wealthiest landowners, died there, June 6, 1929, at the age of 64. The Portman estate covers an area of 270 acres, partly including a part of Oxford Street. The viscount's interest in the keeping of herds of donkeys for the sale of their milk for invalids, the business having originated in the family generations ago by the illness of a Mrs. Portman for whom the milk was prescribed. The animals were driven into London and milked at the customer's door.

Pratt, Dallas Barthe. An American banker, died Oct. 9, 1929, in New York City, where he was born Feb. 4, 1849. In 1892 he became connected with Marland, Coppell & Co., New York bankers, and at the time of his death was senior partner of the firm. He was also a director of the Atlantic Mutual Insurance Company, of the American Car & Foundry Co., of the American Car & Foundry Securities Co., and a trustee of the Central Savings Bank of New York.

Primrose, Archibald Philip. See Rosebery, Fifth Earl of

Prince, Morton
Priser, Edward. American business man died Aug. 11, 1929, in East Orange, N. J. He was born in Doylestown, Pa., Mar. 3, 1856, and was educated in public schools and a seminary. He was first in newspaper work, beginning as a reporter for the Bucks County (Pa.) *Intelligencer*, later becoming editor and business manager. In 1882 he was connected with the Vacuum Oil Company, of which he became president in 1917 and chairman of the board in 1924. During the World War, he was a member of the Petroleum War Service Committee.

Prothero, James Harrison. An American dentist and educator died Apr. 9, 1929. He was born in Albany, Ill., Mar. 1, 1862, and was educated at the State Agricultural College of Kansas and at Washington University Dental School, from which he was graduated in 1890. After 1893 Dr. Prothero was identified with Northwestern University Dental School, where he lectured on radiology, and at the time of his death was emeritus professor of prosthodontic dentistry.

Prussia, Henry, Prince of. See Henry, Prince of Prussia.

Prussia, Victoria, Princess of. See Victoria, Princess of Prussia.

Psichari, Jean. A French philologist, writer, and director of studies at the Ecole des Hautes Etudes in Paris, died in 1929. He was born May 15, 1854, in Odessa, Russia, and was educated at the Sorbonne and the Lycée Condorcet. His works include *Essais de grammaire historique grecque* (1887), *Etudes de philologie grecque* (1892), *Etudes de philologie grecque* (1893), *Autour de la Grèce* (1895), *La Rivière de l'Ymnos* (1897), *L'Epreuve* (1899), *La Grèce antique* (1899), *Histoire d'un nouveau Robinson* (1904), *Roses et pommes* (1902-03), *Mon Voyage* (1905), *Mon Apologie* (1906).

Quinn, Edmond T.
Radostavoff, Vassili

Raiberti, Baron Mammut. A former cabinet official and lawyer of France, died Dec. 17, 1929, in Nice, where he was born in 1862 and where he practiced law. In 1920 he served as Minister of War, and from 1922 to 1924, he was Minister of Marine.

Rasauet, Leo. American lawyer and judge, died June 1, 1929, in St. Louis, Mo. He was born Apr. 19, 1844, in Wadern, Prussia, but went to the United States in early childhood. During the Civil War, he served in the Union Army, enlisting as a private in the 1st Missouri Volunteer and being mustered out as major of the 30th Missouri Infantry. He was admitted to the St. Louis bar in 1867, and served as attorney for the city school board from 1880 to 1890. He was judge of the probate court of St. Louis during 1895-99, after which he resumed his private law practice. He was commander in chief of the Grand Army of the Republic in 1900-01.

Reich, Leon. A Polish Zionist, died Dec. 1, 1929, in Lwow, Poland, at the age of 56. He was born in Dnobyts, and attended a school at Sambor, later studying law at the Lemberg University. He also studied at the Ecole Libre des Sciences Politiques in Paris. In 1905 he became vice president of the Zionist organization in Galicia, and edited the Zionist paper *Wachdod* during 1905-08. He later edited the *Almanach Zydowski*, an illustrated Jewish almanac. In 1912 he was elected a member of the executive committee of the International Zionist Congress, holding the position until his death. He

was made president of the Zionist organization for Israel in Poland in 1920, and in 1922 was elected president of the Polish Jewish League where he concluded the so-called Polish Jewish League under the name of a vice president of the Committee of the Peace Conference in Paris (1919-20), during which time he published *The Question of the Minorities in Eastern Europe*, a compilation of the views of the League. He was a Canadian senator, died Aug. 26, 1929, in Prescott, Ont., where he was born Jan. 1, 1859. He was graduated from Queen's University in medicine, but did not practice. A Conservative he represented Grenville in the Canadian House of Commons from 1891 to 1921. From 1911 to 1917, he held the portfolio of Minister of Customs, and from 1917 to 1921 he was Minister of Finance. He was appointed to the Canadian Senate from the Province of Ontario in 1921.

Reid, Robert
Rift, Richard A. Czechoslovakian chess player, died in Prague June 6, 1929. He was born May 28, 1869, in Przemok. In 1920 he won prize in the international chess tournament held in Gothenburg, Sweden. He also played at London in 1922, winning sixth place, in New York in 1924, and at Moscow in 1925. He wrote *Die neuen Ideen im Schachspiel* (1922), an authoritative book on the playing of chess, and *Meister des Schachspiels* (1924).

Revelstoke, Baring, John, Second Baron of
Reynolds, Horatio M. An American educator, died Oct. 3, 1929, in New Haven, Conn. He was born in Wakefield, N. H., Apr. 17, 1857, and was graduated from Yale University in 1880. He returned to Yale University in 1883 as tutor, becoming in 1888 assistant professor of Greek. He was appointed Tabor professor of Greek language and literature in 1893, and in 1922 became emeritus professor.

Rice, The Rev. Dr. Edwin Wilbur An American editor died Dec. 3, 1929, in Philadelphia, Pa. He was born July 24, 1811, in Kingsboro (now Gloversville), N. Y., and was graduated from Union College, Schenectady, N. Y., in 1834. During 1855-57 he was a student at the Union Theological Seminary, New York City, and was ordained in the Congregational ministry in 1860. Union College conferred on him the honorary D. D. degree in 1881 and the Litt. D. degree in 1914. He was a Sunday-school missionary in St. Louis, Mo., and in Chicago, Wis., from 1859 to 1864. Joining the American Sunday School Union, he became superintendent in Milwaukee (1864-70), assistant secretary and assistant editor in Philadelphia (1871-78), editor of periodicals (1878-79), editor of periodicals and publications (1879-1916), and after 1915, honorary editor. Dr. Rice was author and editor of many books and pamphlets on religious subjects. After his nineteenth birthday, he wrote an autobiography, *At Ninety* (1922) and *After Ninety Years Story of a Nonagenarian and the Educators He Has Known* (1921, 1924).

Richardson, Charles Williamson An American nose, throat, and ear specialist, died in Boston, Mass., Aug. 25, 1929. He was born in Washington, D. C., Aug. 22, 1861, and received an M.D. degree from Columbian University (now George Washington) in 1884 and from the University of Pennsylvania the same year. From 1891 to 1924, he was professor of laryngology and otology at George Washington University, and after 1924 emeritus professor. Dr. Richardson lived and practiced in Washington, and during President Coolidge's administration was specialist for the White House. In 1917-18 he was director of the section of defects of hearing and speech in the office of the Surgeon General. He contributed to *Posey and Wright's Diseases of the Eye, Ear, Throat, and Nose* (1907), to *Musser and Kelly's Handbook of Practice and Treatment*.

Rickard, George Lewis (Tex.) American professional boxing promoter, died at Miami Beach, Fla., Jan. 6, 1929. He was born in Kansas City, Mo., Jan. 2, 1871, and spent his boyhood on a cattle ranch. As a young man he went to Alaska and for several years lived in the gold mining districts there. He became interested in professional boxing in the United States, arranging in 1906 the bout between Joe Gans and Battling Nelson at Goldfield, Nev. In 1920 he became manager of Madison Square Garden, sports centre in New York City. He was promoter in 1921 of the heavyweight championship match between Jack Dempsey and Georges Carpentier in Jersey City, witnessed by 80,000 people with gate receipts of \$1,552,422. In Chicago, in 1927, 120,000 persons paid about \$2,500,000 to see the fight between Gene Tunney and Jack Dempsey, also promoted by Rickard.

Ridgway, Robert
Riggs, Robert Baird An American chemist and educator, died in Hartford, Conn., Aug. 1, 1929. He was born in Hazelwood, Minn., May 22, 1855, and was graduated from Beloit College in 1876, receiving the Ph.D. degree from the University of Gottingen in 1883. During 1884-87 he was chemist with the United States Geological Survey. He was professor of chemistry at the National College of Pharmacy in 1886-87, and at Trinity

College from 1887 until 1920, in which year he retired. **Riley, The Most Rev. Charles Owen Leaver**, Arch bishop of Perth Anglican diocese, died June 23, 1929, in Perth, Australia. He was born May 20, 1854, and was educated at Owens College, Manchester, and at Caius College, Cambridge. Ordained in 1878 to the curacy of Bierley, Yorkshire, he went in 1880 to Holy Trinity, Bradford, and in 1882 to Lancaster. He was vicar of St. Paul, Preston, from 1885 to 1894, when he was appointed Bishop of Perth, a diocese of 84,000 square miles in West Australia. In 1911 he was raised to the rank of archbishop and the same year was appointed chaplain general of the Commonwealth Forces. During 1916-22 he was chancellor of the University of West Australia.

Riley, Franklin Lafayette An American educator, historian and author, died Nov. 10, 1929, in Lexington, Va. He was born Aug. 24, 1868, near Hebron, Miss., and was graduated from Mississippi College in 1890, receiving the Ph.D. degree from Johns Hopkins University in 1896. He was president of Hulan College for Young Women in 1896-97, and professor of history at the University of Mississippi from 1897 to 1914. After 1914 he was professor of history at Washington and Lee University and head of the department. In 1902 he organized the Mississippi State Department of Archives and History, and until 1914 served as its executive. During the World War Dr. Riley lectured in army camps and in 1919 was professor of American history in the A. F. F. University in Beaune, France. He wrote *Colonial Origins of New England Senators* (1896), *Spanish Policy in Mississippi after the Treaty of San Lorenzo* (1897), *Greek History of Mississippi* (1900), *Extinct Towns and Villages of Mississippi* (1902), *the Mississippi River as a Political Factor in American History* (1910), *Our Republic: A Grammar School History of the United States* (1910), joint author and publisher. He also edited 14 volumes of publications of the Mississippi Historical Society and *A Political History of the South* (South in the Building of the Nation series). He was literary editor of the *Literary Digest* (1907-1910), and the associate editor of the *World's Orator* (10 vols.), and editor of *General Robert E. Lee after Appomattox* (1921).

Robb, James Alexander A Canadian statesman, died in Toronto, Nov. 11, 1929. He was born in Huntingdon, Quebec, Aug. 10, 1859, and attended the Huntingdon Academy. In 1908 he was elected as a Liberal to the Canadian Parliament and was re-elected thereafter until his death. He was Minister of Trade and Commerce in 1921-23, Minister of Immigration and Colonization in 1923-26, acting Minister of Finance in 1924-25, and after 1926, Minister of Finance. He served in 1918 as the Liberal party's chief whip, and became a member of the Privy Council in 1921. Mr. Robb was president of McDonald & Robb, millers of Valleyfield, Quebec, and of Bruneau, Curcio & Co., wholesale flour merchants of Montreal.

Robinson, Sir Joseph Benjamin
Robinson, Colonel Wirt A retired American army officer and educator, died Jan. 19, 1929, in Washington, D. C. Born in Buckingham Co., Va., Oct. 16, 1864, he studied at Richmond College during 1879-82, and was graduated from the U. S. Military Academy in 1887. He was commissioned second lieutenant in the 4th Artillery, U. S. Army, in 1887, and was promoted through successive grades to the rank of colonel in 1911. He was an instructor in French and Spanish at the U. S. Military Academy in 1891-92, professor of military science at Harvard University during 1894-98, and assistant professor of modern languages, again at the U. S. Military Academy, from 1899 to 1901. In 1904-06 he was head of the department of chemistry and explored in the School of Submarine Defense at Fort Totten, N. Y. He returned to the U. S. Military Academy as assistant professor of chemistry in 1906, and in 1911 was made professor and head of the department. In 1928 he retired. Colonel Robinson was a naturalist, making trips to Colombia, Venezuela, Central America, and the West Indies to add to his collection. He was the author of *Plunging Trip to the Tropics* (1896) and *Elements of Electricity* (1914).

Rockwell, Francis William American lawyer and former congressman, died June 26, 1929, in Pittsfield, Mass., where he was born, May 20, 1844. He was graduated from Amherst College in 1868 and from the Harvard Law School in 1871, in the latter year beginning the practice of law in Pittsfield. During 1873-75 he was one of the special justices of the district court of central Berkshire. He entered politics in 1879 as a member of the Massachusetts House of Representatives, and in 1881 he served in the State Senate. From 1884 to 1892, he represented the twelfth Massachusetts district in Congress, after which he resumed the practice of law in Pittsfield. He retired in 1916. From 1898 to 1926, he was a member of the Greylock Reservation Commission.

Roe, Edward Drake, Jr. An American mathematician and astronomer, died in Syracuse, N. Y., Dec. 11, 1929.

He was born Jan 4, 1859, in Elmira, N. Y., and was graduated from Syracuse University in 1880 and from Harvard University in 1885. He studied also at the Harvard medical and graduate schools, and in 1898 received the Ph. D. degree from the University of Erlangen, Germany. During 1886-88 he was instructor in mathematics in an academy in Media, Pa., and in 1890-92 at Boston University. He was associate professor of mathematics at Oberlin College from 1892 to 1899, and at Syracuse University in 1900-01. After 1901 he was John Raymond French professor of mathematics at Syracuse University, and after 1919 director of the Holden Observatory there. In 1906 he built a private astronomical observatory in his home in Syracuse. He contributed to mathematical and scientific journals.

Roe, Gilbert Ernstsen. An American lawyer, died in New York City, Dec. 22, 1929. He was born in Oregon, Wis., Feb. 7, 1865, and was graduated from the University of Wisconsin with a law degree in 1890. From 1890 to 1899, he was in Wisconsin, associated with the late

Marion La Follette. In 1899 he moved to New York, and there continued his practice during 1905-10 as a member of the law firm, Roe & McCombs. He was counsel in 1922-23 for the United States Senate Committee on Manufactures, of which La Follette was chairman, in an investigation of the prices of gasoline and other petroleum products. He was Eastern regional director of the La Follette Wheeler campaign committee during the presidential campaign of 1924. In addition to many legal articles, he wrote *Our Judicial Oligarchy* and *Review of Selected Opinions of Chief Justices Dixon and Ryan*.

Rogers, Rear Admiral Eustace Barton. A former paymaster general in the U. S. Navy, died in March, 1929, at the Naval Hospital, League Island, Pa. He was born in San Francisco, Calif., May 29, 1855, and was educated at Lehigh University and at the University of California. Appointed from California to the U. S. Navy in 1879, he became paymaster in 1894 pay inspector in 1902, pay director in 1905, and paymaster general with rank of rear admiral in 1916. He was chief of the Bureau of Supplies and Accounts in 1906. He was retired in 1910. In the Spanish American War Admiral Rogers served on the U. S. *Monterey*, and during the World War, he was first on duty at the Navy Yard in Biernorton, Wash., and with the United States Shipping Board, and later general inspector of the Supply Corps on the Pacific coast.

Rogers, James Hays. A New York City lawyer, died Feb. 10, 1929, in New York City, at the age of 49. In 1925 he began to edit in Graz the monthly journal *Heimatsinn*. He was the author of *Die vierhundert Jahre (1907)*, *Die Kommodore Magdalene (1911)*, *Die Götter (1911)*, *Polycarp der Erbsenmagdalen (1916)*, *Peter der Mensch (1924)*.

Rosenbush, Paul. A German author of adventure and detective stories, died Sept. 12, 1929. He was born July 11, 1877, in Hamburg. His works include *Die ferne Front*, *Der Held der Sonne*, *Schiffbruchsläufer*, *Campbell*, *Der Mann auf der Kraitelocher*.

Ross, William Benjamin. A Canadian senator, leader of the Conservative party, died in Guelph, Ont., Jan. 10, 1929. Born on Prince Edward Island, Canada, in 1854, he attended Dalhousie College, Halifax, N. S. He was admitted to the Nova Scotia bar in 1878 and practiced at Halifax, becoming King's counsel in 1890. He was appointed to the Canadian Senate in 1912 and made Conservative leader of the Upper House in June, 1926.

Rosster, William Sidney.

Rubner, Cornelius.

Sackett, Henry Woodward. An American lawyer, died Dec. 9, 1929, in New York City. He was born in Enfield, N. Y., Aug. 31, 1862, and was graduated from Cornell University in 1875, studying law at Columbia University the following year. Admitted to the New York bar in 1877, he became a law clerk in the office of Cornelius A. Ruess, whom he succeeded as counsel for the *New York Tribune* in 1888. From 1888 to 1894, he was a member of the law firm of Sackett & Bennett, and, at the time of his death, was senior member of Sackett, Chapman, Brown & Cross. He specialized in the law of libel, lecturing and writing in that field as well as practicing. In addition to being at one time law editor and contributor to the *Herald Tribune*, he wrote *The Law of Libel for Newspaper Men*. He lectured at the School of Journalism of Columbia University and was a special lecturer at the College of Law of Cornell University.

Saugous, Charles Euchariste de' Medici.

Saugous, Louis Theodore de' Medici. An American physician, died Jan. 16, 1929, in Philadelphia, Pa., where he was born Dec. 1, 1846. He was graduated from the University of Pennsylvania in 1906, and in 1909 received a medical degree there. He also studied pharmacology at the University of Geneva and became associate professor of pharmacology at Temple University,

Philadelphia. Subsequently, he was successively instructor and assistant professor in endocrinology at the University of Pennsylvania, was associated with his father, Dr. Charles E. de' Medici, professor of endocrinology, in research work in that field. With him also, he edited the *Saugous' Analytical Cyclopaedia of Practical Medicine* (1898-1925).

Salus, Hugo A. (Czechoslovakian poet and physician died in 1929, in Prague. He was born in Ceska, August, 1866, and practiced medicine in Prague. His volumes of poetry include *Gedichte* (1898), *Esigen* (1900), *Ernte* (1903), *Glockenklang* (1911), *Das neue Buch* (1920), *Klarer Klang* (1923), *Helle Träume* (1924), *Die Harfe Gottes* (1928). She also wrote *Novellen des Lyrikers* (1904), *Zeitschrift für Kinderleben* (1909), *Schwache Helden* (1910), *Seelen und Sinne* (1911), *Die achene Barbara* (1922).

Sandora, General Otto Liman von.

Sarrail, Maurice Paul Emmanuel.

Savio, Reginald Hall. An American surgeon, died May 29, 1929, in New York City, where he was born Oct. 18, 1859. He was graduated from Columbia College in 1881, receiving the M.D. degree from New York University-Bellevue Hospital Medical College in 1884. From 1885 to 1890 he was assistant professor of surgery in the Bellevue Hospital Medical College of New York City. In 1890 he became assistant professor of surgery in the New York University-Bellevue Hospital Medical College, in 1897 adjunct professor of orthopedic surgery, in 1898 clinical professor, and, after 1910 professor of orthopedic surgery. After 1911 he was also assistant attending surgeon at Bellevue Hospital in New York City. Dr. Savio edited the department of orthopedic surgery in *Annals of the University Medical Society* (1895-96), and wrote *Immediate Reduction of Deformity after Tetanum* (1887).

Schaff, Morris.

Schrenck Notzing, Baron Albert von. A German physician and neurologist died in Munich Feb. 12, 1929. He was born May 18, 1862, in Oldenburg. He was interested in metaphysics and in psychic phenomena, especially in hypnotism. His books include *Materialisationsphänomene* (1914), *Physikalische Phänomene des Mediumismus* (1920), *Experimente der Fernbewegung* (1924).

Schure, Edouard.

Schur, Arthur.

Scott, Geoffrey. An English scholar and architect died in New York City Aug. 14, 1929. He was born in England in June 1885 and was educated at Oxford University. In 1909 he went to Italy, living in Florence and designing private houses and gardens. At Oxford he wrote *English Architecture* and in 1914 published *The Architecture of Humanism*. He went to the United States in 1914 to edit the Boswell manuscripts, discovered at Malahide Castle and bought by Col. Ralph H. Isham. The six volumes of this work that had been published were of great interest to students of James Boswell in that they threw a new light on Dr. Isham's biography and his death. Mr. Scott before the completion of the work was considered a distinct loss to Boswell scholarship.

Sergeant Sir David Maurice. An English physician and poet, died Jan. 12, 1929, at the age of 99. He left Cambridge University in 1852 for the gold mines of Australia and was forced to work intermittently at various manual occupations. He returned to Cambridge, and later completed his medical course at Guy's Hospital, London. After serving in the medical department of a steamship company, he practiced at Camberwell, becoming senior officer of the Camberwell National Reserve. Sir David received the M.D. degree from the University of Saint Andrews, and in 1922 he was knighted for his patriotic poetry.

Servais, Garrett Putnam.

Seesums, The Rt. Rev. Davis, Bishop of Louisiana.

Seydoux, Charles Louis Auguste Jacques. A French diplomat and publicist, died May 26, 1929, in Paris. He was born Dec. 30, 1870, and was educated at l'Ecole des Sciences Politiques, later studying law at The Hague and at London. During the diplomatic service he was secretary in Athens and in Berlin, and at one time had the rank of Minister Plenipotentiary. He was also Assistant Director of Political and Commercial Affairs in the French Foreign Office. He contributed political articles to newspapers, writing a number of articles for the New York *Herald Tribune* and

contributing regularly to *Le Petit Parisien*. As an economist, his advice was sought by French leaders. During the World War, he studied blockades and was later concerned with the economic sections of peace treaties, especially with reparations. Because of ill health, he retired in 1926.

Seymour, Admiral of the Fleet Rt Hon Sir Edward Hobart

Shorn, Dallas Lore

Shattuck, Frederick Cheever

Shaw, Mary An American actress, died in New York City, May 16, 1929. Born in 1860 in Boston, Mass., she made her first appearance on the stage there in 1878. She went to New York in 1881, playing in Sheridan's *School for Scandal*. Her best known roles were Mrs Warren in Shaw's play, *Mrs Warren's Profession*, and Mrs Arling in Thesen's *Ghost*.

Shugrue, Martin J An American economist and educator, died Apr 4, 1929, in Brookline, Mass., at the age of 39. He was born in Colchester, Conn., and was graduated from the University of Michigan. In 1914 he entered the department of economics at the Massachusetts Institute of Technology. With David R Dewey, he wrote *Banking in the United States*.

Sidi, Mohamed el Iahib, Bey of Tunis. Ruler of Tunis a French protectorate of North Africa, died Feb 11, 1929, at the age of 71. He ascended the throne in 1922. He was succeeded by his cousin, Sidi Ahmed Sifon, Sir Clifford

Simkins, William Stewart An American lawyer, educator, and soldier, died in Austin, Tex. Feb 27, 1929. Born in P. D. C. S. O. Aug 25, 1842, he joined the South forces in December, 1860, with his entire class at the Military Academy of South Carolina, later was commissioned first lieutenant in the Confederate artillery and served through the Civil War. During the reconstruction period, he was an important officer in the Ku Klux Klan. Admitted to the bar in 1870, he practiced at Monticello, Fla., 1870-73, at Corsicana, Tex., 1873-85, and at Dallas, Tex. 1885-99. He was then appointed professor of law at the University of Texas where he remained until his death. The University of the South conferred on him the D.C.L. degree in 1913. In addition to his books, *Simkins on Equity* (1901) and *Simkins' Contracts and Sales* (1905), he wrote *Simkins on Administration of Estates in Texas* (1908), *A Federal Suit in Equity* (1909), *A Federal Suit at Law* (1912), and *Trusts by Limitation in Texas*. Singer, Sir Mark Twain An English sportsman, died in London, June 24, 1929. He was born in Yonkers, N. Y., July 25, 1863, the son of Isaac Merritt Singer, inventor of the Singer sewing machine. Educated at Cambridge University, he became a naturalized British subject in 1900 and in 1920 was knighted. He was a certified aeronaut, holding the eighth license issued by the British government. He was also a pioneer in cycling and motorcycling, and a well known vachman. In 1881 he began the breeding and training of horses.

Sherrett, Hon Sir Charles Perrin An English jurist, died at sea, Feb 15, 1929. He was born Sept 2, 1863. Admitted to the New Zealand bar as barrister and counsellor, 1884, he became King's counsel in 1907. He was president of the New Zealand Law Society, 1918-26, and in the latter year was made Chief Justice of New Zealand, remaining in that post until his death. Sir Charles served as chairman of the Royal Commission on the Administration of Western Samoa, 1927. He was created a Knight Commander of St Michael and St George in the same year.

Skoda, Baron Karl von A German munitions manufacturer, died Jan 11, 1929, at the age of 51. He was general director of the Skoda Steel Foundry and Munition Works in Pilsen, Czechoslovakia. During the World War, the 30 5 centimeter howitzer constructed by his firm was largely employed by the German artillery.

Sloggett, Lieut-Gen Sir Arthur (Thomas) A British military surgeon, died Nov 27, 1929, in London. He was born Nov 24, 1857, at Stoke Damerel, and in 1881 entered the Royal Army Medical Corps, where he was promoted to the rank of colonel in 1903, surgeon major general in 1908, and lieutenant-general in 1914. He served on the Indian frontier from 1884, in the Sudan from 1897-98, and from 1909 to 1909, he was in South Africa. From 1911 to 1914, he was Director of Medical Services in India, and from 1914 to 1918, he was Director-General of the British Army Medical Services. In the course of his military service, General Sloggett was often mentioned in despatches and received numerous decorations, including that of Grand Officer of the Legion of Honor from France. Commander of the Order of Leopold, First class, from Belgium, and the Croix de Guerre from both France and Belgium. He was created Knight Commander of the Bath in 1915 and Knight Commander of St Michael and St George in 1917. From 1921 to 1928, he was colonel commandant of the Royal Army Medical Corps.

Slosson, Edwin Emory

Smareghia, Antonio

Smart, Rt Hon Sir Thomas William

Smart, General Birney An American educator and author, died Apr 4, 1929. He was born in Middlefield, Mass., May 8, 1868, and was graduated from Brown University in 1891 and from the Union Theological Seminary in 1898. He also studied at the universities of Berlin, Marburg, and Paris (1898-1900). He was then in Lehn at Oberlin Academy in 1891-92 and instructor in mathematics and modern languages at Worcester Academy in 1892-95. In 1902 he was ordained in the Baptist ministry, and during 1900-04 he was an instructor in systematic theology at the University of Chicago, assistant professor in 1904-06, associate professor of dogmatic theology during 1906-17, and professor of Christian theology during 1907-11. He was the Nathaniel William Taylor lecturer at Yale University in 1912 and the Earl Lecturer at Yale University in 1920. He received the D.D. degree from Brown University in 1909. Dr. Smith was managing editor for the *American Journal of Theology* (1909 to 1920), editor of the *Journal of Religion* (1921 to 1927), and with Shailer Mathews, edited *A Dictionary of Religion and Ethics* (1927). His works include *Practical Theology* (1903), *Biblical Concordance* (1903), *What is a D. D.?* (1903), *Religion and Power* (1909), *Social Idealism and the Changing Theology* (1913), *Principles of Christian Living* (1924), and *Current Christian Thinking* (1927).

Smith, Harry Alexander An American soldier, died May 26, 1929, in Omaha, Neb. He was born in Athens, Kans. June 18, 1866 and was graduated from the U. S. Military Academy in 1891. Commissioned second lieutenant in the 1st Infantry, he was promoted through the successive grades to colonel in 1919, brigadier general in 1922, and major general in 1926. During the World War General Smith served on the General Staff of the A. E. F. He commanded the Army Service Schools in France in 1918, and in the early months of 1919, he was in charge of civil affairs in Germany. He was a military delegate to the Limitation of Arms Conference in Geneva in 1926. At the time of his death he was commanding general of the 7th Corps Area with headquarters at Fort Omaha, Neb. General Smith received many decorations among them the Distinguished Service Medal of the United States and French Legion of Honor.

Smith, Kendall Kerfoot An American classicist, died in New York City, Nov 26, 1929, at the age of 47. He was graduated from Harvard University in 1904 and attended the American School of Classical Studies at Athens in 1907-08. After teaching at Harvard University he went to Brown University in 1915, where at the time of his death he was head of the classics department and Benedict professor of Greek literature and history. During the World War, he was a Y. M. C. A. worker with the Greek Army.

Smith, Seth MacCuen An American surgeon, died Sept 14, 1929, in Philadelphia, Pa. Born in Hollidaysburg, Pa. May 6, 1861, he was graduated in 1884 from Jefferson Medical College in Philadelphia, where he became professor of medicine the following year. He became professor of otology at Jefferson Medical College in 1904. He was also attending otologist at the Jefferson College Hospital, surgeon in charge of ear, nose, and throat at the Germantown Hospital, attending otologist and laryngologist at the Jewish Hospital. In 1917 he was commissioned major in the Medical Reserve Corps on the U. S. Army. Besides writing for medical journals and contributing to medical encyclopedias, Dr. Smith edited the *Atlas and Epitome of Otolaryngology*.

Smith, Wilson George An American composer, died in Cleveland Feb 26, 1929. He was born in Elvira, Ohio, in 1855, studied in Cincinnati and Berlin and in 1882 settled in Cleveland as a teacher. From 1902 on he was in charge for *The Press*. He was a prolific composer of instructive work.

Smith, Xanthus An American painter, died in Weldon, Pa., Dec 2, 1929, at the age of 90. He was born in Philadelphia, Pa., the son of the artist, Russell Smith. Becoming known as an artist, his work was interrupted by the Civil War, in which he served first as captain's clerk on the U. S. S. *Wabash*, and later, on the admiral's staff during the operations of the coast of Charleston. S. O. Returning to his civil life, he painted large-scale pictures of both naval and land battles of the Civil War. His work includes, "Battle of Fort Fisher," "Fight Between the Monitor and the Merrimack," "Sinking of the Alabama," "Close of Pickett's Charge at Gettysburg," and "John Burns's July the First at Gettysburg."

Soltys, Mieczyslaw A Polish composer, died in Lwow, Nov 15, 1929. He was born in Lemberg, in 1863, and studied in Vienna and Paris. In 1901 he became director of the Conservatory and conductor of the Music Society in Lemberg. He wrote an oratorio, *The Vow of John Casimir*, a symphony, a symphonic poem, a

piano concerto, piano pieces, and songs. Of four operas, only two were produced. *The Repulse of Babia* (Lemberg 1905) and *Wien* (Lemberg, 1910).

Soudav, Paul A. French literary critic, died in Paris, July 7, 1929. For many years, he conducted a column in *Le Temps*. He also wrote a weekly letter to the *New York Times*. His books include *Préface aux Maximes de La Rochefoucauld* and *Les Lettres du Temps*.
 Spencer, The Rev. Dr. David Smith. An American missionary of the Methodist Episcopal Church, died in Pasadena, Calif., Oct. 31, 1929, at the age of 75. He was born in Lemon, Pa., and educated at Wyoming Seminary and at Drew Theological Seminary. After holding pastorates in Pennsylvania and New Jersey, he became a professor in Aoyama Gakuin, a Methodist Episcopal mission college in Tokyo. He was later successively principal of Chinese Gakuin, a missionary seminary in Nagasaki, superintendent of the Nagoya and Tokyo districts of the Japan Methodist Conference, general manager of the Methodist Publishing House in Tokyo, and editor of the *Japan Times*. Dr. Spencer translated into Japanese a volume of poems by

Spencer, Sir Wm. P. An American sugar manufacturer, died June 28, 1929, in Yonkers, N. Y. He was born Feb. 7, 1870, in San Francisco, Calif., a member of the family founding the famous sugar business of California. At the age of 16, he entered the mill of the Western Sugar Refining Company in San Francisco, was later an official in the Spencer Refining Company's plant in Philadelphia and, at the time of his death, he was general manager of the Federal Sugar Refining Company's plant in Yonkers, N. Y.

Spry, William A. Former Governor of Utah, died Apr. 21, 1929, in Washington, D. C. He was born in Windsor, England, Jan. 11, 1864, and went to the United States in 1875. For a number of years, he was a farmer and banker in Utah, and in 1905-06 served as president of the State Board of Land Commissioners. He was United States Marshal for Utah in 1906-08 and, from 1909 to 1917, Governor of the State. In 1921, he was appointed Commissioner of the General Land Office by President Harding, and was reappointed by both Presidents Coolidge and Hoover.

Stack, Austin. An Irish statesman and Sinn Féin leader, died Apr. 27, 1929, in Dublin. He was born in 1880. From 1918 to 1921, he was a Sinn Féin member of Parliament from West Kerry. In 1919-22, he was Secretary for Home Affairs in the Dáil Éireann. He represented the counties of Kerry and West Kerry in the Dáil in 1921-23 and was a member for County Kerry from 1923 to 1927. Opposing the treaty of December, 1921, by which the Irish Free State was established, he joined in the civil war which followed, being captured by the Free State troops at Tipperary in 1921.

Stallings, George T. An American baseball manager died May 13, 1929, near Haddon, Va. He was born on a farm near Augusta, Ga., in 1866. In 1888, he played baseball with the Stockton (Calif.) Baseball Club. After several years of playing with teams in the West and in the East, he became manager of a team in Augusta, Ga. In 1900, he went to Detroit to direct the team there and was later in Buffalo in New York, and in Boston.

Steel, Flora Annie.
 Steele, Hiram R. An American lawyer, died in Brooklyn, N. Y., Nov. 21, 1929. He was born July 10, 1842, in Stanstead, Canada, of American parents and was educated at an academy in St. Johnsbury, Vt. In the Civil War, he served as captain of Company K, 10th Vermont Infantry, and in 1865 was brevetted major of the Vermont Volunteers. Going to Louisiana after the War, he was admitted to the bar there in 1868, and was judge of the Parish Court (1868-72), district attorney (1872-75), assistant attorney general (1875) and judge of the Superior Criminal Court of New Orleans (1875-76). In 1890, he moved to Brooklyn, N. Y., where he became senior member of the law firm, Steele, De Plessa & Steele. He was also a trustee of the New York Life Insurance Company.

Steinen, Karl von den. A German explorer and ethnologist, died Nov. 5, 1929, in Cronberg. He was born in Mulheim an der Ruhr, March 1855. In 1882-83, he accompanied the German South Polar Expedition to South Georgia. He explored the Yungu River of Brazil in 1884 and 1887-88, and the Marquesas Islands of the Southern Pacific in 1897-98. He wrote *Durch Zentralbrasilien Expedition zur Erforschung des Schingu* (1886), *Die Bakarapacha* (1892), *Unter den Naturvölkern Zentralbrasilien Reisebilder und Entdeckungen der Schingu Expedition (1887-88)*, *Die Marquesen und ihre Inseln Studien über die Entwicklung primitiver Völkergemeinschaften* (3 vols., 1925-28).

Stevens, John Peter. An American merchant and leader in the textile industry, died Oct. 27, 1929, in Plainfield, N. J. He was born Feb. 2, 1868, in North Andover, Mass., and was educated at Phillips Academy in Andover. He entered the dry goods commission house,

Faulkner, Page & Co., of Boston, Mass., and in 1899 established in New York City the J. P. Stevens & Co., dry goods commission merchants, of which he was president. He was president of the American Association of Woolen and Worsted Manufacturers and of the Association of Cotton Textile Merchants.

Stewart, Grant. An American actor and playwright, died Aug. 18, 1929, in Woodstock, N. Y. He was born in Lewisham, Kent, England, Apr. 28, 1866. He first appeared on the stage in 1894 in the repertory company of the English actress, Rosina Vokes. In 1909, he played with De Wolf Hopper, American comedian, and the following year toured England with Charles Hawtrely, an English actor. He also played with Ethel Barrymore, Anne Russell, Viola Allen, and Elsie Ferguson. The plays in which he appeared include *The Earl of Marland*, *Dear Brutus*, *The Undercurrent*, *The Rude Return*, and *Young Woodley*. He was the author or coauthor of 38 plays and operettas, including the operas *Bianca and Madeline*, and the plays *A Little Water on the Side* and *He tried to Be Nice*.

Stewart, Joseph. An American postal official, died July 1, 1929, in Washington, D. C. He was born Oct. 30, 1859, in Humboldt, Kans., and was graduated from Columbian College (now George Washington University) with the LL.B. degree in 1884, receiving the LL.M. degree in 1885. He became a clerk in the U. S. Post Office Department of Washington, D. C., in 1882, and, after practicing law at Kansas City, Mo., from 1887 to 1890, he reentered government service in 1891. Appointed assistant superintendent of railway adjustments for the U. S. Post Office Department in 1902, he became superintendent in 1907 and second assistant postmaster general in 1908. He was special assistant to the attorney general in 1915, but after 1924 was executive assistant to the United States Postmaster General. He was chairman of the Universal Postal Congress in Stockholm, Sweden, in 1924 and to the Pan American Postal Congress in Mexico in 1926. He wrote *The Evolution of Living* (1900), *Realization* (3 vols., 1901-1902, 1903). He edited *Digest of Decisions of United States and Other Courts Affecting the Post Office Department and Postal Service* (1905).

Stirkoke, Gen. Lord Horne of See Horne, Henry Sinclair.

Stirling Rear Admiral Yates.
 Stollwerck, Albert N. An American chocolate manufacturer died Aug. 25, 1929, at Cape May, N. J., at the age of 60. He was the son of Heinrich Stollwerck, head of the chocolate firm, Stollwerck Brothers in Cologne, Germany, and went to the United States to become manager of the branch factory established at Stamford, Conn., in 1904. Under his direction, Stollwerck chocolate candy slot machines were installed in railroad stations all over the United States. At the time of his death, he was no longer director of the Stollwerck factory, but was general manager of the Royal Cocoa Company of Camden, N. J.

Stone, Melville Elijah.
 Storey, Moorfield.
 Straton, The Rev. Dr. John Roach.
 Strauss, Albert. An American banker, died Mar. 28, 1929, in Atlantic City, N. J. He was born in New York City, Aug. 26, 1864, and from 1879 to 1882, was a student at the College of the City of New York. In 1882, he entered the banking business in New York, becoming in 1901 a member of J. & W. Seligman & Co. From 1918 to 1920, he was a vice governor of the Federal Reserve Board. He was also a financial adviser to the American delegation to the Paris Peace Conference of 1921. He returned in 1921 to J. & W. Seligman & Co.

Streafeld, The Rt. Rev. William Champion, Suffragan Bishop of Lewes. An English prelate died suddenly on a train between Lewes and Eastbourne, Feb. 15, 1929. Born in Plaxton Kent, Sept. 1, 1865, he was a foundation scholar at Malborough College, and was graduated from Pembroke College, Cambridge, in 1886. Ordained in 1889, he was a curate at Sittingbourne and in 1890, being made priest in 1890. On leaving Sittingbourne, Mr. Streafeld was assigned to Frant, Sussex, and he later served as vicar at Amberley and Houghton, Sussex, 1897-1902, at St. Peter's, St. Leonards-on-Sea, 1902-11, and at Eastbourne, where he was also rural dean, 1911-28. Mr. Streafeld was interested in civic affairs and in social welfare and was numerous in religious cooperation between the various denominations. Appointed Suffragan Bishop of Lewes in December, 1928, he was consecrated Jan. 25, 1928.

Stresemann, Gustav.
 Stryker, Melancthon Woodbey.
 Stubbs, Walter Roscoe. A former Governor of Kansas and ranch owner, died in Topoka, Kans., Mar. 25, 1929. He was born Nov. 7, 1858, in Richmond, Ind., and in 1869 moved with his parents to Douglas Co., Kans. He was a student at the University of Kansas. He became a railroad contractor in Kansas, and later owned and operated cattle ranches in Kansas, Texas, New

Mexico, and Colorado. In 1903, 1905, and 1907, he was elected a R. H. Douglas County to the Kansas Legislature. He was Governor of Kansas from 1909 to 1913.

Studdert-Kennedy, The Rev. Geoffrey Ankettell See Kennedy, The Rev. Geoffrey Ankettell Studdert Suárez, José León An international lawyer and historical writer of Argentina, died in July, 1929. He was born in Buenos Aires April 20, 1877. From 1898 to 1922, he was Minister of Agriculture for Argentina. He wrote, among other books, *Carácter de la Revolución Argentina*, *Diplomacia Universitaria Americana*, *El general Mitre diplomático*.

Summers, James Collings ("Blue Peter") Anglo-American naval officer and journalist, died in Hawthell, Calif., Feb. 2, 1929. Born at Southgate, England, Feb. 19, 1854, he attended King's College, London. After being in the British merchant service, 1864-72, he served at various times as mate, master, and pilot of United States steamers until 1881. He then joined the New York Naval Militia, 1890, and in 1898 he was commissioned ensign in the United States Navy, being promoted to lieutenant the following year, during the Spanish-American War. When the United States entered the World War, he again received the lieutenant's commission, Dec. 1, 1917, serving in the vicinity of New York City. Captain Summers was yachting editor for the *New York Tribune*, 1899-1917, and he edited the annual official yacht review *Who'll win?* 1895-96. He also edited and published the illustrated yachting weekly, *Buoy and Pennant*, 1893-95, and the monthly magazine, *Yachting*, 1895-98.

Sweetser, The Rev. Dr. Edwin Chapin An American Universalist clergyman, died in Philadelphia, Pa., Oct. 22, 1929. He was born Mar. 16, 1847, in Wakefield, Mass., and was graduated from Tufts College in 1866, studying at the Canton Theological School in 1866-68. Ordained in the Universalist ministry in 1869, he held pastorates in New York State before he became pastor of the Church of the Messiah in Philadelphia in 1879. In 1920 he was made pastor emeritus of the Church of the Messiah. He was president of the Universalist General Convention in 1880-87 and a trustee from 1887 to 1903. He was one of the speakers at the World's Parliament of Religions in Chicago in 1893. In 1921 he published *The Image of God*.

Taft, Charles Phelps
Tazgari, Thomas
Tanaka, Ryoichi
Taubmann, Otto

Thompson, Sir Edward Maundie
Tillman, John Newton An American politician and former university president, died Mar. 4, 1929, in Fayetteville, Ark. He was born in Springfield, Mo., Dec. 11, 1859, and was graduated from the University of Arkansas in 1880. Admitted to the Arkansas bar in 1883, he was circuit clerk of Washington County in 1884-88, a member of the State Senate in 1888-92, prosecuting attorney for the fourth judicial district during 1892-98, and judge of that district from 1900 to 1905. During 1905-12 he was president of the University of Arkansas. In 1915 he was elected to represent the third district in Congress. He retired in 1928.

Tinsley, Katherine
Titus, Lydia Yeamans An English actress, died Dec. 31, 1929, in Los Angeles, Calif. She was the daughter of Annie Yeamans, an Australian actress, and was the widow of Frederick J. Titus. In 1900 she was popular in vaudeville. To show his pleasure in her singing of *Nally in Our Alley*, King Edward VII. gave the actress a gold bairpin, on which the first notes of the song were written in diamonds. During the last 10 years of her life, she played character parts in motion pictures. She was cared for during her last illness by the Motion Picture Actors Relief Association, to which she had given \$5000 on retirement from the stage.

Tondorf, Francis Anthony An American seismologist and educator, died Nov. 29, 1929, in Washington, D. C. He was born July 17, 1870, in Washington, D. C., and was graduated from Woodstock College in 1893, receiving the Ph.D. degree in 1914 from Georgetown University. In 1904 he was elected director of the Seismological Observatory at Georgetown University and in 1924 was elected head of the department of physiology there. Dr. Tondorf was an authority on earthquakes, doing research in epicentres and microseisms. He was also a contributor to scientific journals.

Toole, Joseph Kemp A former Governor of Montana, died Mar. 11, 1929, in Helena, Mont. He was born May 12, 1851, in Savannah, Mo., but moved to Montana in 1870. Admitted to the Montana bar in 1872, he began the practice of law in Helena and, from 1872 to 1876, was district attorney for the third judicial district. He was several times a member of the Montana Territorial Legislature, was a member of the Montana Constitutional Convention in 1889, and served in the Forty-Ninth and Fiftieth Congresses (1885-89). On the admission of

Montana as a State to the Union in 1889, he became the first governor, 1889-93, and was again governor from 1901 to 1909.

Tosi, Cardinal Eugenio, Archbishop of Milan A Roman Catholic prelate, died in Milan, Italy, Jan. 7, 1929. He was born in Busto Arsizio, a district of Italy, in 1864. In 1922 he was created cardinal and made Archbishop of Milan.

Tout, Thomas Frederick
Trevor, Norman An American actor died Oct. 30, 1929, in Norwalk, Calif. He was born June 23, 1877, in Calcutta, India, and was educated there at St. Xavier's College. He became known as an athlete, winning in 1900, as a member of the British Olympic team in Paris, the medal and the bronze statue for the best physique of the athletes represented. He first appeared on the stage in 1907, when he played in *The Stronger Sex*, at the Apollo Theatre in London. He joined the Play Actors the following year, and in 1909 toured with his own company. He went to the United States in 1914. He first appeared in New York in *The Rider Son*. In 1916 he played opposite Maud Adams in *Barrett's A Kiss for Cinderella*, and in 1918 he became joint man ager, with Cyril Harcourt, of the Comedy Theatre. After 1920, he gave his entire time to acting for the motion pictures.

Trimbicelli, Alfredo An Italian philologist, died July 6, 1929, in Venice, at the age of 63. After many grants from the Italian Government, he spent 30 years in research in an effort to read the Etruscan language. He studied inscriptions in tombs and on works of art and at the International Congress of Linguistics meeting at the Hague in 1928. He lectured on his discoveries. He believed that he was near a solution to the mystery of the lost.

True, Tsuda, Umeko A Japanese educator died Aug. 17, 1929, in Kamikura. She was born in Tokyo in 1865, the daughter of the agriculturalist Tsuda Sen and she was one of the five Japanese girls sent in 1871, by the Imperial Government to study in the United States. She remained in the United States until 1882 and on her return to Japan taught in the Pericles' School and lectured in the Women's Higher Normal School. She went again to the United States in 1889 and was graduated from Vassar College in 1892. In 1901 she founded the Joshi Eigaku Gaku (Girls' English School) in Tokyo.

Tuher, Théodore
Tuke, Henry Scott
Turner, Edward Raymond
Tyler, John Mason
Tyson, Lawrence Davis

Underwood, Oscar W. (elder)
Underwood, William Lyman American naturalist and educator, died in Belmont, Mass., Jan. 28, 1929, where he was born Mar. 4, 1864. He left school in 1880 to enter his father's concern, the William Underwood Company, manufacturers of canned goods, of which he subsequently became a director. He commenced lecturing in Boston on natural history in 1886. In 1890 he pointed lecturer in the biological department of the Massachusetts Institute of Technology. In 1900, he remained with that institution until his death, lecturing and writing on the bacteriological problems of the canning and preserving industries, the extermination of mosquitoes, the gray and brown tail moths, and on numerous forms of wild animal life. He was the author of *Wild Brother and Wilderness Adventures*.

Van der Stucken, Frank
Van Slyke, Elizabeth Johnson Canadian physician, died in New York City Feb. 16, 1929. Born in Montreal, the daughter of William and Margaret Reid Johnson, she married in 1902 the Rev. Evert van Slyke who died in 1909. She was a graduate from the New York Hospital Training School in 1884, and from the medical school of Buffalo University in 1887. While in Buffalo, Dr. Van Slyke was superintendent of the training school of the High Street General Hospital. She practiced in New York and supervised for 10 years the dispensary clinic in the dispensary of the New York Hospital for Women and Children. Dr. Van Slyke was medical editor of the *Scientific American* and served for a time on the advisory board of the School of Applied Design for Women.

Vasilev, Alexander Vasilievitch A Russian mathematician, died in Moscow, Oct. 6, 1929. He was born in Kazan, July 2, 1853, and was graduated in 1874 from the University of Petrograd, after which he lectured at the University of Kazan on the theories of function, numbers, and probability. In 1879 he studied in Berlin and Paris. As professor emeritus at the University of Kazan, he lectured there from 1899 to 1907, when he became a lecturer at the University of Leningrad. He was the first mathematician in Russia to emphasize the importance of the theory of groups. The French government bestowed upon him the title Officer de l'Instruction Publique. In addition to textbooks on mathematics, he wrote *Space, Time, Motion*, a historical

cal introduction to the general theory of relativity, and *The Acquisitions and Enigmas of the Philosophy of Nature*.

Victoria, Victor Clarence
Victoria, Princess of Prussia. Second daughter of the Emperor Frederick of Germany and the Princess Royal of England, a granddaughter of Queen Victoria of England, and a sister of the former Kaiser Wilhelm II of Germany, died Nov. 13, 1929, in Bonn, Prussia. Born at Potsdam Germany, Apr. 12, 1866, she was married in 1890 to Prince Adolph zu Schaumburg-Lippe, and after his death in 1916, continued to live at the Schaumburg Palace in Bonn. In 1927 she was married to Alexander Zoubkoff, a young Russian refugee, 21 years of age, who incurred many debts. In 1928, after taking part in a brawl in a Berlin place of entertainment, Zoubkoff was banished from Germany as an undesirable alien. At the time of her death, Princess Victoria was living in comparative poverty and was seeking a divorce from her husband.

Voorhees, James D. An American obstetrician, died in Santa Barbara, Calif., July 30, 1929. He was born in Morristown, N. J., May 21, 1869, and was graduated from Princeton University in 1890, receiving the medical degree from the College of Physicians and Surgeons, Columbia University, in 1893. After serving as an interne in the Presbyterian Hospital, New York City (1894-96) and of the New York Hospital (1896), he became resident physician at the Sloane Maternity Hospital in New York City from 1897 to 1900. He taught in the College of Physicians and Surgeons from 1897 to 1920, becoming in 1913 associate professor of obstetrics. After 1920, Dr. Voorhees was consulting obstetrician at the Sloane Hospital for Women. He was also consulting obstetrician at Green with Hospital in New York City after 1910, the Southampton (N. Y.) Hospital after 1919, and the Overlook Hospital in Summit, N. J., after 1920.

Vrooman, John Whitely. An American banker and lawyer, died in Herkimer, N. Y., Nov. 24, 1929. He was born in Herkimer Co., N. Y., Mar. 28, 1844. A volunteer in the U. S. Navy during the Civil War he was present at both attacks on Fort Fisher. In 1866 he was admitted to the New York bar and practiced in Herkimer, N. Y., where he also held the surrogate's court, Herkimer County, during 1868-78, deputy clerk of the New York Assembly in 1876-77, and secretary of the New York Senate in 1877-78. Before 1890 he was a banker at Herkimer, and, after that year, was in the same business in New York City. From 1889 to 1891, he was Grand Master of the Masons of New York.

Wacker, Charles Henry. An American manufacturer, died Oct. 31, 1929, in Chicago, Ill., where he was born Aug. 29, 1856. He was educated at Lake Forest (Ill.) Academy and in Stuttgart, Germany, 1874-1880. He established with his father the mailing firm, F. Wacker & Son, later Wacker & Bark Bros., and Mailing Co., of which he was president from 1884 to 1901. He was made chairman of the Chicago Plan Commission in 1909, and under his leadership a unified city plan was developed and the lake front of Chicago was made a beautiful avenue. In 1927 he resigned from the commission because of ill health. Wacker Drove on the Chicago River, was named in recognition of his work.

Wadt, Frank. An American lawyer and penologist, died Apr. 10, 1929, in Buffalo, N. Y., where he was born Dec. 14, 1865. Graduated from Cornell University in 1889, he was admitted to the New York bar in 1892 and practiced in Buffalo until his death. After 1900, he was a member of the New York State Commission of Prisons, and, after 1907, a member of the New York State Probation Commission, serving as president in 1917. He drafted the child abandonment law and the adult contributory delinquency law sections of the penal law.

Wakeman, Maurice. An American physician, died Mar. 2, 1929, on board a steamship between the Azores and Southampton, England. He was born in New York City, Mar. 30, 1897, and was graduated from Yale University in 1919, receiving the medical degree there in 1923. In 1924-25 he was on the staff of the Presbyterian Hospital in New York City and in 1926 was appointed an instructor in the medical school at Yale University. He was also an associate physician in the New Haven (Conn.) Hospital. Dr. Wakeman, in 1928, was granted a leave of absence from Yale University to study the chemical pathology of yellow fever in Africa. As a member of the International Health Board of the Rockefeller Institute, he went to Lagos, Nigeria, where he contracted yellow fever, of which he died on his return voyage.

Waldo, Leonard
Walker, Henry Oliver
Walpole, The Rt. Rev. George Henry Somerset, Bishop of Edinburgh. Scottish Anglican bishop, died in Edin-

burgh, Mar. 5, 1929. He was born in 1854 and educated at Cambridge. He went as a tutor to the School of Divinity at Truro, Cornwall, 1877-82. During 1882-89 he was incumbent of St. Mary's Cathedral at Auckland, New Zealand, and also warden of St. John's Cathedral, Auckland, 1889 to 1896. He was professor of dogmatic theology in the General Theological Seminary, Durham, from 1896 to 1903, principal of Leeds College, Durham. He was then appointed examining chaplain to the Archbishop of York, 1903, and rector of Lambeth, 1904-10. In 1906-10 he was honorary canon of Southwark. After 1910 he was Bishop of Edinburgh. Bishop Walpole was the author of a great number of books on theological subjects. He was the father of Hugh Walpole, the English novelist.

Walsh, Stephen
Warburg, Aby. A German educator, died Oct. 28, 1929, in Hamburg, where he was born June 13, 1866. He studied at the universities in Bonn, Munich, and Göttingen. In 1891-95 he lived in Italy, where he was in the art of Florence, and from 1897 to 1902, he made a study of the art of the Pueblo Indians in the southwestern part of the United States. In addition to his work on the faculty of the University of Hamburg, Professor Warburg established the Warburg Library in Hamburg, where are kept the many volumes which he collected on Italian art. He also published *Die Botticelli Geburt der Venus und Frühling*, *Bild und Kunst* und *Florentinisch Burgert, Heidnisch antike Wissenschaft im Wort und Bild zum Luthers Zeit*.

Ward, James R. Wadel. A British American physician and lecturer, died in New York City, Sept. 27, 1929. He was born on the Mount of Olives, in Palestine, Aug. 29, 1836, the son of the British Consul in Jerusalem. He studied at Oxford University, at the Sorbonne, and at the universities of Heidelberg, Vienna, and Naples. Going to Paris, he was for three years private secretary and physician to the Empress Eugénie. On returning to Palestine, he studied the Oriental languages, and later succeeded his father as consul. In 1860 he went to the United States, where he lectured on the Orient. He became an American citizen in 1923.

Ward, William Breining. American wholesale baker, died in New York, Feb. 6, 1929. Born in Pittsburgh, Pa., Feb. 9, 1844, he was graduated from the Wharton Business School, University of Pennsylvania, in 1905. In 1906 he entered the Ward Makers Company, Pittsburgh, a chain development of the bakeryshop established by his grandfather in New York City, in 1849. Elected treasurer and director of the Ward Bread Company in 1908, he organized additional companies in Ohio, Indiana, and Illinois in 1912. He returned the major in 1921 of the United Bakers Corporation, with a capital of \$10,000,000, which acquired many baking concerns in the Middle West and South. Resigning as chairman, Mr. Ward bought the outstanding stock of the Ward Baking Company in 1924, and reorganizing the firm as the Ward Baking Corporation, was elected president, subsequently becoming chairman of the board. At the time of his death, Mr. Ward was president of the Ward Baking Corporation, having been reelected Dec. 20, 1928. He was a trustee of Syracuse University.

Warden, Florence (Mrs. Florence James). An English novelist, died Mar. 11, 1929. She was born May 16, 1857, in Hanworth, Middlesex, the daughter of C. W. Price. She married Mr. James in 1887, but remained best known by her pen name. During 1875-80, she was a governess, and from 1880 to 1885 she was on the stage. Her published works include *The House on the Marsh*, *A Prince of Darkness*, *A Witch of the Hill*, *Ralph Ryder of Brent*, *Those Western Girls*, *A Pass age through Bohemia*, *The Inn by the Shore*, *From the Sea*, *Mad Sir Geoffrey*, *The Man with the Amber Eyes*, *The Grey Moth*, *Lullaby*, *A Patched Up Affair* (Play), and *Parley-Yous Francaise* (play).

Warner, Worcester Reed. An American manufacturer, died June 25, 1929, in Eisenach, Germany. He was born in Cummington, Mass., May 16, 1846, and after attending the University of Vermont, he began the trade. From 1870 to 1880, he was with Pratt & Whitney Co. at Hartford, Conn., meanwhile studying astronomy and experimenting in the building of telescopes. In 1881 with Ambrose Swasey, he established the Warner & Swasey Co., later Warner & Swasey, Inc., in Cleveland, Ohio. Manufacturers of machine tools and instruments of precision, they designed and constructed the 36 inch telescope for the Lick Observatory, the 40 inch one for the Yerkes Observatory, and the 72 inch reflecting telescope for the Dominion Observatory of Canada at Victoria, B. C.

Warren, Francis Emory
Warner, William Fairfield
Waterbury, John Isaac
Watson, Henry. An American judge, died Dec. 7, 1929, in Montpelier, Vt., at the age of 78. Born in Bradford, Vt., he entered a law office there and in 1877 was admitted to the Vermont bar. He became attorney for Orange County in 1886, and was elected to the

State Senate in 1892. For 30 years, he served in the Vermont Supreme Court and, after 1917, was Chief Justice.

Weinmann, Karl

Weissmann, Adolf A German writer on music, died in Saïda, Syria, Apr 24, 1929. He was born in Rosenberg, Silesia, in 1873. From 1900 until his death, he was music critic for various Berlin papers. His chief books are *Berichte des Musikstadt* (1911), *Die Musik in der Weltkriegs* (1922), *Der Dirigent im 20. Jahrhundert* (1925), and biographies of Bizet, Chopin, Puccini, and Verdi.

Wells, Joseph

Wells, Philip Paterson

Webb, von See Auer, Karl

Wenck, Ernest G A German sculptor, died Jan 24, 1929. He was born in Reppen, near Frankfurt On Oder, Mar 18, 1865. He studied sculpture in Berlin, and most of his works are in the Berlin National Gallery and in the public squares of that city. They include an equestrian monument to Kaiser Wilhelm I, a marble statue, "Zwei Menschen," and an Atlas group.

Wenley, Robert Mark

Weston, Edward Payson

Wheeler, Herbert Locke An American dentist, died in New York City, Mar 23, 1929. He was born Jan 12, 1869, in Corry, Pa., and was graduated in 1890 from the Philadelphia Dental College, where, from 1901 to 1910, he was clinical instructor. Dr Wheeler organized the department of dental surgery at Bellevue Hospital in New York City and, for 20 years, was at the head of it. During the World War, he was a lieutenant in the Dental Corps of the U S Army.

White, William Prescott An American Presbyterian clergyman and editor, died in Philadelphia, Pa, Feb 22, 1929. Born in Honey Brook, Pa, Mar 22, 1840, he was graduated from Amherst in 1867, and from the Princeton Theological Seminary in 1870. Ordained into the Presbyterian ministry in the latter year, he served as pastor at Plymouth, Pa, until 1885, and at Mount Airy, Pa, 1885-92. Becoming financial secretary of Lincoln University in Pennsylvania in 1892, he retained that position until 1925. Dr White was a correspondent on *The Presbyterian*, Philadelphia, 1870-94, and he edited the *Presbyterian Journal*, 1894-1904, he then was made its editor of the *Westminster*, transferring to *The Christian* in Philadelphia correspondent in 1910. Dr White was elected vice president of the Synodical Sustentation of the Synod of Pennsylvania in 1884, serving for many years. Washington College conferred on him the degree of D D in 1892. He wrote *Presbyterian Year Book* (1887, 1888, 1889), and *The Presbyterian Churches of Philadelphia, illustrated*.

Whitney, Casper

Widal, (Georges) Fernand Isidore

Wild, Harrison M An American organist and choral conductor, died in Chicago, Mar 1, 1929. He was born in Hoboken, N J, in 1861. From 1895 to 1918, he was organist and choirmaster at Grace Episcopal Church in Chicago. He was best known as conductor of the Apollo Club, which under his direction (1898-1928) gained the reputation of being one of the finest choral organizations in the United States. From 1896 to 1925, he was also conductor of the Mendelssohn Club at Rockport, Ill.

Wilder, Ines Whipple

Wilder, An American zoologist and educator, died Apr 29, 1929, in Northampton, Mass. She was graduated from Rhode Island State Normal School in 1890, receiving the Ph B degree from Brown University in 1900 and the M A degree from Smith College in 1904. In 1906 she was married to Harris Hawthorne Wilder, with whom she had become associated in the department of zoology at Smith College in 1920 and whom she succeeded as head of the department at his death in 1928. She wrote *Limnology Studies in Mammalian Anatomy* (1913, 14 edition, 1923), *Morphology of Amphibian Metamorphosis* (1925).

Wilcox, Louise Collier

An American author, died while visiting in Paris, Sept 14, 1929. She was born in Chicago, Ill, Apr 24, 1865, the daughter of the Rev Robert Laird Collier, and studied with tutors in France, Germany, and England, attending the conservatory at Leipzig in 1882-83. Married in 1890 to Westmore Wilcox, she made her home in Norfolk, Va. Mrs Wilcox was on the editorial staff of the *North American Review* from 1906 to 1918, reader and adviser for the Macmillan Company, publishers, during 1903-09, and for E P Dutton & Co, during 1910-17. She wrote *The Human Way* (1909), *A Manual of Spiritual Fortification* (1910), *The Road to Joy* (1911), *The House in Order* (1916), *The Torch*, an anthology she translated *My Friend from Tennessee*, the Balzac Prize book for 1923, *Jacob Wassermann's Gold*, and *Derennes's Life of the Bat*.

Williams, Jesse Lynch

Wilson, Joseph Havelock

Windie, Sir Bertram Coghill Alan,

Wise, Isidor. An American editor, died in New York City, Nov 15, 1929. He was born in Cincinnati, Ohio, Dec 2, 1855, the eldest son of Rabbi Isaac M Wise, founder of Hebrew Union College. At the time of his death, he was associate editor of *The American Israelite*.

Witherspoon, John A

Witwer, Harry Charles An American humorist and author, died in Los Angeles, Calif, Aug 8, 1929. He was born Mar 11, 1890, in Athens, Pa., and in 1906 attended St Joseph's College. In 1911 he became a reporter on the St Cloud, Fla, *Tribune*, and until 1915 he was, for short periods of time, with the New York *American*, the Brooklyn *Eagle*, the Elizabeth, N J, *Times*, the New York *Mail*, the Atlanta *Gleaner*, the Newark, N J, *News*, and the New York *Sun*. After 1915, he gave his entire time to the writing of humorous stories for magazines and for the motion pictures. His stories, written in slang for the most part, often had for their subject baseball or boxing. His books include *From Baseball to Hockey* (1918), *A Smile a Minute* (1919), *After the Great* (1919), *There's No Base Like Home* (1920), *Kid Scalon* (1920), *The Leather Pushers* (1922), *Fighting Blood* (1923), *Love and Learn* (1924), *Bill Grimm's Progress* (1926), *The Classics in Slang* (1927).

Wolff, Eugen A German educator, professor of German language and literature at the University of Kiel, died Feb 25, 1929. He was born Sept 28, 1863, at Frankfurt-on-Oder, and studied at the universities of Berlin, Leipzig, and Heidelberg. His works include *A G Lesson* (1886), *Dissemination* (1887), *J F Schlegel* (1889), *Goethe's Leben und Werke* (1895), *Von Shakespeare zu Zola* (1912), *Der Junge Goethe* (1907), *Mignon* (1909), *Faust und Luther* (1912), *Meisterwerke von H von Kleist*.

Wood, Thomas Barlow An English agriculturist and educator, died in November, 1929, at the age of 60. Educated at Gonville and Caius College, Cambridge University, he was at the time of his death Mountr fellow of Gonville and Caius College and Drapers professor of agriculture at Cambridge. In 1914, Professor Wood was secretary of the Department of Agriculture. He was joint editor of the *Journal of Agricultural Science*. His books include *A Year of a Loaf of Bread* (1913), *National Food Supply in Peace and War* (1917), *Composition and Nutritive Value of Feeding Stuffs* (1918), *Food and War Time* (1917), with F G Hopkins, *War Time*, of *Crop Production* (1920), *Animal Nutrition* (1924).

"Woodrow Wilhe" See Kennedy, The Rev Geoffrey Anketell Student.

Woodruff, Lorenzo Ferguson (Fussy) An American journalist, died Dec 7, 1929, in Atlanta, Ga. He was born in Montgomery, Ala, May 27, 1884. As reporter, sports writer, musical and dramatic critic, and copy reader, he served on the staffs of many newspapers, including the Birmingham *News* and *Age Herald*, the New York *Evening World*, the Chicago *Examiner*, the St Louis *Post Dispatch*, the Atlanta *Constitution* and *Georgian*. At the time of his death, he was a special writer for the Atlanta *Journal*.

Woolsey, Theodore Salisbury

Wragge, Edmund

Wright, William A An American public official, died in Atlanta, Sept 13, 1929. He was born in Louisville, Ga, Jan 19, 1844, and served with the 3d Georgia Regiment in the Civil War. In 1877 he became land clerk in the comptroller's office in Atlanta, and in 1879 was appointed chief clerk of Georgia, an office which he held.

Wundt, Theodor Karl Wilhelm von A German lieutenant-general, alpinist, and author, died Aug 17, 1929. He was born Apr 21, 1858, in Ludwigshurg, and was educated in Stuttgart. His books include *Die Jungfrau Disziplin* (drama), the novels, *Mattsehorn*, *Hohenflug*, and *Das Duadem*, and an autobiography, *Ich und die Berg*.

Wyman, Lillie Buffum Chace (Mrs John C Wyman) American author, died in Newtonville, Mass, Jan 10, 1929. Born in Valley Falls, N Y, Dec 10, 1847, the daughter of Samuel Buffington and Elizabeth Buffum Chace, she attended private schools, and on Oct 29, 1878, married John Crawford Wyman. She first published short stories in *The Atlantic Monthly*, and later wrote *Poverty Grass* (1886), *American University* (1913), *Interludes and Other Verses* (1913), *Elizabeth Buffum Chace and Her Environment*, 2 vols (1914), *Gertrude of Denmark* (1924), *A Grand Army Man of Rhode Island* (1925), and *Syringa at the Gate* (1926).

Yang Yung-tai A Chinese army officer, was executed by order of Chang Hsueh-liang, Governor of Manchuria, Jan 11, 1929. General Yang was chief of staff for the late Chang Tso-lin, father of Chang Hsueh-liang, and up to the time of his execution was in command of the 3d and 4th Manchurian Army Corps. The reason given for

the execution was that General Yang had been detected in a plot to overthrow the government of Manchuria
 Yokum, Benjamin F.
 Young, Allan Abbott
 Zetland, First Marquess of See Dundas, Lawrence
 Zille, Heinrich A German artist, died in Berlin, Aug 9, 1929. He was born in Radeburg, Saxony, Jan 10, 1856. After a childhood of poverty and years of toil as a photo engraver in Berlin, he began to attract attention with his pencil sketches. His drawings were reproduced in the humorous papers, including *Simplicissimus*, *Jugend*, *Lustige Blätter*, *Ulk*, and *Sporthumor*. He portrayed the working people of Berlin, and the language of the accompanying text was the language heard in the meaner streets of the city. He was elected to the Academy of Arts, and in his later years was a well known and well loved figure
 Zsigmondy, Richard

NEGRI SEMBILAN, nā'grē sem'belin'. A federation of nine divisions, constituting a state in the Federated Malay States. See **FEDERATED MALAY STATES**

NEJD, SUITANATE OF See ARABIA

NESTS. See ZOOLOGY

NETHERLANDS, THE, or HOLLAND. A constitutional monarchy of Europe, bounded by the North Sea on the west and south, on the east by Germany, and on the south by Belgium. Capital, The Hague, reigning sovereign in 1929, Queen Wilhelmina Ileana Pauline Maria

AREA AND POPULATION On Jan 1, 1928, the total area was 12,402 square miles, exclusive of water, population, according to the census of 1920, 6,865,314, according to the communal lists for Jan 1, 1928, 7,625,938, density per square mile in 1927, 605.1. According to the figures for 1927, 47.03 per cent of the population, or 3,585,645, were inhabitants of towns of 20,000 or more, the remainder being classified as rural. The average number of births from 1924 to 1928 was 178,515 and of deaths, 73,613, leaving an annual excess of 104,902. The birth rate per thousand was 23.9 and the death rate, 9.8. The emigration, mostly to North America, was 3340 in 1927. The largest cities with their populations in 1928 were Amsterdam, 743,402, Rotterdam, 577,695, The Hague, 425,120, Utrecht, 151,651.

EDUCATION Elementary education is free and compulsory between the ages of 7 and 13, the cost being shared by the state and the communes. Public elementary schools in 1925-26, 3694 with 15,655 teachers and 484,264 pupils, private elementary schools numbered 3740, with 18,369 teachers and 592,508 pupils, public infant schools, 238, with 1112 teachers and 36,154 pupils, private infant schools, 1324 with 3085 teachers and 123,896 pupils. For higher education, there are the four public universities at Leiden, Utrecht, Amsterdam, and Groningen, with totals of 408 members in the faculties and 6755 students. Besides, there are a technical university, a private university, navigation schools, commercial schools, schools for working people, etc.

PRODUCTION, ETC. Agriculture and animal husbandry in the Netherlands are highly intensive. There were 2,201,000 acres of arable land in 1927, or about 26 per cent of the total area, 3,145,000 acres of permanent meadow, and 618,000 acres of woods and forests. Of 210,000 farmers in the Netherlands in 1928, 182,000 had small holdings of from 2 to 49 acres and only about 200 cultivated more than 250 acres. Crops were abundant in 1928, due to unusually good weather, but the prices received were low. The area and production of the leading crops in 1928 were as follows: Wheat, 148,000 acres, 7,335,000 bushels, rye, 485,000 acres, 17,333,000 bushels, barley, 70,000 acres, 4,494,000 bushels, oats,

377,000 acres, 24,802,000 bushels; potatoes, 443,000 acres, 142,011,000 bushels, sugar beets, 181,000 acres, 2,300,000 metric tons, flax, 39,000 acres, 30,865,000 pounds of fibre. The average acreage devoted to bulbs is 13,580 and exports of bulbs in 1928 were valued at \$17,173,000. Butter production rose to 188,025,000 pounds in 1928 and cheese production to 291,357,000 pounds. In 1921 there were 2,063,000 cattle, 1,519,000 swine, 668,000 sheep, 272,000 goats, and 384,000 horses in the country. The normal poultry stock is estimated at 15,000,000 and about half of the annual egg production, valued at 70,000,000 guilders, is exported (the guilder, or florin, has a par value of \$0.4020).

The fisheries in 1927 engaged 5169 vessels of all kinds and the herring catch was valued at 11,275,237 guilders.

The coal industry, which is of increasing importance, produced 10,700,000 tons in 1928, or 15 per cent more than in the previous year. State-owned mines produced 70 per cent of the total. The average number of workers employed in the industry was 34,113. Lignite production in 1928 totaled 197,000 metric tons, salt, 41,860 metric tons. Industry in general experienced a favorable year in 1928, particularly rayon and wool. Conditions in the diamond industry were more stable. The shipbuilding industry in 1929 comprised 108 concerns employing 33,000 workers. New vessels launched in 1928 totaled 166,754 gross tons. Orders were more numerous than at any time in the preceding six years. The number of unemployed persons in unemployment insurance societies at the end of 1928 was 38,116, as compared with 44,185 the year previous. In 1927 there were 295 distilleries, 9 sugar refineries, 12 beet-sugar factories, 12 salt works, 190 breweries, and 3152 tobacco factories.

COMMERCE Both imports and exports increased in 1928, as compared with 1927, the imports rising to \$1,078,929,000 from the 1927 figures of \$1,022,346,000 and the exports to \$798,446,000 from \$761,974,000 in 1927. The excess of imports was normal and was balanced by the returns on foreign investments and the earnings of Dutch shipping. The value of the leading import commodities was Coal, coke, briquets, \$47,180,000, machinery, other than electric, \$46,173,000, electric machinery, \$18,969,000, iron and steel, \$69,647,000, linseed, \$30,224,000, pine lumber, \$29,725,000, wheat, \$28,821,000, corn, \$51,029,000, green coffee, \$22,450,000, hides and skins, \$20,344,000, chemicals and medicines, \$20,015,000, cotton, \$19,975,000. Leading exports included Cotton piece goods, \$40,964,000; butter, \$35,382,000, cheese, \$32,261,000, coal, coke, briquets, \$32,382,000, fresh vegetables, \$27,681,000, diamonds \$23,655,000, machinery, \$23,731,000, vegetable oils, \$49,700,000, eggs, \$24,924,000. The value of both imports and exports again increased in 1929.

The bulk of the Netherlands' foreign trade was carried on with Germany and the United Kingdom. Germany furnished 27.2 per cent of the imports in 1928, Belgium, 11.2 per cent, the United States, 9.9 per cent, the United Kingdom, 9.6 per cent, and France, 4.5 per cent. Of the Dutch domestic exports in the same year, 23.5 per cent went to Germany, 22.3 per cent to the United Kingdom, 8.7 per cent to Belgium, 6.2 per cent to France, and 3.6 per cent to the United States (excluding reexports of diamonds). Imports from the United States in

creased in value from 224,000,000 florins in 1928 to 251,000,000 florins in 1929, while exports to the United States increased from 61,000,000 to 66,000,000 florins. Foodstuffs and live animals constituted 24.7 per cent of the total imports and 40.5 per cent of the exports by value, raw and partly manufactured goods, 35.9 per cent and 16.3 per cent; manufactures, 39.1 and 40.4; unclassified goods, 0.3 and 2.8 per cent, respectively.

The Netherlands government at the beginning of 1929 discontinued its system of credit insurance for export transactions which had been in operation for the preceding six years.

FINANCE. The estimated ordinary expenditures of the Netherlands government during 1929 totaled 593,624,000 florins and the estimated ordinary revenues, 601,110,000 florins, leaving a surplus of 8,186,000 florins. Preliminary returns indicated that the surplus would be much larger than anticipated due to unexpectedly large revenues. In 1927 the actual ordinary expenditures, according to provisional returns, was 571,107,000 florins and the revenues 627,456,000 florins, leaving a surplus of 53,349,000 florins. The proposed budget for 1930 estimated ordinary receipts at 621,122,000 florins and expenditures at 611,982,000 florins, leaving a surplus of 9,140,000 florins. Including extraordinary revenues and receipts, the budget figures for 1928 were receipts, 651,581,000 florins, expenditures, 821,480,000 florins, deficit 169,899,000; for 1929 receipts, 645,950,000, expenditures, 782,872,000 florins, deficit, 136,922,000; for 1930 receipts 648,893,000, expenditures, 708,735,000, deficit, 59,842,000.

The public debt on Jan. 1, 1929, totaled 2,824,304,000 florins (\$1,135,370,000), of which 2,588,765,000 florins was funded and 235,539,000 florins was floating debt. This was 165,927,000 florins less than on the same date in 1928.

COMMUNICATIONS. In 1927 vessels in the foreign trade entering Netherlands ports totaled 21,710 of 33,716,000 net registered tons and vessels clearing totaled 24,870 of 33,637,000 net registered tons. The movement of shipping in and out of the port of Rotterdam in 1929 reached 21,316,000 tons in 1929, or 800,000 tons more than in the previous year. The Dutch merchant marine on June 30, 1928, consisted of 1290 vessels of 100 tons or over with a gross tonnage of 2,816,703. In 1929 due to low freight rates, 10 out of 14 Dutch shipping companies failed to pay dividends.

The railway lines of the country, which had 2284 miles of line in 1927, were owned by two companies, in each of which the government had a controlling interest. In 1927 the railroads carried 52,286,000 passengers and 20,361,000 metric tons of freight; gross receipts amounting to 162,217,000 florins (\$65,065,000). Receipts in 1928 were substantially higher despite a reduction in rates. In the same year the civil air lines covered 5965 miles and carried 17,165 passengers, 77,381 pounds of mail, and 1,517,051 pounds of freight. In 1929 civil aviation experienced an increase of 13 per cent in passenger traffic, of 29 per cent in freight and of 64 per cent in mail business, and of 64 per cent in parcel post.

GOVERNMENT. Executive power is vested in the sovereign and legislative power conjointly in the sovereign and the Parliament, which is called the States-General and consists of two houses. The upper house is composed of 50 members,

elected by the provinces, and the lower house of 100 deputies, elected directly. The sovereign, Wilhelmina Helena Pauline Maria, was born Aug. 31, 1880, and succeeded to the throne on the death of her father, Willem III, Nov. 23, 1890, and was crowned Sept. 6, 1898. The cabinet in 1929 was as follows: Premier and Minister of Finance, Dr. D. J. de Geer; Foreign Affairs, F. B. van Blokland (appointed Mar. 30, 1927); Interior and Agriculture, Dr. J. B. van Kan; Justice, Dr. J. Donner; Colonies, Dr. J. C. Koningsberger; War and Marine, J. M. J. H. Lamboux; Public Works, Dr. H. van der Vegt; (the latter, interim); Labor, Commerce, and Industry, Dr. J. R. S. de Bruijne; Instruction, Science, and Arts, Dr. M. A. M. Wasmink.

HISTORY. The year 1929 was an uneventful one for the Netherlands. The election of a new lower chamber of the States-General resulted in no striking changes in the strength of the respective parties. Partly as a result of compulsory voting the electoral vote totaled 3,380,217 as compared with 3,085,862 in the election of 1925. The two leading parties, the Roman Catholic State party and the Socialists, increased their respective votes proportionately, the former polling 1,001,574 as against 883,333 in 1925, and the latter 804,818 as against 706,689 in 1925. The Communist vote was split, the orthodox wing receiving 37,622 votes, as against 36,258 in 1925, while a secession wing secured 29,860 votes. The composition of the chamber following the election, with the former figures in parentheses, was as follows: Roman Catholic State party, 30 (30); Socialists, 24 (24); Anti-Revolutionists, 12 (13); Christian-Historicals, 11 (11); Liberty Leaguers, 8 (9); Democrats, 7 (7); State Reformers, 1 (1); Peasants, 1 (1); Communists, 1 (0); Roman Catholic Populists, 0 (1); Middle Class Parties, 1 (0).

NEUMANN, FRANZ A distinguished Czech composer and conductor, died in Brunn in February, 1929. He was born in Píseň, Moravia, June 16, 1874. After being graduated from the Leipzig Conservatory he was assistant conductor in Karlsruhe and in Hamburg, then conductor in Kassel, Linz, and Reichenberg. In 1904 he became conductor in Frankfurt where he remained 15 years. Upon the establishment of the new Czech National Opera in Brunn, in 1919, he was called as first conductor, and in 1925 was made director. At this theatre, he conducted the premieres of almost all of Janáček's operas. His own compositions consist of several choral works, chamber music, two ballets, and the operas, *Die Brautwerbung* (Linz, 1901), *Lehelis* (Frankfurt, 1910), *Herbststurm* (Berlin, 1919), and *Beatrice Carracci* (Brunn, 1922).

NEVADA. POPULATION. According to the Fourteenth Census, the population of the State Jan. 1, 1920, was 77,407, and no subsequent estimate had been made. Capital, Carson City.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Hay	1929	369,000	848,000 *	\$9,470,000
	1928	368,000	733,000 *	8,309,000
	1929	5,000	850,000	1,275,000
Potatoes	1928	6,000	840,000	714,000
Wheat	1929	16,000	404,000	520,000
	1928	18,000	482,000	590,000

* Tons

MINERAL PRODUCTION A sharp increase in the mineral output of the State as a whole occurred in 1928, and was conspicuous in the cases of the product alike of gold, silver, copper, and zinc, while that of lead decreased slightly. The rise in copper production was the most significant. There were produced in 1928, 158,786,883 pounds of copper, in 1927, 120,259,276 pounds. The average mine value for 1928, moreover, was 14 4 cents, as against 13 1 cents a pound for 1927, when the copper production had attained the total value of \$15,753,965. The quantity of gold produced was, for 1928, 175,157 79 fine ounces and for 1927, 150,346 16, that of silver, for 1928, 5,481,547 fine ounces and for 1927, 5,397,179, that of lead, for 1928, 15,747,414 pounds and for 1927, 15,784,818, that of zinc, for 1928, 6,796,713 pounds and for 1927, 6,344,523. The total value of the year's product of the above five metals was for 1928, \$31,033,776, for 1927, \$23,322,589. Gypsum was the only other mineral produced regularly in excess of \$1,000,000 of yearly value, and of this there was produced the quantity in 1927 of 327,363 short tons and in 1926 of 350,972 tons, in value, \$1,484,171 for 1927 and \$1,527,235 for 1926. The total value of the State's mineral product was, for 1927, \$26,753,295, for 1926, \$27,613,212.

The value of gold, silver, copper, lead and zinc mined in Nevada increased to about \$31,302,000 for 1929, according to a preliminary Federal estimate. There were decreases in the output of all metals except lead and zinc, though the value of the copper output increased. Gold output was about \$3,251,000 for 1929. The Nevada Consolidated Copper Company continued to be the largest producer of gold in the State. A merger of the principal producing mines in the Comstock district placed them under the Sutor Coalition management. The silver production was about 4,783,000 ounces in value about \$2,447,000.

Copper output decreased to about 131,967,000 pounds for 1929, but the value increased from \$22,878,271 to about \$23,622,000. The lead output increased to about 16,467,000 pounds for 1929, in value, about \$1,046,000. Zinc recovered from ore mined in Nevada increased to about 14,082,000 pounds for 1929 in value, about \$936,000.

TRANSPORTATION The total number of miles of railroad line in operation on Jan. 1, 1929, was 2122.66. There were built, in 1929, 17.82 miles of additional second track.

MANUFACTURES According to the Federal biennial Census of Manufactures published by the Department of Commerce in 1929 and dealing with operations in 1927, there were in the State, in 1927, 116 manufacturing establishments. These employed 2419 wage earners, whose wages for the year totaled \$3,915,185. Materials and supplies used in production cost \$11,410,437. Manufactured products attained the combined value of \$26,815,907.

EDUCATION The main objectives of the policy of the State Department of Education in 1929 were the attainment of a codification of school laws, a teachers retirement law, and an enlargement of the Board of Education. There were in the public schools of the State, in the academic year 1927-28, 16,586 pupils, of whom 13,304 were in the elementary grades and kindergartens and 3292, in the high schools. There were in use 322 schoolhouses, and of this total the one-room

schoolhouses numbered 212. The salaries of teachers averaged \$1532. Expenditures for public-school education in the academic year 1928-29 were current, \$1,905,740, total, including interest and outlay, \$2,519,695.

CHARITIES AND CORRECTIONS The care of the State prison rested in 1929 with an ex-officio Board of State Prison Commissioners, another ex-officio board controlled the State Orphans' Home. The State Board of Health included a division of child welfare. There was also a Board of Commissioners for the Care of the Indigent. Insane. The State Institutions were State Orphans' Home, Carson City, Nevada Hospital for Mental Diseases, Reno, Nevada State Prison, Carson City, School of Industry, Elko.

LEGISLATION The State Legislature held a regular biennial session, convening in January. The chief matters of deliberation were those contained in the message of Governor Balzar, setting forth the policy of the administration and recommending an annual appropriation of \$5000 for the State's Colorado River Commission, which sought to enter into an agreement with Arizona and California regarding the development of the Colorado River Dam, the effort to reduce State taxation and expenditure, and the construction in the course of the year of 189.9 miles of gravel-surfaced highway and of 5 1/2 miles of the highway connecting Elko and White Pine counties.

POLITICAL AND OTHER EVENTS Nevada took an active hand in the contest among the adjoining States over the disposal of the power to be derived from the projected Federal dam on the Colorado River. After conferring with the representatives of California and Arizona, Nevada, through its Colorado River Commissioner, George W. Maloune, submitted to the Secretary of the Interior a tentative offer, on November 12, to purchase through the Boulder Canyon Power Company, a State corporation formed for the purpose, from one-third to all of the power generated by the dam at 175 mills the kilowatt-hour. Prehistoric Indian or other aboriginal relics were discovered by anthropologists of the University of California in a cave among the Humboldt Mountains, and were ascribed to a period about 1000 B.C. The number of divorces granted by the State in 1928, under the influence of an amendment of the law, facilitating divorce for outsiders, was reported by the Department of Commerce as 2529, as against 1953 in 1927. Marriages performed in Nevada totaled 4168 for 1928 as against 2398 for 1927. This increase was attributed to the change in the marriage law of California, which had rendered Nevada a place of pilgrimage for those seeking to enter matrimony.

OFFICERS Governor, Fied B. Balzar, Lieutenant-Governor, Moilev Griswold, Secretary of State, W. G. Greathouse, Controller, Edward C. Peterson, Treasurer, George B. Russell, Attorney-General, M. A. Dinkin, Superintendent of Public Instruction, Walter Anderson.

JUDICIARY Supreme Court, Chief Justice, Edward A. Ducker, Associate Justices, Ben W. Coleman, J. A. Sanders.

NEVADA, UNIVERSITY OF A coeducational State institution of higher education in Reno, Nev., founded in 1874. There was an enrollment of 932 students for the autumn term of 1929, of whom 536 were men and 396 were women. These were distributed among the various departments

of the university as follows: Arts and sciences, 619; normal school, 51; engineering, 183; agriculture, 46, and home economics, 33. The summer session of 1929 had a registration of 132. There were 74 members on the faculty. The productive funds of the university amounted to \$335,100 and the income for the year, to \$586,924. The library contained 50,200 volumes. President, Walter E. Clark, Ph.D., LL.D.

NEW BRUNSWICK (brnz'włk). One of the Maritime Provinces of Canada, lying east of Maine and south of the province of Quebec Area, 27,085 square miles, population, according to the census of 1921, 387,876; estimated June 1, 1929, 419,300. In 1927 births totaled 10,483, deaths 4879, and marriages 2881. The capital is Fredericton, with a population in 1921 of 8114. The largest cities with their populations in 1921 are St. John, 47,166, and Moncton, 17,488. The chief industries are agriculture, mining, manufactures, fishing, and lumbering. In 1927 the area planted to field crops was 889,277 acres and the value of the produce was \$18,413,500. The gross value of other leading products in the same year was: Farm animals, \$3,249,000, dairy products, \$8,702,000, poultry and eggs, \$1,744,000, fruits and vegetables, \$1,070,000, furs, \$457,000. The livestock census in 1926 showed 53,159 horses, 116,530 milch cows; 107,932 other cattle; 156,616 sheep, 71,568 swine, and 854,621 poultry. The value of the fishery output in 1928 was \$4,996,898, a 13 per cent increase over 1927. The province possesses various minerals including iron, gypsum, coal, building stone, antimony, copper, and manganese. The only active mining, however, is in coal and gypsum. The coal output in 1927 amounted to 171,177 short tons. In 1927-28 the total exports of the province amounted to \$71,521,545 and the imports for consumption, to \$25,227,984. The value of forest products exported totals over \$30,000,000 annually. In 1925-26 there were 1941 miles of railways open for operation. The province is under a lieutenant-governor appointed by the Governor-General of Canada, and a legislative assembly of 48 members elected for five years. As a result of the election held in August, 1925, the political grouping in the Assembly was as follows: Conservatives, 35, Liberals, 12, Independent, 1. Lieutenant-Governor in 1929, W. F. Todd, Prime Minister and Attorney-General, J. B. M. Baxter, Secretary-Treasurer, A. J. Leger, Agriculture, Lewis Smith, Public Health and Labor, Dr. H. I. Taylor, President of the Executive Council, L. P. D. Tilley; Lands and Mines, C. D. Richards, Public Works, D. A. Stewart, Minister without Portfolio, E. A. Reilly. The province is represented by 10 members in the Canadian Senate and 11 in the House of Commons. See CANADA.

NEW CALEDONIA, kál'e-dō'n'ya. A French colony, comprising the island of New Caledonia, the southernmost of the Melanesian Islands, lying between 22° 1' and 22° 20' S latitude and 161° 30' and 144° 40' E longitude, and the following dependencies: Isle of Pines, Wallis Archipelago, Loyalty Islands, Huon Islands, and Futuna and Alofi. The island of New Caledonia has a length greater than 248 miles and an average width of 31 miles. Area, 8548 square miles. Population, according to the census of 1926, 57,630, of whom 14,983 were free, 1281 of convict origin, and 27,490 Melanesians and Polynesians. Capital, Nouméa, with 9336 inhabitants in 1921. No

convicts have been sent to the penal settlements on Nou Island since 1896. Coffee, copra, cotton, manioc, corn, bananas, tobacco, and pineapples form the principal agricultural products. The mineral resources are said to be very rich and varied, comprising cobalt, chrome, nickel, iron, and manganese, all of which are abundant, also antimony, mercury, silver, gold, lead, copper, and cinnabar. In 1925 the value of mineral exports was 4,019,334 francs. The other leading exports include coffee, copper, copra, guano, and preserved meats. The chief imports are wine, coal, flour, and rice. In 1927, 129 vessels of 198,019 tons entered, and 133 of 190,825 tons cleared, the ports of New Caledonia. Imports in 1927 amounted to 154,771,189 francs and the exports, 87,195,349 francs. About two-thirds of those that entered were French. There is a narrow gauge railway from Nouméa to Paita, about 20 miles long. In 1929 six German companies were awarded contracts for the construction of new harbor works, warehouses, and a hydroelectric plant and sewage works at Nouméa. The work was to be finished within 40 months and was to cost 65,000,000 francs, to be credited on repayments account. The colony is administered by a governor assisted by a privy council, made up of officials, and by an elected council-general. Governor in 1929, M. Guyon, who was appointed in 1925.

NEWCOMB, H. SOPHIA, COLLEGE FOR WOMEN. See TILANE UNIVERSITY.

NEWFOUNDLAND, nü'fünd-länd'. A large island in the northeastern part of the Gulf of St. Lawrence, forming one of the British dominions. Area, 42,734 square miles, population, according to the census of 1921, 259,358, estimated in 1928, 268,178. Labrador, the most easterly part of North America, is a dependency of Newfoundland. It has an area of 120,000 and a population, in 1927, of 4054. Capital of Newfoundland, St. John's, with a population in 1928 of 57,641. Other towns, with their populations in 1921, were Bonaville, 4025, Harbor Grace, 3825, Carbonear, 3320. Between 1924 and 1928, the average annual births totaled 6953 and the deaths 3853, leaving an annual excess of births of 3100. Immigrants in 1927 numbered 13,687 and emigrants 16,765. The schools, practically all of which are conducted by the various religious bodies, numbered 1139 in 1926, with a total attendance of 59,088.

PRODUCTION. Agriculture, fishing, mining, lumbering, and manufacturing are the principal industries. In 1921 there were 188,000 acres of farm land, 89,000 acres of improved land, and 9,600,000 acres of forests. Hay, potatoes, turnips, and cabbage are the chief crops. In 1928 the codfish catch totaled 121,599,000 pounds and the number of seals caught, 227,022. While the codfish catch was smaller than in previous years, it sold for approximately \$3,000,000 more than the 1927 catch and was a leading factor in the prosperity which in 1928 succeeded two years of depression. The 1929 codfish catch was estimated at 10 per cent less than for 1928. The output of mines and newsprint plants reached record levels during 1928. Iron-ore output totaled 1,547,900 short tons, as compared with 1,495,800 in 1927. In 1929 the iron-ore output declined to 1,516,999 tons, valued at \$2,503,048. Newsprint production in 1928 was 184,900 tons valued at \$13,581,000, and pulp-wood exports amounted to 48,000 cords, valued at \$558,000.

Commerce Domestic exports for the fiscal year ending June 30, 1928, totaled \$32,677,000, or 9 per cent more than in 1927, while imports amounted to \$27,637,000, as compared with \$25,814,000 in 1927. Preliminary returns for the calendar year 1929 placed exports at \$36,200,000, or \$3,500,000 more than in 1928, and imports at \$29,000,000. Imports from Canada totaled \$11,800,000, from the United States, \$9,900,000; and from the United Kingdom, \$6,200,000 (an increase of \$1,200,000 for the year from Great Britain). Fishery products constituted about one-half of the total trade in 1928, other leading exports being iron ore, newsprint, pulp-wood, and furs. Imports consisted mainly of staple foodstuffs and finished manufactures. The United States, Canada, and the United Kingdom took most of Newfoundland's exports and furnished the bulk of the imports.

FINANCE For the fiscal year ending June 30, 1928, government receipts totaled \$10,000,000 and expenditures, \$10,741,000, not including the cost of operating the state railways, which carried over an unliquidated deficit of about \$800,000 from the previous year. The total debt at the end of 1928 was \$79,500,000, including a £2,000,000 loan floated in London during the year. The expenditure items in 1927-28 included Debt service, \$3,842,000, public charities, \$1,116,000, posts and telegraphs, \$1,171,000, education, \$1,100,000, of customs, \$668,000, military and naval pensions, \$627,000, all other, \$2,422,000.

COMMUNICATIONS In 1928 there were 974 miles of railway line, of which 905 miles were state owned. The mileage of telegraph and telephone wire in 1927 totaled 7500 and 12,000, respectively. Vessels engaged in the foreign trade which entered the ports of the island in 1927-28 numbered 1796 of 1,596,810 net registered tons, vessels cleared numbered 1329 of 1,501,003 net registered tons.

GOVERNMENT Executive power is vested in a governor, assisted by an executive council of not more than 10 members, and legislative power, in a council of not more than 24 members, and an elected house of representatives of 40 members. Women have the franchise. Governor and commander-in-chief in 1929, Sir John Middleton, appointed in August, 1928. The Ministry constituted in November, 1928, was composed as follows: Prime Minister and Minister of Justice, Sir R. A. Squires, Colonial Secretary, A. Barnes, Finance and Customs, P. J. Cashin, Posts and Telegraphs, W. W. Hallyard, Ministers without Portfolios Sir W. F. Coaker, Dr. A. Campbell, F. G. Bradley, Dr. H. M. Mosdell, P. J. Lewis, T. K. Cook. Other Ministers not in the cabinet were Marine and Fisheries, H. B. C. Lake, Public Works, R. Hibbs, Agriculture and Mines, F. J. Downey.

HISTORY An earthquake off the southern coast of Newfoundland on November 18, 1929, caused a tidal wave which swept the southern shores of the island, known as the Burin Peninsula, in some places to a height of 100 feet, causing the loss of 28 lives and damages estimated at \$1,000,000 to villages along the shore. See LARRADOR, *BARBICAKES*, and GIBB, *BRITAIN, under History*.

NEW GUINEA, *gîn'v*. An island of the East Indies, the third in size in the world, ranking after Australia and Greenland Area, variously estimated at from 310,000 to 335,000 square

miles, population estimated to be slightly below 1,000,000. It is divided under Australian, Dutch, and British control, the distribution being as follows. The northeastern portion, constituting the former Kaiser Wilhelmsland, to Australia, the western part, to 140° E longitude, to the Dutch East Indies, the southeastern part is the British colony of Papua. See DUTCH EAST INDIES, GERMAN NEW GUINEA, and PAPUA.

NEW HAMPSHIRE. **POPULATION** According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 443,083. The estimated population on July 1, 1928, was 456,000. The capital is Concord.

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod. Bu.	Value
Hay	1929	477,000	679,000 *	\$9,091,000
	1928	475,000	665,000 *	9,281,000
Potatoes	1929	11,000	1,826,000	2,922,000
	1928	12,000	1,656,000	1,325,000
Corn	1929	14,000	574,000	631,000
	1928	14,000	560,000	672,000

* Tons.

MINERAL PRODUCTION The total value of the mineral product of the State was \$3,447,105 for 1927, for 1926, \$4,144,645. The chief component of these totals was furnished by stone, chiefly of high grade, of which the State quarried in 1927 178,300 short tons and in 1926 148,250 tons. The value of stone quarried was \$1,584,262 for 1927 and \$1,908,284 for 1926. No other mineral product attained \$1,000,000 in total value for either year. The clay products of the State had a total value of \$811,626 for 1927 and \$881,997 for 1926. The output of sand and gravel came next in value (\$653,214 for 1927). The minor products were feldspar, mica, and mica.

FINANCE State expenditures of the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were for maintenance and operation of governmental departments, \$7,173,076 (of which \$584,868 was for local education), for interest of debt, \$71,023, for permanent improvements, \$2,229,104, total, \$9,473,803 (of which \$4,446,510 was for highways, \$2,879,409 being for maintenance and \$1,567,101 for construction, the chief part of the heavy highway maintenance charge having been entailed by flood damages of 1927).

Revenues for the year 1929 were \$8,877,022. Of these, property and special taxes formed 38.6 per cent, departmental earnings and remuneration for officers' services, 8.6, sale of licenses, 43.7 (including gasoline taxation of \$1,495,741). The State's funded debt of June 30, 1928, was \$2,054,636 outstanding, with no material offsetting sinking funds. On a property valuation of \$667,977,686 were levied in the year State taxes of \$2,965,492.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 1169.39. There was no reported construction of additional line in 1929.

MANUFACTURES According to the biennial Census of Manufactures published by the U. S. Department of Commerce in 1929, there were in the State, in 1927, 1028 manufacturing establishments. These employed 65,482 wage earners, whose wages for the year totaled \$72,803,397. Materials and supplies used in manufacture

were of the total value of \$182,106,373. The manufactured products attained the value of \$327,528,366.

EDUCATION It was reported by the State Board of Education in 1929 that since and including the winter of 1924 no public school of the State had shortened its academic period on account of winter difficulties to less than the 36 weeks prescribed by the law of 1919. Commissioner of Education Butterworth stated in the *Journal* of the National Education Association that the total school costs of the State ran lower for 1929 than for 1928 or 1926, and attributed this fact to increased educational efficiency and not to reduced standards. The number of children between the ages of 5 and 16 years in the State on September 30, 1928, was stated as 91,660. The number of pupils registered in public and private schools, somewhat higher, was 97,429. Those in public schools numbered 71,521. There were 1513 in kindergartens, 54,390 in elementary and 12,767 in high schools. Expenditure for public-school education in the academic year 1928-29 totaled \$7,960,224.

CHARITIES AND CORRECTIONS The name of the central State organization dealing with the State institutions of care and custody was changed by the Legislature in 1929 from the State Board of Charities and Corrections to the State Board of Public Welfare. The administration of the system of mothers' aid was transferred to its jurisdiction. The board exercised various powers with regard to dependent children, the deaf, the dumb, and the blind. It consisted of five appointed and two ex-officio members, including the Governor. The institutions for the care or custody of individuals maintained by the State were State Hospital (insane), Concord, Laconia State Industrial School (feeble-minded), Laconia, State Industrial School, Manchester, State Prison, Concord, Soldiers' Home, Tilton, State Sanatorium (tuberculosis), Glencliff.

POLITICAL AND OTHER EVENTS The State Public Service Commission occupied a prominent place in the year's political activity. At the behest of the Legislature it investigated the service of the Boston & Maine Railroad in the State and rendered a report favorable to the system's relations with its employees. The report was of interest because of the apprehension in New Hampshire that the railroad might undertake to abandon some additional sections of its mileage within the State's borders. Governor Tobey named S. H. Bridges, vice chairman of the Republican State Committee, in May to be chairman of the Public Service Commission. The Governor's Council rejected the nomination, and twice again when it was later presented, again rejected it, thus bringing about a deadlock in the situation. The city of Berlin, New Hampshire, suffered severe damage, estimated at \$500,000, from a storm of the character of a tornado, on May 5, and from a fire caused by lightning.

OFFICERS Governor, Charles W. Limmer; Secretary of State, Enoch D. Fuller; State Treasurer, Henry E. Chamberlin; Attorney-General, Ralph W. Davis; Commissioner of Education, Ernest W. Butterfield.

JUDICIAL Supreme Court Chief Justice, Robert J. Peaslee; Associate Justices, John E. Allen, Thomas L. Marble, Oliver W. Branch, Leslie P. Snow.

NEW HAMPSHIRE, UNIVERSITY OF A co-educational State institution of higher learning

in Durham, N. H., founded in 1866 in Hanover, N. H., as part of Dartmouth College, transferred to Durham as State College in 1893, and made the State University in 1923. It consists of a college of liberal arts, a college of agriculture, and a college of technology. The 1929-30 enrollment was 1551, of whom 1065 were men and 486, women. The summer session had a registration of 345 students. The faculty numbered 142; its endowment amounted to \$1,118,702, and the income for the year totaled \$1,506,842. The fund accruing under the millage law of 1925, which provided an annual amount equal to one mill for each dollar for the assessed valuation of the State, amounted in 1928-29 to \$654,850. Thus, together with income from other sources, was sufficient for the maintenance of the institution and for the gradual construction of a complete physical plant in accordance with a comprehensive plan for the development of the university. In 1919 the construction of the new chemistry building, Charles James Hall, was completed at a cost of \$480,000. The library contained 64,000 volumes. President, Edward Morgan Lewis, LL.D., Litt D.

NEW HEBRIDES, *Néw-Hébrides*. A group of islands in Melanesia, including the following islands, Espiritu Santo, Veleka, Efate or Sandwich Island, Epi, Erromanga, Tanna, Futuna or Kironnan, and Anietyim. The group is under the joint administration of France and Great Britain, according to conventions of February, 1906, and Mar. 18, 1922. The interests of British, French, and natives are guaranteed, the conditions of land holding in the islands are fixed, and the regulation and recruitment of labor provided for. The area is approximately 5700 square miles and the population about 60,000, of whom in 1927, 200 were British and 720 French. Many missionary schools have been established, chiefly by the Presbyterian faith. The land for the most part has not been cleared, but large tracts have been settled in the interior. The area under cultivation is planted chiefly with coconuts, cacao, cotton, and coffee. Bananas, oranges, and all tropical fruits grow well. Trade is chiefly with Sydney and New Caledonia. The imports in 1928 amounted to 38,184,562 francs and the exports were valued at 49,355,472 francs, of which about one-fourth were British. The chief imports are provisions, clothing, metals, and furniture, and the chief exports are corn, copra, coffee, cotton, coconuts, and cacao. The joint revenue in 1927 was 3,017,711 francs and expenditure, 2,220,479 francs. British revenue in 1927 amounted to £620 and expenditure to £12,688. Direct steamship communication has been established with France, via Tahiti and Panama. British High Commissioner, in 1929, Sir Eyre Hutson; French High Commissioner, M. Guyon; British Resident Commissioner, G. A. Joy (acting); French Resident Commissioner, M. d'Arboussier.

NEW JERSEY POPULATION According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 3,155,900. The estimated population on July 1, 1928, was 3,821,000. The capital is Trenton.

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

MINERAL PRODUCTION The greater part of the total value of the mineral production of the State continued to be contributed by its clay products. These attained, however, for 1927 a

Crop	Year	Acreage	Prod Bu	Value
Potatoes	1929	50,000	6,032,000	\$9,651,000
	1928	57,000	9,130,000	4,680,000
Hay	1929	259,000	388,000 *	7,002,000
	1928	263,000	479,000 *	6,926,000
Corn	1929	183,000	6,588,000	6,654,000
	1928	181,000	6,968,000	6,759,000
Peaches	1929	2,600,000		2,990,000
	1928	1,625,000		2,194,000
Sweet potatoes	1929	15,000	2,100,000	2,940,000
	1928	15,000	2,175,000	2,610,000
Wheat	1929	62,000	1,178,000	1,449,000
	1928	60,000	1,200,000	1,488,000

* Tons

smaller value, \$43,073,377, than that for the active year 1928, which was \$47,512,514. Zinc production mounted in 1927, reaching for that year 95,695 short tons, as against 80,629 for 1926. The output of stone, totaling 2,870,880 short tons for 1927 and 2,315,450 for 1926, had a value, for 1927, of \$4,334,526 and for 1926 of \$3,589,119. The iron mines of the State, formerly important, resumed in 1928 the moderate rally in production that they had made in 1926. There were shipped from the mines in 1928, 350,616 long tons of iron ore with a value of \$1,357,877, as against 202,720 tons in 1927, with a value of \$860,393. The industry in the production of by-product coke that had sprung up adjacent to some of the large communities of the State about held its own in 1928, producing 903,177 short tons, as against 906,321 in 1927. The total value of the mineral products native to the State was \$71,064,418 for 1927 for 1926, \$77,065,713.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929 was 2297.02. There were built, in 1929, 126 miles of additional third track.

MANUFACTURES According to the biennial Census of Manufactures published by the United States Department of Commerce in 1929, there were in the State, in 1927, 8312 manufacturing establishments. These employed 408,093 wage earners, whose wages for 1927 totaled \$570,308,502. Materials and supplies used in manufacture cost \$1,956,597,097. The manufactured products attained the combined value of \$3,417,450,248.

EDUCATION The chief educational changes of the year, as noted by State Commissioner of Education Morse in the *Journal of the National Education Association* were the prolongation of the normal-school curriculum from 2 to 3 years, and of the music, commercial, and physical education curricula from 3 to 4 years. The creation of a State Board of Regents by legislative act was designed to provide a clearing house and general means of correlation for the educational activities. The school-age population of 1929 was estimated at 1,034,372. There were enrolled in the public schools of the State 770,879 pupils. Of these, 346,889 were in primary, 242,624 in grammar, and 107,765 in high-school grades. The current expenditure of 1929 for public-school education was \$70,501,448. The yearly salaries of teachers averaged \$2007.

CHARITIES AND CORRECTIONS The central authority for the care of dependents, defectives, and delinquents rested in 1929 in the Department of Institutions and Agencies, organized in 1918. Its duties included coordinating all branches of State welfare work, shaping general policies, and supervising the respective institutions. Its directing body was a Board of Control whose members were the Governor, ex officio, and 8 appointed non-salaried members. The State institutions, with

their resident populations of Dec. 1, 1929, were Graystone Park State Hospital (insane), 3711, Trenton State Hospital (mental), 2596, State School for the Feeble-Minded, Vineland 1072, State Colony for Feeble-Minded Males, New Lisbon, 466, State Colony for Feeble-Minded Males, Woodbine, 395, North Jersey Training School (females), Totowa, 345, State Village for Epileptics, Skillman, 1025, Sanatorium for Tuberculous Diseases, Glen Gardner, 397, State Prison, Trenton, 1003, State Prison Farm, Leesburg, 215, New Jersey Reformatory (males), Rahway, 631, New Jersey Reformatory (males), Annandale, 216, New Jersey Reformatory (women), Clinton, 187, State Home for Boys (delinquent), Jamesburg, 650, State Home for Girls (delinquent), Trenton, 239, Home for Disabled Soldiers, Kearny, 85, Home for Disabled Soldiers, Sailors, and Marines, and their Wives and Widows, Vineland, 172. The Annandale reformatory was opened in 1929 to provide industrial and vocational training and social rehabilitation for minor offenders between the ages of 16 and 30 years. A prison-farm colony at Bordentown and a State Hospital for Mental Diseases at Hillsdale were under construction.

LEGISLATION The 153d Legislature of the State of New Jersey convened on January 8 in regular annual session and adjourned July 2. It opened the way for a social experiment by the passage of the measure designed to enable Newark and the Prudential Life Insurance Company to carry out their housing plans. This act gave cities power to condemn, at the expense of a private investor, unsafe and insanitary dwellings, for the benefit of housing projects approved by the cities' governing bodies. A companion act permitted domestic insurance companies to invest not beyond 5 per cent of their resources in housing projects thus created. A number of statutory governmental bodies were brought into existence. One of these was a Board of Regents, charged with the duty to determine the needs of the State with regard to higher education. Another was a State Water Policy Commission. A Women's and Children's Bureau with a woman for its head was created as part of the State Department of Labor. The juvenile court system and the probation laws underwent revision. Primary elections were eliminated in municipalities having government by manager. Supervision of the safety of moving-picture houses, theatres, and grandstands was vested in the commissioner of labor, with regard to territory where no local building supervision existed. A series of measures for the regulation of banks and insurance companies was passed. The maximum legal interest on small loans was reduced to 1½ per cent a month, from 3 per cent. The Legislature took steps to cause the State legal forces to bring suits against other States in three matters. Of these, one was the under-water boundary between New Jersey and Delaware. The others concerned disputes with New York over New York's contemplated diversion of water from the Delaware River and over the system of free lightage in New York Harbor, which New Jersey wished to force railroads to abolish, for the advantage of its own harbor frontage. The State Civil Service Commission was abolished as a means to expel the commissioners, and a new Commission was created in its place.

The Wise Act regulated the use by public utilities of bridges taken over by the State Highway

were of the total value of \$182,106,373. The manufactured products attained the value of \$327,528,366.

EDUCATION It was reported by the State Board of Education in 1929 that since and including the winter of 1924 no public school of the State had shortened its academic period on account of winter difficulties to less than the 36 weeks prescribed by the law of 1919. Commissioner of Education Butterworth stated in the *Journal* of the National Education Association that the total school costs of the State ran lower for 1929 than for 1928 or 1926, and attributed this fact to increased educational efficiency and not to reduced standards. The number of children between the ages of 5 and 16 years in the State on September 30, 1928, was stated as 91,660. The number of pupils registered in public and private schools, somewhat higher, was 97,429. Those in public schools numbered 71,521. There were 1513 in kindergartens, 54,390 in elementary and 12,767 in high schools. Expenditure for public-school education in the academic year 1928-29 totaled \$7,960,224.

CHARITIES AND CORRECTIONS The name of the central State organization dealing with the State institutions of care and custody was changed by the Legislature in 1929 from the State Board of Charities and Corrections to the State Board of Public Welfare. The administration of the system of mothers' aid was transferred to its jurisdiction. The board exercised various powers with regard to dependent children, the deaf, the dumb, and the blind. It consisted of five appointed and two ex-officio members, including the Governor. The institutions for the care or custody of individuals maintained by the State were State Hospital (insane), Concord, Laconia State School (feeble-minded), Laconia, State Industrial School, Manchester, State Prison, Concord, Soldiers' Home, Tilton, State Sanatorium (tuberculosis), Glencliff.

POLITICAL AND OTHER EVENTS The State Public Service Commission occupied a prominent place in the year's political activity. At the behest of the Legislature it conducted the service of the Boston & Maine Railroad in the State and rendered a report favorable to the system's relations with its employees. The report was of interest because of the apprehension in New Hampshire that the railroad might undertake to abandon some additional sections of its mileage within the State's borders. Governor Tobey named S. H. Bridges, vice chairman of the Republican State Committee, in May to be chairman of the Public Service Commission. The Governor's Council rejected the nomination, and twice again when it was later presented, again rejected it, thus bringing about a deadlock in the situation. The city of Berlin, New Hampshire, suffered severe damage, estimated at \$500,000, from a storm of the character of a tornado, on May 5, and from a fire caused by lightning.

OFFICERS Governor, Charles W. Tobey, Secretary of State, Enoch D. Fuller, State Treasurer, Henry E. Chamberlin, Attorney-General, Ralph W. Davis, Commissioner of Education, Ernest W. Butterfield.

JUDICIARY Supreme Court Chief Justice, Robert J. Pennington, Associate Justices, John F. Allen, Thomas L. Marble, Oliver W. Branch, Leslie P. Snow.

NEW HAMPSHIRE, UNIVERSITY OF A co-educational State institution of higher learning

in Durham, N. H., founded in 1866 in Hanover, N. H., as part of Dartmouth College, transferred to Durham as State College in 1893, and made the State University in 1923. It consists of a college of liberal arts, a college of agriculture, and a college of technology. The 1929-30 enrollment was 1551, of whom 1065 were men and 486, women. The summer session had a number of 345 students. The faculty number 11. Endowment amounted to \$1,118,702, and the income for the year totaled \$1,506,842. The fund accruing under the millage law of 1925, which provided an annual amount equal to one mill for each dollar for the assessed valuation of the State, amounted in 1928-29 to \$654,850. This, together with income from other sources, was sufficient for the maintenance of the institution and for the gradual construction of a complete physical plant in accordance with a comprehensive plan for the development of the university. In 1919 the construction of the new chemistry building, Charles James Hall, was completed at a cost of \$480,000. The library contained 64,000 volumes. President, Edward Morgan Lewis, LL.D., Litt.D.

NEW HEBRIDES, *hēlvi-dēz*. A group of islands in Melanesia, including the following islands, Espiritu Santo, Malekula, Efate or Sandwich Island, Epi, Erromanga, Tanna, Fotuna or Kionnan, and Aneitym. The group is under the joint administration of France and Great Britain, according to conventions of February, 1906, and Mar. 18, 1922. The interests of British, French, and natives are guaranteed, the conditions of land holding in the islands are fixed, and the regulation and recruitment of labor provided for. The area is approximately 5700 square miles and the population about 60,000, of whom in 1927, 200 were British and 720 French. Many missionary schools have been established, chiefly by the Presbyterian faith. The land for the most part has not been cleared, but large tracts have been settled in the interior. The area under cultivation is planted chiefly with coconuts, cacao, cotton, and coffee. Bananas, oranges, and all tropical fruits grow well. Trade is chiefly with Sydney and New Caledonia. The imports in 1928 amounted to 38,184,562 francs and the exports were valued at 49,355,472 francs, of which about one-fourth were British. The chief imports are provisions, clothing, metals, and furniture, and the chief exports are corn, copra, coffee, cotton, coconuts, and cacao. The joint revenue in 1927 was 3,037,711 francs and expenditure, 2,220,479 francs. British revenue in 1927 amounted to £620 and expenditure to £12,688. Direct steamship communication has been established with France, via Tahiti and Panama. British High Commissioner, in 1929, Sir Eyre Hutson, French High Commissioner, M. Guyon, British Resident Commissioner, G. A. Joy (acting), French Resident Commissioner, M. d'Arbousier.

NEW JERSEY. POPULATION According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 3,155,900. The estimated population on July 1, 1928, was 3,821,000. The capital is Trenton.

AGRICULTURE The accompanying table gives the acreage, production, and value of the principal crops in 1928 and 1929.

MINERAL PRODUCTION. The greater part of the total value of the mineral production of the State continued to be contributed by its clay products. These attained, however, for 1927 a

Crop	Year	Acres	Prod Bu	Value
Potatoes	1929	50,000	6,032,000	\$9,551,000
	1928	57,000	9,120,000	4,560,000
Hay	1929	259,000	388,000 *	7,002,000
	1928	263,000	479,000 *	6,926,000
Corn	1929	183,000	6,588,000	6,654,000
	1928	181,000	6,968,000	6,759,000
Peaches	1929	2,600,000		2,990,000
	1928	1,625,000		2,194,000
Sweet potatoes	1929	15,000	2,100,000	2,940,000
	1928	15,000	2,175,000	2,610,000
Wheat	1929	62,000	1,178,000	1,449,000
	1928	60,000	1,200,000	1,488,000

* Tons

smaller value, \$43,073,377, than that for the active year 1926, which was \$47,512,514. Zinc production mounted in 1927, reaching for that year 95,695 short tons, as against 80,629 for 1926. The output of stone, totaling 2,670,880 short tons for 1927 and 2,315,450 for 1926, had a value, for 1927, of \$4,334,526 and for 1926 of \$3,589,119. The iron mines of the State, formerly important, resumed in 1928 the moderate rally in production that they had made in 1926. There were shipped from the mines in 1928, 350,616 long tons of iron ore, with a value of \$1,357,877, as against 202,720 tons in 1927, with a value of \$860,393. The industry in the production of by-product coke that had sprung up adjacent to some of the large communities of the State about held its own in 1928 producing 903,177 short tons, as against 906,321 in 1927. The total value of the mineral products native to the State was \$74,064,418 for 1927, for 1926, \$77,065,713.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan 1 1929, was 22,955.02. There were built, in 1929, 126 miles of additional third track.

MANUFACTURES. According to the biennial Census of Manufactures published by the United States Department of Commerce in 1929, there were in the State, in 1927, 8312 manufacturing establishments. These employed 408,003 wage earners, whose wages for 1927 totaled \$570,308,502. Materials and supplies used in manufacture cost \$1,956,597,097. The manufactured products attained the combined value of \$3,417,450,248.

EDUCATION. The chief educational changes of the year, as noted by State Commissioner of Education Morse, in the *Journal of the National Education Association* were the prolongation of the normal-school curriculum from 2 to 3 years, and of the music, commercial, and physical education curricula from 3 to 4 years. The creation of a State Board of Regents by legislative act was designed to provide a clearing house and general means of correlation for the educational activities. The school-age population of 1929 was estimated at 1,034,372. There were enrolled in the public schools of the State 770,879 pupils. Of these, 346,889 were in primary, 212,624 in grammar, and 107,765 in high-school grades. The current expenditure of 1929 for public-school education was \$70,501,448. The yearly salaries of teachers averaged \$2007.

CHARITIES AND CORRECTIONS. The central authority for the care of dependents, defectives, and delinquents rested in 1929 in the Department of Institutions and Agencies, organized in 1918. Its duties included coordinating all branches of State welfare work, shaping general policies, and supervising the respective institutions. Its directing body was a Board of Control whose members were the Governor, ex officio, and 8 appointed non-salaried members. The State institutions, with

their resident populations of Dec 1, 1929, were: Graystone Park State Hospital (insane), 3711; Trenton State Hospital (mental), 2596; State School for the Feeble-Minded, Vineland, 1072; State Colony for Feeble-Minded Males, New Lisbon, 466; State Colony for Feeble-Minded Males, Woodbine, 395; North Jersey Training School (females), Totowa, 345; State Village for Epileptics, Skillman, 1025; Sanatorium for Tuberculous Diseases, Glen Gardner, 397; State Prison, Trenton, 1603; State Prison Farm, Leesburg, 215; New Jersey Reformatory (males), Rahway, 631; New Jersey Reformatory (males), Annandale, 216; New Jersey Reformatory (women), Clinton, 187; State Home for Boys (delinquent), Jamesburg, 650; State Home for Girls (delinquent), Trenton, 239; Home for Disabled Soldiers, Kearny, 85; Home for Disabled Soldiers, Sailors, and Marines, and their Wives and Widows, Vineland, 172. The Annandale reformatory was opened in 1929 to provide industrial and vocational training and social rehabilitation for minor offenders between the ages of 16 and 30 years. A prison-farm colony at Bordentown and a State Hospital for Mental Diseases at Hillsdale were under construction.

LEGISLATION. The session of the State of New Jersey, which began in regular annual session and adjourned July 2. It opened the way for a social experiment by the passage of the measure designed to enable Newark and the Prudential Life Insurance Company to carry out their housing plans. This act gave cities power to condemn, at the expense of a private investor, unsafe and insanitary dwellings for the benefit of housing projects approved by the cities' governing bodies. A companion act permitted domestic insurance companies to invest not beyond 5 per cent of their resources in housing projects thus created. A number of statutory governmental bodies were brought into existence. One of these was a Board of Regents, charged with the duty to determine the needs of the State with regard to higher education. Another was a State Water Policy Commission. A Women's and Children's Bureau with a woman for its head was created as part of the State Department of Labor. The juvenile court system and the probation laws underwent revision. Primary elections were eliminated in municipalities having government by manager. Supervision of the safety of moving-picture houses, theatres, and grandstands was vested in the commissioner of labor, with regard to territory where no local building supervision existed. A series of measures for the regulation of banks and insurance companies was passed. The maximum legal interest on small loans was reduced to 1½ per cent a month, from 3 per cent. The Legislature took steps to cause the State legal forces to bring suits against other States in three matters. Of these, one was the under-water boundary between New Jersey and Delaware. The others concerned disputes with New York over New York's contemplated diversion of water from the Delaware River and over the system of free lightering in New York Harbor, which New Jersey wished to force railroads to abolish, for the abolition of its own harbor frontage. The State Water Policy Commission was abolished as a means to expel the commissioners, and a new Commission was created in its place.

The Wise Act regulated the use by public utilities of bridges taken over by the State Highway

Commission. In the bill, after its passage, was found by Senate minority leader Simpson a clause that in effect relieved such companies from payment for certain work done prior to the passage of the act. In order to avoid shifting this charge to taxpayers, Governor Larson called a special session, which met on August 12 and revised the Visc Act. Much effort was expended by the regular session in the continuation of the Legislature's efforts to bring out damaging political facts against Mayor Frank Hague of Jersey City, the State's Democratic stronghold. The vote cast in Jersey City in the election of the previous November was inquired into for evidences of fraud. It was made the subject of contempt proceedings for failure to answer questions of a legislative committee. A law was enacted, bearing on his case, putting on those guilty of contempt a maximum penalty of 6 months in prison.

POLITICAL AND OTHER EVENTS A new Civil Service Commission was created, its five members being appointed by Governor Larson on May 1, the old commission having been abolished by Legislative act. A Women's and Children's Bureau of the State Department of Labor was entrusted with the charge of regulating labor relations among these groups. State Attorney-General Stevens studied the question of lighterage in New York Harbor and submitted to Governor Larson on September 10 a report presenting reasons for which New Jersey might determine to bring action before the Interstate Commerce Commission for the abolition of free lighterage as contrary to the Commission's regulations and practices. The report stated that about 11,000,000 tons of freight was lighterage each year in New York Harbor, of which but 2,000,000 was moved from points in New Jersey to points within the State. The principle was laid down that "the commerce of New Jersey should not . . . have to contribute toward the cost of handling the traffic of competitors across the harbor." Governor Larson in accordance with this view directed the Attorney-General to institute a complaint on the part of the State.

New Jersey also brought suit in the United States Supreme Court to prevent the proposed diversion, within New York State, of water from the upper course of the Delaware River, for the municipal supply of New York City, and, separately, a suit to prevent pollution of the New Jersey shore front by pollution of the adjacent waters of the Atlantic Ocean with refuse dumped at sea by New York City. The Supreme Court admitted the complaints on May 20 and hearings were held on the pollution suit in November. Yet another interstate matter was brought before the Federal Supreme Court when New Jersey instituted a friendly action to determine the boundary between it and Delaware along the course of Delaware Bay. For many years Delaware had claimed jurisdiction of land under water as far as the low-water mark on the New Jersey shore, while New Jersey had claimed territorial right as far as mid-channel. Control of fishing and oyster industries of material value was involved.

Early in the year the State Public Utility Commission authorized and the Public Service Gas and Electric Company put into effect a new system of rates for gas. This system of rates placed a high charge on the initial quantity used monthly and diminishing charges on successive marginal amounts. A special interim commission created by the Legislature of 1925 to study re-

codification was reported on October 11 to have, for presentation to the session of 1930, a recommendation that about 1000 statutes found unconstitutional, repealed by inference, superseded or simply obsolete should be repealed.

Highway communication underwent several important developments. The State Highway Commission approved on October 15 plans for the completing links of the great highway to extend from the Holland Tunnel, at Jersey City, to Camden. These links included bridges across the Hackensack and Passaic rivers and a viaduct over the intervening meadows, the cost of the three features being estimated at \$19,000,000. A bridge on this highway, crossing the Raritan River just below New Brunswick, was almost complete at the end of the year. A private company took the preliminary steps toward building a bridge across Delaware Bay from Penn's Grove, New Jersey, to the approaches of Wilmington, Delaware. A highway bridge across the Delaware River between Tacony and Palmyra, affording another approach to Philadelphia, was completed by a private company at a cost of about \$5,000,000 and was opened on August 14. At Newark the Metropolitan Airport was opened on February 17 as an air-mail port for New York City.

The long-protracted contest against Mayor Frank Hague of Jersey City, the State's Democratic stronghold, conducted by the Republican element in the Legislature culminated on May 14, when municipal elections in Jersey City were held. Hague and his fellow-candidates for the commissionership were opposed by a strong fusion ticket, but were all elected by an average vote of about 68,000 each, to 43,808 for the highest opposition candidate. The State Court of Errors and Appeals had previously, in April, put an end to the proceedings of the Legislative investigating committee to have Hague punished for contempt on the charge of his failure to answer some of its questions put to him as a witness.

It was announced on October 31 that the State, working since 1920, had virtually rid its territory of the gypsy moth. Progress was made at Princeton University on a \$3,000,000 history of the State, financed by a gift of Lloyd W. Smith of Madison.

OFFICERS Governor, Morgan F. Larson, Secretary of State, Joseph F. S. Fitzpatrick, Treasurer, Albert C. Middleton, Comptroller, John McCutcheon, Attorney-General, William A. Stevens; Commissioner of Education, Charles H. Elliott.

JUDICIARY Chancellor, Edwin Robert Walker, Supreme Court, William S. Sumner (Chief Justice), Samuel Kalisch, Frank S. Katzenbach, Jr., Thomas W. Trenchard, Charles W. Parker, Charles C. Black, James F. Minturn, Luther A. Campbell, Frank T. Lloyd.

NEW JERUSALEM, CHURCH OF THE AN organization which also is known as the New Church, and popularly called Swedenborgian, because based upon the statement of Christianity set forth in the writings of Emanuel Swedenborg, Swedish scientist, philosopher, theologian, and seer (1688-1772). The two bodies that now compose it in the United States are the General Church of the New Jerusalem and the General Convention of the New Jerusalem, while in Great Britain the General Conference of the New Church corresponds to the General Convention

in the United States. The first New Church society in America was founded in Baltimore in 1792, and the General Convention of the New Jerusalem in the United States was organized in 1817. In 1890 a considerable number withdrew forming later the General Church of the New Jerusalem. The polity of the church is modified episcopacy, the worship in the church is generally liturgical, chants being extensively used. Missionary work is carried on in Denmark, Sweden, Germany, France, Switzerland, Latvia, Czechoslovakia, Austria, South Africa, India, Japan, British Guiana, and Dutch Guiana.

THE GENERAL CHURCH OF THE NEW JERUSALEM. This body was organized in 1897 under episcopal government with headquarters in Bryn Athyn, Pa., a new community where the church established the following institutions: A cathedral church of unusual architectural interests, built in the manner of the great cathedrals of the fourteenth century, the Academy of the New Church, which has a valuable museum and library and departments from kindergarten to junior college, and theological and normal schools, which had an enrollment of 297 in 1929.

The General Church differs from older bodies in the New Church mainly in its stricter attitude toward the theological writings of Swedenborg (considering them to be the Gospel or Word of the Lord at his Second Advent) and in the endeavor to establish parochial schools. It had an international membership in 1929 of 1950 with 3 bishops, 36 pastors, 4 ministers, and 24 societies, 15 of which were in the United States and Canada, 2 in England, and others in Sweden, Holland, Belgium, France, Natal, New South Wales, and Brazil. A native mission was carried on in South Africa, with headquarters at Alpha, Orange Free State, which reported 622 adult members (natives), 5 native pastors, and 6 native ministers. A cathedral of Bryn Athyn, Pa., is maintained. Among the periodicals published by the General Church are *New Church Life*, its official monthly magazine, *New Church Sermons*, *The Journal of Education*, and *The Bulletin*.

THE GENERAL CONVENTION OF THE NEW JERUSALEM IN THE UNITED STATES OF AMERICA. In 1929, the General Convention consisted of about 5750 communicant members, united into 84 societies, territorially organized as 12 associations and 7 independent societies. The ministerial membership was 110, and the amount expended for missions and benevolences for the year ending Apr. 30, 1929, was \$35,000. Educational institutions of the General Convention included a theological school in Cambridge, Mass., a junior college in Urbana, Ohio, and the Waltham School for Girls, Waltham, Mass. Periodicals included the *New Church Messenger*, weekly, Brooklyn, N. Y., the *New Church Review*, quarterly, Boston, Mass., the *New Church League Journal*, monthly, Boston, Mass., *The Helper*, weekly, Philadelphia, Pa., and *Sunday Afternoons*, weekly, Boston, Mass. The Convention held its 1929 meeting at its church in Brooklyn, N. Y., June 15-18. The 1930 convention was to be held in Boston in June.

NEW MEXICO. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 360,350. The estimated population on July 1, 1928, was 396,000. The capital is Santa Fe.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod. Bu.	Value
Cotton	1929	130,000	84,000 ^a	\$7,434,000
	1928	117,000	88,000 ^a	8,580,000
Hay	1929	231,000	478,000 ^b	8,541,000
	1928	219,000	437,000 ^b	7,268,000
Dry Beans	1929	225,000	1,688,000	4,389,000
	1928	214,000	856,000	2,596,000
Corn	1929	209,000	4,180,000	7,720,000
	1928	199,000	3,482,000	3,099,000
Wheat	1929	305,000	5,742,000	5,495,000
	1928	186,000	2,054,000	2,201,000
Grain sorghum	1929	303,000	4,466,000	2,903,000
	1928	188,000	3,384,000	2,030,000

^a Bales. ^b Tons.

MINERAL PRODUCTION. The copper production of the State in 1928 was in greater quantity than in a number of years previous. There were produced 92,777,233 pounds in recoverable ore content, as against 79,761,222 pounds in 1927. Gold production also rose, being for 1928, 31,705 fine ounces as against 26,098 for 1927, in value, \$655,400 for 1928 and \$539,500 for 1927. The production of silver attained the quantity of 799,414 fine ounces for 1928, 754,757 for 1927, and the value of \$467,657 for 1928 and \$428,016 for 1927. The zinc production of 1927 was of the quantity of 29,802 short tons and the value of \$3,814,592, that of 1926, 12,052 tons, or \$1,807,860. Coal mining in 1928 was on a somewhat smaller scale than in 1927. The quantity produced in 1928 was 2,711,851 short tons, in 1927, 2,935,539 tons were mined. The value of coal mined was \$8,636,000 for 1928, for 1927, \$9,179,000. The production of petroleum declined in 1928 to 959,000 barrels, from 1,226,000 for 1927, the value of petroleum produced was estimated for 1928 at \$1,200,000, for 1927 it was \$1,680,000. Natural gas was produced in minor quantity. The total value of the mineral products of the State was \$28,608,776 for 1927; for 1926, \$28,513,991.

The estimated metal output of 1929 was 34,200 ounces of gold, 1,090,000 ounces of silver, 22,000,000 pounds of lead, 100,000,000 pounds of copper, and 68,000,000 pounds of zinc. The estimated gross value of the metal produced was gold, \$77,000, silver, \$582,000, lead, \$1,397,000, copper, \$17,900,000, zinc, \$4,522,000, total, \$25,108,000.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 2964.23. There was no reported construction of additional line in 1929.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and dealing with the operations of 1927, there were in the State, in 1927, 200 manufacturing establishments. These employed 4653 wage earners, whose wages for the year totaled \$5,421,441. Materials and supplies used in production cost \$10,055,852. Manufactured products attained the combined value of \$20,182,672.

EDUCATION. The system of State examinations for graduation of pupils from the eighth grade and their passage to the ninth was given up, and control of this important promotion was restored to the county school superintendents. Apportionment of State funds to schools was raised to a basis of \$10.50 per capita, from \$8.50.

CHARITIES AND CORRECTIONS. The State Department of Public Welfare, governed by the

State Board of Public Welfare, consists of two bureaus, that of Public Health and that of Child Welfare. The former corresponds to boards or departments of health in other States and the latter, the only division of the State government engaging in a programme of social service, carries on work chiefly on behalf of children but not limited to them entirely. The State institutions for the care or custody of individuals are outside the control of the State Department of Public Welfare.

POLITICAL AND OTHER EVENTS The U. S. Department of Justice undertook in May to settle the boundary dispute of New Mexico with Texas, in a communication proposing conferences with the governors of the respective States. New Mexico, after enacting a tobacco tax, failed to put the taxing act into effect, the administration preferring to await the result of petitions for a referendum on the subject. A writ of mandamus was sought in the District Court of Santa Fe County to compel the collection of the tobacco tax. This writ was granted and the grant was confirmed on December 26 by the State Supreme Court. The Rio Grande Conservancy District, a body created under State authority for the construction of works of drainage, flood control, storage of water, and irrigation along the course of the Rio Grande, undertook in May to finance these works by the issue of \$8,700,000 of its bonds. The Federal Government participated in the flood-control plans in so far as they affected Indian lands. In the neighborhood of San Marcial, a flood of the Rio Puerco on August 13 drove out some 200 inhabitants and melted away many of the adobe dwellings. See **FLOODS**. In a cavern on the slope of Bysons Cap, near Mesquite were discovered fossils including what the director of the Los Angeles Museum described as the probable remnant of a human skull 25,000 years old.

OFFICERS Governor, R. C. Dillon, Lieutenant-Governor, Hugh B. Woodward, Secretary of State, Mrs. E. A. Perrault, State Auditor, Victoriano Uihbarri, Treasurer, Emerson Watts, Attorney-General, M. A. Otero, Superintendent of Public Instruction, Anastasio Montoya.

JUDICIARY Supreme Court Chief Justice, Howard L. Bickley, Associate Justices, John C. Watson, Frank W. Parker, John F. Simms, Charles C. Catron.

NEW ORLEANS. SEE LOUISIANA

NEW ORLEANS STREET-CAR STRIKE

See **STRIKES AND LOCKOUTS**

NEW SOUTH WALES. One of the six original States of the Commonwealth of Australia, located in the southeast part of the continent, bounded on the north by Queensland, on the south by Victoria, on the east by the Pacific Ocean, and on the west by South Australia. Area, exclusive of the Federal Territory, 309,432 square miles, population, including aborigines, according to the census of 1921, 2,101,908, estimated, Mar. 31, 1929, 2,457,127. The Federal Territory in 1929 had an area of 940 square miles and 8358 inhabitants. Sydney, the capital, had a population in 1921, of 905,047, including suburbs and shipping, estimated Jan. 1, 1929, at 1,127,470. Other towns with their populations at the end of 1927 were Newcastle and suburbs, 102,550, Broken Hill, 23,430, Auburn, 18,530, Parramatta, 16,760, Granville, 17,530, Bankstown, 18,850, and Lithgow, 16,480. The movement of population in 1928 was Births, 54,791, deaths, 22,657; mar-

riages, 20,075. During the same year, the excess of immigration over emigration was 12,880. Education is controlled by the State and instruction is compulsory between the ages of 7 and 14. At the beginning of 1928, there were 3142 government schools, with 11,550 teachers, with 352,310 pupils enrolled, and an average attendance of 283,615. There were 719 private schools, of which 491 were Roman Catholic, with 2972 teachers and 69,488 students.

Wheat is the principal cereal crop and the chief fruit crop is oranges. The area sown for wheat during the 1928-29 season was 4,076,600 acres and the total yield 49,182,600 bushels. Other grains and other citrus fruits, potatoes, tobacco, sugar cane, bananas, and apples are raised. The total area under cultivation in 1927 was 4,597,296 acres and the value of all crops was £22,098,100.

The estimated production of wool in 1928-29 amounted to 482,100,000 pounds. Including the Federal Territory, the state on Jan. 1, 1928, had 50,710,000 sheep, 2,848,054 cattle, 598,377 horses, and 301,819 swine. Mineral production in 1927-28 was as follows: Gold, £54,503, copper, 13,497, tin, 1231,843, coal, 18,263,729, all minerals, £15,337,154. In the same year there were 8032 factories employing 182,660 persons, which produced goods valued at £181,403,084. Preliminary figures for overseas commerce in 1928-29 were: Imports, £63,503,493, exports, £49,291,112. For the year ending June 30, 1928, the state revenues were £41,198,972 and the expenditures, 145,203,968. The gross public debt on June 30, 1929, was \$1,342,425,000. Railway lines in operation in 1927-28 totaled 5826 miles. A deficit of 11,039,386 incurred by the state railways for the fiscal year ending June 30, 1929, led to a decision to reorganize the financial management along the lines recommended by British experts in 1924. There are seven private railways having a total extent of 112 miles (mainly colliery lines). In 1929 there were 14,000 miles of main highway in New South Wales. The sum of \$58,214,000 was spent on highway construction in the same year.

Executive power is vested in a governor assisted by a cabinet, and legislative power in a bicameral legislature, consisting of a legislative council and a legislative assembly. The legislative council, which must not consist of less than 21 members, is appointed for life by the Crown, and consisted of 96 members in 1929. There are 90 members in the Legislative Assembly. Governor in 1929, Admiral Sir Dudley R. S. De Chair, Premier and Colonial Treasurer, T. R. Bavin.

HISTORY Armed conflict between the police and striking coal miners on Dec. 16 and 17, 1929, resulted in two deaths and injuries to many. An agreement as to wage reductions reached between the miners' leaders and the employers, was repudiated at a meeting of 4000 miners on December 6 and when the State announced its determination to keep a leading coal mine in operation with volunteer labor, the mine was attacked by nearly 8000 miners from the northern coal fields. See **AUSTRALIA**.

NEW YORK. POPULATION A census by the State was taken in 1925. This showed a population of 11,162,151, compared with 10,385,227 by the Federal census in 1920. The population of New York City increased from 5,620,048 in 1920 to 5,873,356 in 1925, in the Borough of Manhattan, it decreased from 2,284,103 in 1920 to 1,945,029 in 1925. All the other boroughs in-

creased their populations. The U. S. Census Bureau estimate for July 1, 1928, was New York City, 6,017,500, Borough of Bronx, 951,900, Borough of Brooklyn, 2,308,500, Borough of Manhattan, 1,752,000, Borough of Queens, 854,400, Borough of Richmond, 150,700. The estimated population of the State on July 1, 1928, was 11,570,000. The capital is Albany.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929

Crop	Year	Acreage	Prod Bu	Value
Hay	1929	4,697,000	6,738,000 *	\$81,898,000
	1928	4,665,000	6,513,000 *	78,316,000
Potatoes	1929	270,000	24,840,000	36,018,000
	1928	284,000	32,376,000	21,044,000
Corn	1929	676,000	21,024,000	21,655,000
	1928	650,000	22,100,000	21,879,000
Oats	1929	989,000	24,628,000	14,283,000
	1928	1,020,000	31,660,000	18,176,000
Apples	1929		16,520,000	23,954,000
	1928		21,900,000	24,090,000
Wheat	1929	287,000	4,584,000	5,685,000
	1928	316,000	4,702,000	6,428,000
Barley	1929	159,000	3,514,000	2,952,000
	1928	169,000	4,648,000	3,625,000
Ruckwheat	1929	198,000	3,168,000	3,188,000
	1928	192,000	3,475,000	3,128,000

* Tons

MINERAL PRODUCTION. The mineral industry showing much the highest total value of yearly product, the production of pig iron, extracted almost entirely from ore originating in other States, attained for 1928 the total quantity of 2,369,814 long tons, as against 2,401,432 tons for 1927, the value of the product was \$39,928,960 for 1928 and \$40,803,579 for 1927. The allied industry of coke production attained for 1928 a total output of 3,802,657 short tons and for 1927 of 3,602,642 tons, in value, \$25,033,049 for 1928 and \$24,125,451 for 1927. The totals of the cement industry of the State were not available for 1928, but in 1917 were shipped from the factories 10,531,092 barrels, shipments were valued at \$16,380,000. Clay products were valued at \$25,374,276 for 1927 and at \$28,999,053 for 1926. The stone produced in the State, chiefly of the less costly grade, attained for 1927 the quantity of 10,651,610 short tons, exclusive of basalt, and for 1926, of 9,708,700 tons, the value of stone produced was \$15,830,959 for 1927 and \$13,713,020 for 1926. The output of sand and gravel for 1927 was of the value of \$12,157,612. Salt production rose to 2,085,320 short tons for 1928 from 1,964,080 for 1927, in value, to \$6,400,933, from \$6,121,461. The gypsum production of 1927 was 12,257,239 short tons, in value \$14,889,390, for 1926, 1,723,460 tons, or \$10,794,589. The value of ferro-alloys produced in 1927 was \$12,138,392, in 1926, \$13,045,398. The total value of the State's native mineral products was \$112,106,913 for 1927, for 1926, \$112,010,262.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were for maintenance and operation of governmental departments, \$169,727,420 (of which \$71,550,099 was for local education); for interest on debt, \$14,200,688, for permanent improvements, \$52,830,044, total, \$236,758,152 (of which \$51,502,063 was for highways and waterways, \$24,763,275 being for maintenance and \$26,738,788 for construction). Interdepartmental payments accounted for \$225,758 of the year's total expenditure. Revenues were \$240,199,580. Of these, property and special

taxes formed 56.1 per cent, departments' earnings and remuneration for officers' services, 3.3, sale of licenses, 30.4 (including licenses for business privileges, automobiles, hunting and fishing, but not covering sales of gasoline, on which no tax had yet been placed). The State's funded debt on June 30, 1928, \$360,758,300 consisted of \$259,602,471 net of sinking funds, including \$209,498,000 for highways and waterways, of which \$151,848,000 was for the State Barge Canal. On a property valuation of \$22,958,837,107, State taxes of \$24,897,004 were levied in the year.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 8338.03. There were built, in 1929, 929 miles of second, 3.37 of third, and 3.36 of fourth or other track.

MANUFACTURES. According to the biennial Census of Manufactures published by the U. S. Department of Commerce in 1929, there were in the State, in 1927, 36,650 manufacturing establishments. These employed 1,072,284 wage earners, whose wages for the year 1927 totaled \$1,605,378,086. Materials and supplies used in manufacture cost \$4,804,172,874. The manufactured products attained the combined value of \$9,400,061,376.

EDUCATION. The effort was made to promote study of the curricula in the schools of the State by organized cooperation of superintendents, principals, and teachers. An increase of the amount of State aid rendered possible the advancement of a programme for the improvement of the rural schools. For the academic year 1927-28, the school-age population of the State was estimated at 3,472,435. There were enrolled in the public schools 2,058,710 pupils. Of these, 1,701,088 were in the elementary, and 357,628 in the high schools. Expenditures for public-school education in the year 1928 totaled \$324,405,895. Salaries of teachers average \$2194.

CHARITIES AND CORRECTIONS. The new designation, Department of Social Welfare, was given the former Department of Charities by a legislative act of 1929. This department continued to act as the central administrative body with regard to many of the State's institutional activities. It supervised almshouses and the care of Indians within the State. It exercised State authority over institutions and agencies for the care of children, dealt with many problems connected with hospitals and sanatoria, had power to inspect all charitable and correctional institutions supported in any part by the State, except those under the direct care of other departments, and itself administered a number of institutions. These were State Training School for Girls, Hudson, State Agricultural and Industrial School (delinquent boys), at Industry, Thomas Indian School, at Iroquois, State Hospital for the Treatment of Incipient Pulmonary Tuberculosis, Raybrook, State Reconstruction Home (indigent crippled children), West Haverstraw, State Women's Relief Corps Home, (for ex-soldiers, their wives, and widows), Oxford. A State Training School for Boys, at Oxford, was projected in 1929.

The Department of Correction had the charge and full management of the chief correctional institutions of the State. Its head was an appointed commissioner holding office during the term of the appointing governor. It conducted a parole system, which was in the hands of a board made up of the commissioner, an assistant com-

missioner and the wardens of the four State prisons. The institutions under this department were Auburn Prison, Auburn; Clinton Prison, Dannemora, Great Meadow Prison, Comstock, Sing Sing Prison, Ossining, Dannemora State Hospital, Dannemora, Matteawan State Hospital (criminal insane), Institution for Defective Delinquents, Napanoch. The inmates of these correctional institutions on June 30, 1928, numbered 10,084.

The Department of Mental Hygiene headed by an appointed commissioner serving for the term of the appointing governor, administered laws as to the care of the insane, mental defectives, and epileptics. It exercised control over the great system of State hospitals for the insane, containing on June 30, 1928, 48,532 inmates, and over separate institutions for mental defectives and for epileptics. The institutions under this department were State Hospitals at Binghamton, Brooklyn, Buffalo, Central Islip, Helmsburgh (near Gowanda), Wingdale, Poughkeepsie, New York, Middletown, Rochester, Utica, and Willard, State Schools for defectives at Syracuse, Rome, Newark, and Letchworth Village (Thells), Craig Colony (epileptics), Sonyea.

LEGISLATION The 152nd regular session of the State Legislature convened on January 2 and adjourned on March 28. Governor Roosevelt submitted to it the first executive budget that had been prepared fully under the incoming system requiring such action. His budget, as submitted, totaled \$256,418,774 required for the ensuing fiscal year. It included important proposed appropriations of lump sums to the aggregate of \$54,000,000, of which the detailed expenditure was not fully specified. The Republican majority in the Legislature accepted the principle of lump-sum appropriation on account of its superior practicability, but was adverse to entrusting to a Democratic Governor the discretion that the power to dispose of such sums, as to detail of expenditure, would demand. Accordingly, in its budget legislation it provided that the control of lump-sum appropriations throughout the year, during the interim of Legislative sessions, should be vested in the hands jointly of the Governor and of the chairmen of the fiscal committees of the respective houses. The Governor resisted this course as violating the budget amendment to the State Constitution. In the end, however, appropriations to the total of some \$253,000,000 were enacted, covered in part by provisions for joint control of expenditure after the manner mentioned, the Governor making it his policy thereafter to contest the clauses for joint control in the courts and vetoing certain items to the purpose that they might be legally contested.

Proposals to change taxation took two main directions: the imposition of a sales tax on gasoline after the manner adopted by almost all the other States of the Union, and the reduction of the income tax, or alternatively, the elimination of direct property taxation. It was enacted that gasoline should pay, starting with May 1, a sales tax of 2 cents a gallon. The anticipated receipts from this source being greater than required for revenue, reduction in other directions was sought. The Governor and the New York City Democrats wanted to bring about a cut in the State income tax, while the up-State Republicans favored abolishing the direct property tax and

making some further distribution to the subdivisions. Eventually the direct State tax was abandoned, for the year, and exemptions from income-tax payment were raised by \$1000 for single individuals and by \$1500 for heads of families. The gasoline-tax law provided in the farmers' interest that gasoline used for the fueling of other than road motors should remain tax free.

The law on decedents' estates was radically amended by the Fearon Act. This abolished the wife's dower right to one-third interest in the husband's real estate but gave the surviving spouse the right to inherit a life interest of one-third of property both real and personal. It was rendered impossible for a husband to alienate possession of real estate from a surviving wife by his transfer, prior to death, of such realty to a corporation. The testator's power to leave property of any kind to charitable purposes was limited, where immediate heirs existed, to one-half of the estate. The act was to become operative Sept. 1, 1930.

Comparatively little legislation was enacted affecting elections, representation, and political parties. It was made possible, indeed, for each party, if it chose, to make rules allowing a woman, as well as a man, representative in the State committee, from each Assembly district. The Democratic effort to enact a four-year term of governorship, the elections of governors falling in non-presidential years, failed, the Republican majority still wishing that they fall in presidential years, if the four-year term were adopted at all. A measure eliminating the party primary from New York City elections, supported by the Citizens' Union, was passed but was vetoed. The reapportionment of State Senate districts was enacted.

School legislation included an act fixing the minimum public school year at 180 days for any school to receive State aid. Salary schedules were provided for instructors in industrial departments of State normal schools. Boards of education in cities of at least 50,000 were authorized to borrow in anticipation of State aid to be received. The Jenks bill, to permit those counties that should so desire to employ the local law machinery for the enforcement of Federal Prohibition, was defeated. The sale of beverages containing wood alcohol was rendered a felony. The Baumes Commission, the Crime Commission of the State, recommended many measures, of which ten were passed, including a constitutional amendment proposal for the creation of inferior criminal courts in rural territory to perform functions taken from justices of the peace, and a statute to stop the running of limitation after indictment had been returned against a criminal, or information filed.

The workmen's-compensation law was enlarged by the inclusion of four diseases in the list of compensable occupational hardships. Those working in hospitals who were injured by radium or X-rays were admitted to compensation. Bills for the restraint of the legal abuse known as "ambulance chasing" failed of passage. Vaccination of school children was made compulsory in all cities of more than 50,000. The cropping of dogs' ears was forbidden. Hunting game with the bow and arrow was prohibited. The marriage law was amended to require the consent of both parents, or of guardians, and of a children's court judge for the issue of a marriage license for a

girl of less than 16 years. Group life insurance was redefined so as to render possible the issue of policies on the basis of trade unions' membership. The right of separate domicile was granted married women, with regard to voting and office-holding requirements. The State poor law was extensively revised.

Legislation especially affecting the City of New York included a multiple dwelling enactment, which permitted apartments 30 stories in height, modernized the requirements of safety and sanitation in design and construction, and legalized the kitchenette in non-housekeeping apartments. The Legislature finally terminated the last of the emergency measures governing rent and leases that had been enacted in the period of housing famine incident to the War. New York City was authorized to set up the Sanitation Department to perform street-cleaning, waste removal, and other like work previously scattered among other branches of its government. The share of counties in defraying the cost of eliminating crossings of railroads and highways at grade was reduced from 5 to 1 per cent, the State assuming the difference, this particularly affected New York City on account of the high cost of eliminations within the counties comprising it. The City's Board of Estimate was authorized to fix tolls for the future Triborough Bridge and Narrows Tunnel. A State reforestation measure calling for the early planting of 5,000,000 trees was adopted.

The law regarding owners of motor vehicles was subjected to an important alteration whereby the licensee was required to show financial responsibility for possible damages that the car might cause, up to \$10,000 for certain eventualities. This law, similar in effect to that of Massachusetts, had the tendency to compel the majority of motorists and car owners to obtain bonds.

POLITICAL AND OTHER EVENTS Five amendments to the State constitution were approved by the popular vote on November 5. They were as follows: giving preference in civil-service employment under the State to disabled war veterans, permitting legislation to provide for absentee voting by those in Veterans' Bureau hospitals, altering the local governments of Nassau and Westchester counties, authorizing the State to incur debt for fighting forest fires, transferring criminal jurisdiction from justices of the peace to local criminal courts. The city of New York reelected Mayor Walker and his fellow members of the Board of Estimate. It also ratified an act of the municipal Legislature increasing the salaries of policemen and firemen to a minimum of \$3,000, from \$2,500. Mayor Walker defeated his chief opponent, the Republican candidate Fiorello H. LaGuardia, by 865,549 votes to 368,384, thus scoring a plurality of little less than 500,000. The Socialist candidate for Mayor, Norman Thomas, however, polled a vote exceptionally high for the Socialist ticket, it reached 174,931, and was interpreted as including a high proportion of votes antagonistic to both the major candidates, rather than partial to the Socialist candidate.

Roosevelt's struggle with the Legislature (see *Legislation*, above) was settled, with regard to the control of budgetary expenditure, in the State courts. Controller Trimane brought action late in April to obtain a ruling as to whether he might pay out State moneys without

the approval of the Legislative censors that had been set up over expenditure of lump appropriations. The Appellate Division, third department, in a divided opinion, ruled on June 21 that the two financial chairmen of the Legislature must share the work of approving the itemization of such sums. The State Court of Appeals, however, on November 19 reversed the Appellate Division by unanimously denying authority to the two chairmen, on the ground that such authority would amount to usurpation of administrative functions, in contravention of the State Constitution. This left the Governor in sole control of the contested authority over appropriations. Another point in the Governor's contention with the Legislature, his demand that provision be made for a \$30,000,000 programme of State hospital construction, led to intimations after the end of the session that he would call a special session to deal with the hospital needs. This step was avoided by leaders' assurance that the needed appropriation would be advanced at the next succeeding session.

A Supreme Court decision of June 25 held the Multiple Dwelling Act of 1929 unconstitutional on the ground that the field lay in the scope of municipal, and not of State, action. The Court of Appeals reversed this ruling on August 9 by a divided opinion of 5 to 2 sustaining the act, which profoundly affected construction and housing, particularly in New York City. The State's title to Montauk Point State Park was upheld on February 16 by the Appellate Division, this and other legal victories greatly advancing the State's policy with regard to the creation of a system of parks on Long Island, much opposed by private interests.

The Appellate Division, First Department, framed on February 26 a code of rules for the bar, forbidding "ambulance chasing" and allied practices in New York and Bronx counties. A Federal Statutory Court allowed on November 11 increases in telephone rates within the State, to the estimated total of about \$21,578,000 a year. The popular dissatisfaction in New York City with the appointment of individual receivers by the Federal courts led the six Federal judges of the southern district on January 10 to still the complaints of a bankruptcy ring by arranging to have the American Exchange Irving Trust Company act as receiver in all bankruptcies.

Frank H. Warder, State Superintendent of Banks, was involved in charges of receiving bribes from a banker. This banker, Francesco M. Ferrari, died on February 2, and shortly afterward it transpired that the City Trust Company, of New York City, of which he had been president, was involved in financial difficulties. Warder failed to take prompt steps at the time for the protection of depositors and came under suspicion. The company having suspended, its affairs were investigated. As a result of the investigation, which disclosed that illicit practices had gone on for a long time unchecked by the State authorities, Warder was placed on trial. On testimony of an employee who had acted as the go-between in carrying money to him from Ferrari, Warder was convicted on the specific count of having taken a \$10,000 bribe from Ferrari. He was sentenced on November 8 from 5 to 10 years in prison. Judge Francis X. Mancuso of the Court of General Sessions, who had been a director of the failed institution, was charged with improper performance of his duties to the

institution and was forced to resign from the bench.

Congestion in the State prisons and rebellion against the Baumes laws led in the course of the year to a number of serious prison mutinies. At Clinton Prison, Dannemora, some of the 1300 inmates set fire to buildings and lumber on June 22, seized and beat two guards and tried to break out. Guards killed three of the mutineers, wounded a score of others, and quelled the outbreak. Damage of \$200,000 was done by the fire. On July 28, at the Auburn Prison, convicts broke into the prison arsenal, seized riot guns, set several buildings on fire, shot and wounded four guards, and sought to storm the walls. Four gained their liberty, but the rest were eventually subdued by State troopers and machine guns, with the death of two convicts. Auburn was the scene on December 11 of a more desperate mutiny than that of July. A band of prisoners who had previously secured a small supply of pistols killed the head keeper, seized the warden as a hostage, wounded several guards, and declared that they would kill the warden unless allowed to go out. The way was opened to them, but before they could get out they were attacked by State troopers and subdued. Eight prisoners were killed in the fighting. See CRIME.

The State made progress with the building of a hospital near Brentwood in Suffolk County designed to accommodate 10,000 mental patients. With regard to a State system of old-age pensions, work preliminary to the Legislative consideration of the subject was done by an interim Legislative commission. The New York State Chamber of Commerce passed resolutions in November urging President Hoover to have the Army engineers study the feasibility of a ship canal from the Great Lakes to the ocean through New York State, thus favoring the idea of a New York Canal, as opposed to the St. Lawrence waterway project. Governor Roosevelt gave the State's approval to the treaty between the United States and Canada for the construction of works in the Niagara River to preserve the contour of Niagara Falls and to increase the supply of water for power purposes. A movement was started in the Finger Lakes region for the study of means to control artificially the level of these lakes. Planting under the State's project of reforestation of State lands was begun near Cortland on October 4.

In New York City, the most notable piece of municipal legislation was the passage of a municipal measure to reimpose rent limitation, which the State Legislature had terminated. This act was passed as an emergency measure, it prohibited summary dispossession proceedings affecting premises rented at less than \$15 a month for each room. Though sustained in a lower court and though popular with a great part of the inhabitants of the city, the law was declared unconstitutional by the Appellate Term of the Supreme Court on November 19, on the ground that the local assembly had no authority to interfere with contracts. In addition to the increase of pay for policemen and firemen, approved by referendum (see above), the municipal assembly voted increases in the salaries of all the members of the Board of Estimate. This action was taken in the closing days of the year, and was widely criticized as the change though applying to a succeeding administration actually affected none but the existing members of the

Board, who were all to remain in office, and who thus voted to raise their own salaries. The Municipal Assembly voted on March 11 to construct the projected Triborough Bridge, to connect Manhattan, Bronx, and Queens boroughs, and a vehicular tunnel under the Narrows, from Brooklyn to Staten Island, at an anticipated cost for the two projects of more than \$100,000,000.

The leader of Tammany Hall, George W. Olvany, resigned on March 15 for the reason of ill health. John F. Curry was elected on April 23 to succeed him. A Department of Sanitation was organized as part of the government of New York City, to take over from other departments the work of street cleaning and of disposal of refuse. The 26 municipal hospitals were placed on February 1 under the direction of a newly created Department of Hospitals. The city's policy in the treatment of drug addicts was affected by the report of a special committee, rendered early in February, unfavorable to the narcotic method, of which trial had been made.

A decision of the Interstate Commerce Commission, given on November 11, to the effect that terminal charges at New York need not be reported separately, favored New York, though it did not dispose of the efforts of New Jersey to abolish free lighterage in the port of New York. In another favorable decision the Commission on December 18 denied an increase in the differential freight rate sought by Baltimore. The city authorities of New York, after 40 years of effort to have the New York Central remove its surface tracks from the west side of Manhattan, concluded with the railroad an agreement by which the latter was to carry out a scheme of track elevation and tunneling, involving a great property development for the purpose of handling terminal freight. The cost to the railroad was estimated to be around \$110,000,000, that to the city \$50,000,000, and that to the State as contributor to grade-crossing elimination \$15,000,000.

The committee of the Regional Plan of New York and its surrounding district, an unofficial body financed by the Sage Foundation, submitted on May 27, after some 7 years of study, its complete scheme of recommended public developments, these were designed to cover the needs of the metropolitan district for orderly growth up to the year 1965, with particular reference to transportation, building development by areas, and park development. One tube of the subway tunnel under the East River, between Fulton Street in Manhattan and Cranberry Street in Brooklyn was holed through on May 15. Work on the actual span of the Hudson River Bridge, between the steel towers, began about midsummer.

A feature of the material growth of New York conspicuous during the year was the progress in construction of office buildings of unprecedented height. The Manhattan Company building on Wall Street, 925 feet high, was erected. The Hippodrome, at Sixth Avenue and Forty-third Street, was purchased for demolition by a company intending to erect an 83-story Hippodrome building rising to 1100 feet. The Waldorf-Astoria Hotel was demolished to make way for a 40-story building with a projected 1300-foot tower and drigible anchorage. The Chrysler building, erected at Lexington Avenue and Forty-second Street, was somewhat over 800 feet high. A new Tammany Hall was built at Seventeenth Street

and Union Square East. The United States Supreme Court on April 8 invalidated a Federal court injunction whereby the city had been forbidden to interfere with the 7-cent fare sought by the Interborough Rapid Transit Company.

Western and central New York held during the summer a number of celebrations to commemorate the 150th anniversaries of events in General John Sullivan's campaign of 1779 against the Iroquois. In Westchester County the acquisition of lands by the county commissioners at alleged excessive cost was investigated and indictments against commissioners were found. The city of Cohoes was reported by State examiners in September to have exceeded its debt limit and to have defaulted on the service of certain of its debts. A plan to remove the tracks of the New York Central from the streets of Syracuse at a projected cost reported as \$30,000,000 was placed before the Interstate Commerce Commission.

OFFICERS Governor, Franklin D. Roosevelt; Lieutenant-Governor, Herbert H. Lehman, Secretary of State, Edward J. Flynn, Comptroller, Morris S. Tremaine, Attorney-General, Hamilton Ward, Commissioner of Education, Frank P. Graves.

JUDICIARY Court of Appeals Chief Judge, Benjamin N. Cardozo, Associate Judges, Cuthbert W. Pound, Frederick E. Crane, William S. Andrews, Irving Lehman, Henry T. Kellogg, John F. O'Brien.

NEW YORK PORT AUTHORITY. See BRIDGES

NEW YORK UNIVERSITY. A nonsectarian institution for the higher education of men and women in New York City, chartered in 1831. It comprises the following divisions. At University Heights, a college of arts and pure science, college of engineering, Guggenheim School of Aeronautics. At Washington Square, the graduate school, school of law, school of commerce, accounts, and finance, Washington Square College, school of education, school of fine arts, college of fine arts, university extension division, and the Institute of Education. At the Wall Street division, the graduate school of business administration and courses in the school of commerce, accounts, and finance. The medical college was on East Twenty-sixth Street, and the dental college on East Twenty-third Street. The enrollment for the year 1928-29 in all divisions of the university, after deducting all duplications, was 37,151. The enrollment in the different units was as follows: University and pure science, 9,377; school of commerce, accounts, and finance, 1,484; Bellevue Hospital Medical College, 486; college of engineering, 1,114; school of law, 614; school of education, 1,114; graduate and undergraduate divisions, 4,984; school of commerce, accounts, and finance, including the Wall Street division, 8,455; Washington Square College, 6,962; graduate school of business administration, 735; school of retailing, 1,046; college of fine arts, 1,497; and college of dentistry, 376. In other divisions, the enrollment was as follows: University extension division, 3,906; Institute of Education, 3,067; public health (correspondence) courses, 265; life-insurance training courses, 144. The faculty of the university consisted of 1,585 members of various ranks.

The productive funds for the year 1928-29 amounted to \$6,495,256, and the income was \$6,625,343. Gifts included \$1,000,000 from Mr.

and Mrs. Percy S. Straus to establish a fund to be known as the Edith A. and Percy S. Straus Fund; a gift of \$1,000,000 from George F. Baker to establish the George David Stewart Endowment for the Teaching of Surgery; the gift of \$700,000 from Mr. and Mrs. Frederick Brown for the purchase of the Greenwich Building at Washington Square; and \$200,000 in anonymous gifts for laboratory and library installations at Washington Square College. The libraries contained 337,479 volumes. Chancellor, Elmer Ellsworth Brown, Ph.D., LL.D.

NEW ZEALAND, zē'land, DOMINION OF. A self-governing British dominion in the southern Pacific Ocean, about 1200 miles east of Australia; consisting mainly of two islands, North and South islands, but comprising also Stewart Island and Chatham Island and a number of small islands. Capital, Wellington.

AREA AND POPULATION. The total area excluding the annexed islands is 103,568 square miles, distributed as follows: North Island, 44,131; South Island, 58,120; Stewart Island, 662; Chatham Island, 372; outlying islands, 284. According to the census of 1921, the population was 1,218,913. The population, June 30, 1928, was 1,389,076 for New Zealand proper, exclusive of Maoris (65,004); residents of Cook and other annexed islands, 14,314; and of Western Samoa (mandated territory), 42,949. On Dec 31, 1929, the population of New Zealand alone was estimated at 1,418,582. The estimated population of the chief cities of New Zealand on Apr 1, 1928, was as follows: Auckland, 206,810; Wellington, 130,120; Christchurch, 123,370; Dunedin, 84,060. From 1924 through 1928, births averaged 27,947 annually and deaths, 11,407, leaving an annual excess of births of 16,540.

EDUCATION. Education is compulsory between the ages of 7 and 14. In 1927 there were 257,576 pupils attending primary schools, 26,930 in secondary schools, 12,408 in technical schools, and 4934 in the following university colleges: Otago University, Dunedin; Canterbury University College, Christchurch; Auckland University College; and Victoria University College, Wellington.

PRODUCTION. Animal husbandry is the leading industry of New Zealand. Only about 3 per cent of the total area, or 1,968,000 acres, was under cultivation in 1927, while 16,680,000 acres were devoted to permanent meadow and improved pasture, 251,000 acres to trees, shrubs and bushes, and 13,000,000 acres to forests. The production in pounds of the chief animal products in 1927-28 was, creamery butter, 6,042,000; pork, bacon, and ham, 59,800,000; mutton and lamb (dressed), 437,515,000; beef and veal (dressed), 329,237,000; wool, 234,280,000. In the preceding year, the production of factory butter was 191,321,000 pounds and of cheese, 175,199,000 pounds. The meat industry was generally prosperous in 1928 and in 1929. In 1928 there were 27,134,000 sheep, 3,274,000 cattle, 589,000 swine, 307,000 horses, and 24,000 goats in the country.

Grain crops are relatively unimportant. The chief cereal crops, with the acreage and production in 1927-28, were as follows: Wheat, 261,000 acres, 9,541,000 bushels; barley, 21,000 acres, 802,000 bushels; oats, 88,000 acres, 3,853,000 bushels; corn, 10,000 acres, 483,000 bushels; potatoes, 22,000 acres, 4,532,000 bushels; peas and beans, 25,000 acres, 802,000 bushels; hay, 280,000 acres, 515,000 long tons. Wheat

production in 1928-29 was 8,400,000 bushels, barley, 781,000 bushels; oats, 4,226,000 bushels.

Although coal, gold, and silver are mined, the mining industry is relatively unimportant. Manufacturing consists mainly of the preparation of pastoral and dairy products for the market. The factory output for the year ending Mar. 31, 1928, totaled about £87,700,000 (\$428,000,000) and the value added in the process of manufacture was £32,400,000 (\$158,000,000). There were 5106 factories employing 51,740 persons. The rapid development of electric power is checking coal production. The Government, up to 1929, had expended \$30,566,000 on its hydroelectric programme, of which the two principal projects were expected to be completed in 1930. The chief mine and factory products in 1928-27 were Coal, 2,367,000 long tons, flour, 128,699 tons, ale, 11,827,000 gallons, leather, 4,059,000 pounds, boots and shoes, 1,397,000 pairs, lumber, 305,675,000 feet, printing, publishing, and bookbinding, £4,528,000, clothing and hosiery, £2,897,000, motor vehicles, 11,897,000. There was some unemployment in the cities while farm laborers were in demand.

COMMERCE The importance of a favorable balance of foreign trade to New Zealand's economy was demonstrated by the comparative prosperity which followed improvements in the trade balance in 1927 and 1928. In the latter year, exports increased to \$273,441,000, or 18 per cent more than in 1927, while the imports of \$218,439,000 were slightly higher than in 1927, but much lower than in 1925 and 1926. In 1929 exports decreased to \$270,100,000, while imports increased to \$239,249,752. According to figures of the U. S. Bureau of Commerce, exports to New Zealand in 1929 totaled \$39,461,000 and imports from New Zealand, \$20,863,000. The chief exports in 1928 were wool, \$81,169,000, butter, \$55,004,000, frozen meats, \$50,317,000, cheese, \$32,576,000, hides and skins, \$18,702,000. The leading imports were automobiles and chassis, \$13,165,000, apparel, \$11,312,000, mineral oils, \$12,397,000, cotton piece goods, \$9,358,000, electrical machinery and apparatus, \$8,577,000.

The United Kingdom took 72 per cent of the total exports in 1928, as compared with 77 per cent in 1927. Other leading customers were the United States, which took 7.6 per cent of total, and Australia, 6.1 per cent. Of the total imports, 47 per cent came from the United Kingdom, 18 per cent from the United States, and 7.8 per cent from Australia. The per capita figures were \$119 for imports and \$181 for exports.

FINANCE The ordinary budget for the year ending Mar. 31, 1929, placed receipts at £23,868,000 and expenditures at £23,608,000. In the previous year, actual receipts totaled £25,124,000 and actual expenditures £24,945,000, leaving a surplus of £179,000 pounds, but the heavy public debt increased due to capital expenditures. The public debt on Mar. 31, 1929, stood at £1,223,419,000, or \$842 per capita. About £71,971,000 of the debt represented war expenditures and about £33,304,000 investments in railways. Chief items of expenditure in 1927-28 were: Debt service, £1,758,000, education, £3,102,000; pensions, £2,549,000, posts, telegraphs, and telephones, £2,297,000, national defense, £969,000, losses on isolated railway lines, £485,000, all other, £5,785,000.

COMMUNICATIONS The state-owned railway lines in 1928 totaled 3180 miles and private

lines, 116 miles. The state lines carried 25,380,000 passengers, and 7,387,000 tons of freight, earning gross receipts of £7,344,000 (\$35,739,000) during the year ending Mar. 31, 1928. A deficit after interest charges of \$1,410,371 was reported for the year, as compared with a deficit of \$485,339 in the 1927-28 year. In 1928-29 the deficit reached \$1,107,000. The increasing deficit was due mainly to the increase in interest charges, the other items remaining approximately the same. A railway line to a fertile fruit-growing area of New Zealand was reported to be nearing completion toward the end of 1929.

The merchant marine in 1927 comprised 565 vessels of 204,760 gross tons. In the same year, 634 vessels of 2,196,000 net registered tons entered and 633 vessels of 2,201,000 net registered tons cleared the ports of New Zealand. In 1928 there were 26,303 miles of telegraph wire and 499,642 miles of telephone wire, all government owned. The net revenue of the Post and Telegraph Department for the year ending Mar. 31, 1929, was £3,445,545 and the net profits for the year, £523,800.

GOVERNMENT Executive power is vested in a Governor-General appointed by the Crown and legislative power in the Governor-General and a general assembly of two houses, namely, the Legislative Council of 41 members (September, 1927) appointed for seven years but to be elected after the expiration of the term of the members sitting in 1923, and the House of Representatives, consisting of 80 members, elected by the people for three years. The Governor-General in 1929 was Sir Charles Fergusson. In December, 1929, Lord Bledisloe (Charles Bathurst), a leading British agriculturalist, was appointed Governor-General to succeed Sir Charles Fergusson, whose term would expire in 1930. The cabinet appointed in December, 1928, was composed as follows: Prime Minister, Minister of Finance and External Affairs, Sir Joseph G. Ward, Land and Agriculture, G. W. Forbes, Public Works, E. A. Ransom, Justice and Defense, T. M. Wilford, Labor and Mines, W. A. Weitch, Railways and Customs, W. B. Taverne, Native Affairs and Cook Islands, Sir Apirana Ngata, Postmaster-General, J. B. Donald, Education, H. Atmore, Internal Affairs, P. A. de la Perrelle, Immigration, Marine, and Industries and Commerce, J. G. Cobbe, Health, A. J. Stallworthy, Attorney-General, T. K. Sidney.

HISTORY The debate over the Ward Government's programme for securing redistribution of land through heavier taxation of the larger holdings in the Commonwealth, serious rioting in that part of Samoa under the New Zealand mandate, and the earthquake of June 17 were the outstanding events in the history of New Zealand during 1929.

Land settlement was the cardinal point in the policy of the United party which, under the leadership of Sir Joseph Ward, came into power in December, 1928. The government was dependent for its existence upon the support of the Labor party, the distribution of seats being: United party, 27, Reform party (Opposition), 27, Labor, 19, other parties, 7. With Labor support the government was able to proceed with its programme, a feature of which was the proposal to borrow \$350,000,000 in the ensuing ten years for various development projects. Parliament, which convened in June, passed the Government's

Land Act, which appropriated £5,000,000 for bringing into cultivation some millions of acres of second-class lands and provided for a graduated supertax on lands of an unimproved value exceeding £12,500. It was estimated that the supertax would affect only 1750 of the 80,000 farmers in the Dominion and it was frankly proposed as a confiscatory measure to enable the parceling out of the land. Adequate defense, stimulation of agriculture, and commercial aviation, the development of roads and automobile transport as feeders to the main railway lines, financial aid to settlers on new lands, and the regulation of immigration from the mother country in relation to the economic condition of the country, were other points in Premier Ward's programme as outlined before Parliament on June 27.

The Ward government announced that its policy with regard to the unrest in Western Samoa would be one of patience, coupled with the determination not to treat with those Samoans who openly defied the mandate power's authority. In September, Premier Ward stated in Parliament that while the attitude of a section of the Samoans was preventing a satisfactory settlement of the difficulties, the government had reduced the number of elected Europeans on the Legislative Council of Western Samoa to two and had added two nominated Samoans. Following the killing of a white constable in rioting in Apia December 28, Premier Ward announced that his government would adopt a firmer attitude toward the native opponents of the island government, and a cruiser was dispatched to Apia to assist in establishing the government's authority.

The earthquake of June 17 was the most severe experienced in New Zealand since that of 1855. It caused the loss of fifteen lives and considerable damage to the towns of Westport, Greymouth, and Murphysburg on the northern part of South Island. For changes in the land, see EARTHQUAKES. See also, and GREAT BRITAIN, under *History*.

NIBLACK, REAR ADMIRAL ALBERT PARKER. Retired officer in the U. S. Navy, died in Monte Carlo, Monaco, Aug. 20, 1929. He was born in Vincennes, Ind., July 25, 1859, and was graduated in 1880 from the U. S. Naval Academy and in 1916 from the Naval War College. He was promoted through the grades to the rank of rear admiral (1918) and retired in 1923. His first post after graduation was at the Pacific Naval Station (1880-82), after which he surveyed and explored in Alaska (1884-88). He served in the Spanish-American War, participating in the Battle of Nipe Bay. He also took part in the suppression of the Filipino insurrection (1899-1901). He was in China in 1900 during the Boxer uprising and, at the outbreak of the World War, he was ordered to command the 1st Division, and later the 1st Squadron, battleship force, of the Atlantic Fleet. In November, 1917, he was put in command of the 2d Squadron of the patrol force and of United States Naval Forces based at Gibraltar. Until after the Armistice, he commanded the United States Naval Forces in the western Mediterranean. In 1919-20 he was director of naval intelligence, Navy Department, and in 1921 was vice admiral commanding the United States naval forces in European waters. After retirement in 1924, he was elected director of the International Hydrographic Bureau of Monaco, and in 1927 president for a term of

five years. During his long career, Admiral Niblack was naval attaché at Berlin, Rome, Vienna, Buenos Aires, and London. He was the recipient of many honors including the Distinguished Service Medal of the United States, the Royal Victorian Order of Great Britain (commander), and the order of Legion of Honor of France (commander).

NICARAGUA, nī'kă-ra'gwă. The largest of the Central American republics. It is bounded on the north by Honduras, on the east by the Caribbean Sea, on the south by Costa Rica, and on the west by the Pacific Ocean. Capital, Managua.

AREA AND POPULATION. The area is estimated at about 51,060 square miles, of which 4500 square miles are lake area. The coast line is 300 miles on the Atlantic and 200 miles on the Pacific. Population, according to the census of 1920, 638,118, or about 12 inhabitants to the square mile. The estimated population in 1927 was 650,000. About 80 per cent lived in the western part of the country and was chiefly of Spanish and Indian blood. The population of the east coast had a large Negro element from the West Indies. The proportion of pure white blood is about 10 per cent. The eastern and western sections differ greatly and there is very little communication between them, the journey by trail and river being difficult. Travelers going from one coast to the other usually go by way of Costa Rica or through the Panama Canal.

The population of the various cities in Nicaragua in 1926, as shown by a census made by their respective departments of sanitation, was reported to be as follows: Managua, the capital, 32,536; León, 23,565; Granada, 18,066; Masaya, 13,763; Chinandega, 10,307; Rivas, 4081; Matagalpa, 3142, and Corinto, 2307.

EDUCATION. Primary education covers a period of six years, following European rather than American lines. In the school year 1928-29, there were 402 government schools (392 primary, 3 secondary, 5 vocational, 2 normal), with an average attendance of 17,973, and 118 municipal and private schools, with an average attendance of 6921. The private schools were nearly all conducted by religious organizations. Higher education was provided by five professional faculties, unsalaried and receiving little governmental aid, three of law and two of medicine.

PRODUCTION, etc. Nicaragua is essentially an agricultural country. As in the past, it must depend upon its agricultural products, seconded by timber and mineral wealth, for its widest future development. The principal agricultural products are bananas and other fruits, coffee, sugar, and coconuts. Other crops are corn, rice, and tobacco. Mahogany, cedar, dye woods, and gums are some of the valuable forest woods of the country. Coffee accounts for about one-half of the total value of exports and the size of the crop and prices received are the major factors which determine local economic conditions. For the year ended Nov. 30, 1928, about 39,800,000 pounds of coffee were exported from Corinto, 32 per cent going to France and 24 per cent, to the United States. In 1928-29 the crop was below average and the prices low, resulting in a temporary depression. The 1929-30 export crop was estimated at about 37,400,000 pounds. The coffee blight called *agomo*, or "cock's eye" appeared in 1929 and assumed alarming proportions in higher altitudes. Sugar production in 1927-28 was estimated at about 14,000 short tons, as compared

with 11,250 in the previous year. Banana exports to the United States increased from 1,300,000 bunches in 1927 to 1,800,000 in 1928. Mining is comparatively unimportant, gold, silver, copper, and precious stones being the principal minerals exploited. There are a few sugar mills, distilleries, and small industries specializing in articles for local consumption.

COMMERCE Exports in 1928 totaled \$11,693,000, representing a 30 per cent increase over the preceding year, while imports expanded in about the same ratio to \$13,350,000. The United States supplied two-thirds of the imports and purchased more than one-half of the exports. In 1927 exports totaled \$9,026,000 and imports \$10,208,000. The chief imports are cotton manufactures, iron and steel, machinery, wheat flour, and chemicals and drugs. Exports include coffee, bananas, sugar, hides and skins, mahogany, and gold and silver. The proportion of the chief exports to the total exportations of the republic in 1928, with figures for 1927 in parentheses, was as follows: Coffee, 58 per cent (45), bananas, 16 per cent (16), cabinet woods, 11 per cent (19), sugar, 4 per cent (5), and gold, 3 per cent (7).

FINANCE In a message to the Nicaraguan Congress delivered Dec. 10, 1929, President Moncada announced that a surplus of more than \$2,400,000 was assured from the government's financial operations during 1929. The anticipated surplus did not include the profits of the National Bank or those of the Pacific Railroad. A part of the surplus was used to purchase the Cominto wharf, which handled much of the country's foreign trade. President Moncada announced that, effective Dec. 31, 1929, New York bankers had relinquished all connection with the National Bank and with the railroad. In 1927 government receipts totaled 4,866,000 cordobas (one cordoba equalled \$1 at par) and expenditures 4,918,000 cordobas. Customs receipts in 1928 reached a new high level. In 1929 an agreement was reached between the municipalities and the government under which the cities agreed to give the government 30 per cent of their general revenues, including the 10 per cent they contributed to the Federal Health Department. In return, the cities were no longer to be required to submit their respective budgets to the government for approval.

The public debt on Mar. 31, 1928, was reported by the collector general of customs as \$23,526,067, of which \$17,278,809 consisted of debts and claims arising from the revolution and was subject to adjudication.

COMMUNICATIONS In 1928 there were 147 miles of government-owned railway line and 19 miles of private line. For the year ending June 30, 1928, the railways carried 895,000 passengers and 114,000 metric tons of freight, with gross receipts of \$1,285,000. A new line 66 miles long from León to Sauce was under construction by the government in 1929. Late in 1929 the Nicaraguan government accepted the resignation of the American manager of the state railroads and assumed direct charge. The telegraph and telephone systems had 1802 and 1143 miles of wire, respectively. The number of steam vessels in foreign trade entering Nicaraguan ports in 1928 was 563 of 806,070 net registered tons.

GOVERNMENT Executive power is vested in a president who acts through a responsible ministry, comprising departments of foreign affairs

and public instruction, finance, interior, justice, war and marine, and public works; legislative power is in a bicameral legislature consisting of a chamber of 40 deputies elected for four years by universal suffrage, and a senate of 13 members elected for six years. The constitution is modeled after that of the United States. President in 1929, José María Moncada, elected Nov. 4, 1928.

HISTORY What promised to be a new era in Nicaraguan history commenced on Jan. 1, 1929, with the inauguration of President José María Moncada, the Liberal candidate who had been overwhelmingly elected at the American supervised election in 1928. Indicative of the improved relations between Liberals and Conservatives was the spectacle, unprecedented in Nicaragua, presented when the retiring Conservative President, Adolfo Díaz, rode in the same carriage with the Liberal President-elect on the way to the inauguration ceremony. As the year progressed, however, there were some indications of a resumption of the bitter animosities characteristic of Nicaraguan politics. In August, more than 20 influential members of Opposition parties were arrested by the Moncada government and some of them were deported. Among those charged with encouraging banditry and plotting against the government were Paulino Solórzano, former Director General of Communications, and several Conservative newspaper men, including Adolfo Ortega Díaz, a nephew of former President Adolfo Díaz. Leaders of the Conservative party denied that they had lent their support to the alleged conspiracy.

In general, however, the year was marked by the steady improvement in internal stability and the withdrawal of United States Marines and Guardia Nacional de la Guardia Nacional de la guerrilla bands which were active in the northwestern part of the country when President Moncada was inaugurated. On January 7, 38 officers and 1194 men of the U. S. Marine Corps were withdrawn from the country by order of the Navy Department in Washington leaving 231 officers and 3330 men on duty there. These, with the assistance of volunteers and the National Guard, undertook to wipe out the remaining rebels or outlaw bands as they were variously called. A number of casualties in clashes with the outlaws were reported from time to time. In June, Augusto C. Sandino, the leader of those opposing the Stimson Agreement of 1927, was forced to flee to Mexico, the important insurgent bands were broken up, and President Moncada, in opening the session of Congress on December 15 said that order had been restored. He admitted, however, that banditry "unworthy the name of revolution" still existed in remote sections. The marine forces were further reduced to a total of 2215 men and officers in September 1. In the meantime the Nicaraguan National Guard was being trained by American officers to take over the task of maintaining order upon the withdrawal of the remaining marines. Secretary of State Stimson announced in Washington, November 22 that while the American government would withdraw the marines as rapidly as conditions permitted, both the Liberal and Conservative parties in Nicaragua had urged that the evacuation be postponed for the time being. During the year ending June 30, 1929, four marines were killed and nine received wounds from which three later died as a result of clashes with bandit forces. Manuel María Jiron, an insurgent leader

who raided the La Paz Mine in 1928 and held captive an American, George Marshall, until his death, was captured and executed by natives. While criticism of the American policy in Nicaragua continued in both the United States and Latin America, President Moncada repeatedly praised the conduct of the marines and upheld their presence in the country, declaring that he was confident the United States Government desired to and would withdraw its forces from Nicaragua as soon as peace was firmly established.

The Cabinet appointed by President Moncada following his inauguration was composed as follows: Minister of Foreign Relations, Cordero Reyes; Promotion, Benjamin Abaunza; Public Instruction, Dr. Leonardo Arguello; Interior, Dr. Bernardo Sotomayor; Finance, Antonio Berberena; Public Health, Dr. Roberto Gonzáles; Agriculture and Labor, Antonio Cabrera. Dr. Juan B. Sacasa, the former constitutional Vice President of Nicaragua, who led the revolution of 1926 and 1927 against the Diaz government which resulted in the intervention of the United States, was appointed Minister to Washington in April.

The prospect that the United States would construct another Atlantic-Pacific Canal, this time across Nicaragua, aroused considerable enthusiasm in that country and both Nicaragua and Costa Rica readily gave their consent to an investigation and survey of the proposed route by a battalion of U. S. Army Engineers. The survey was authorized by President Hoover in June in accordance with a resolution adopted by the Seventieth Congress. The right of the Nicaragua government to use the revenues of the Pacific Railroad as it saw fit was upheld by Secretary of State Stimson in July. New York bankers, who were in the majority on the board of directors of the state-owned road, had voted to appropriate \$2,000,000 of revenue for improvements, a course which President Moncada opposed.

The city of Managua was created a national district, similar to the District of Columbia in the United States, by Presidential decree on October 30, subject to the approval of Congress. Maladministration of the city by the Liberal administration was said to have caused the President's action, although he was of the same political party. The crying need for the development of the public-health service established by President Moncada was demonstrated by a campaign against hookworm and other intestinal parasites made in one section of the country. Of 2407 persons examined, 2308 were found to be suffering from intestinal diseases.

It was reported from Managua in November that President Moncada's proposal that the Central American republics send a single joint representative to Brazil, Chile, Colombia, Peru, and Uruguay, had been tentatively accepted by a majority of the countries of Central America. See HONDURAS, GUATEMALA, UNITED STATES, under *History*. Consult Floyd Cramer, *Our Neighbor, Nicaragua* (New York, 1929).

NICHOLAS (NIKOLAI NIKOLAEVITCH, ny-é-kó-lay' ny-é-kó-lay-é-vésh), GRAND DUKE Russian general and second cousin of Emperor Nicholas II, died Jan. 6, 1929, in Cape Antibes, France. He was born in St. Petersburg, Nov. 6, 1856, and was graduated from Nikolaiev Military Academy, after which he became a member of the Russian

General Staff and aide-de-camp to the Czar. It was as an officer of the General Staff that he fought in the Russo-Turkish War (1877-78). During the Russo-Japanese War (1904-05), the Grand Duke was president of the Imperial Committee of Defence, which attempted to introduce reforms in the army. At the outbreak of the World War, he was appointed commander-in-chief of the Russian Army, a command which he held until superseded by the Czar in 1915. With the abdication of the Czar at the end of the War the Grand Duke found it necessary to go into exile and the last years of his life were spent in France. Many Russian monarchists considered him the rightful heir to the Russian throne.

NICHOLS MEDAL. See CHEMISTRY, INDUSTRIAL.

NICKEL. Continued expansion in the demand for nickel featured the year 1929. Production of the International Nickel Company, which alone produces 90 per cent of the world output, was 55,000 tons of the metal, compared with about 48,000 tons in 1928, according to the Canadian Department of the Interior. By the absorption of Mond Nickel, an English company, International Nickel became the only producer in the Sudbury district of Canada. However, the monopoly was not expected to last long as construction of a smelter was started at the Falconbridge Nickel mine by the so-called Lindsley interests. This group had purchased a refinery in Norway and, early in 1930, was to start putting about 2500 tons of nickel annually on the European market. Any possible increase in the demand for nickel as a steel alloy had been anticipated by the producers with the new plants under construction. International Nickel was completing a programme of mine equipment at its Frood property that cost about \$30,000,000. Conditions in New Caledonia, which produces most of the world's remaining 10 per cent, remained more or less static. The prices for nickel ingots remained at 35 cents per pound throughout the year.

NIDAROS. New name for Trondhjem. See NORWAY under *History*.

NIGERIA, COLONY AND PROTECTORATE OF A West African territory, formerly known as Britain, divided into two groups, known respectively as the Northern and Southern Provinces. The area is approximately 335,700 square miles and the population, according to an estimate in 1927, 18,765,690, of whom 10,232,832 were in the Northern Provinces (area, 258,000 square miles). There were 5200 Europeans in 1927. For administrative purposes the British portion of the mandated territory of Kamerun is attached to Nigeria. The seat of government is at Lagos. In 1927 in the Northern Provinces there were 84 government schools and 141 unassisted mission schools. The total average attendance in the government schools was 2566 and in the mission schools 2988. It was estimated that there were 31,587 Mohammedan schools, with 393,039 pupils. In the Southern Provinces in the same year there were 49 government schools with an average attendance of 6190, 225 assisted schools with an enrollment of 44,814, 2519 unassisted schools with an enrollment of 127,066. The chief products are palm kernels, palm oil, cotton lint, rubber, peanuts, animal products, butter, ivory, cacao, kola nuts, coffee, drugs, and tobacco. The forests supply mahogany, which is exported. Iron, lead, and tin are worked by the natives, and gold, silver, lignite, monazite,

galena, and manganese ore are found. Nigeria is the sixth largest producer of tin in the world, the total exports in 1927 amounting to 10,926 tons. The imports in 1927 were valued at £15,664,637 and the exports at £16,340,957. The chief article of import was manufactured goods and the chief articles of export, palm oil and palm kernels. The total shipping which entered and cleared from the ports of Nigeria in 1927 was 3,367,312 tons, of which 1,904,514 tons was British. The revenue in 1927-28 was £6,304,663 and the expenditure £6,723,023, public debt, £23,559,209. Railways open for traffic in 1929 totaled 1625 miles. In the year ending Mar. 31, 1929, the railways carried 3,161,633 passengers and 958,414 tons of freight, earning net profits of £928,969 (\$4,514,789).

The administration is in the hands of a governor and an executive and legislative council. Governor in 1929, Sir G. Thomson.

Serious disturbances among the natives at Opobo and other points in southeastern Nigeria were reported to the British Colonial Office in December, 1929. Troops were sent to that point in the nick of time to save the trading station and the Europeans stationed there from a rioting mob, according to the report, which said the troops were forced to fire into the crowd. About 50 natives were killed before the disturbances ceased.

NITROGEN COMPOUNDS. See FERTILIZERS.

NOBEL PRIZES. The Nobel Prizes for 1929 were awarded on November 12 to the following persons who, in accordance with the will of Alfred B. Nobel, the Swedish inventor and philanthropist, were considered to have made the greatest contributions towards the progress of the world and the welfare of mankind: Thomas Mann (literature); Dr. Arthur Harden and Prof. Hans von Euler-Chelpin (chemistry); Sir Frederick Gowland Hopkins and Prof. Christian Eijkman (medicine); and the Duc de Broglie (physics). The award in literature is made by the Swedish Academy, the awards in physics and chemistry by the Royal (Swedish) Academy of Sciences, and the award in medicine by the Caroline Institute (the faculty of medicine in Stockholm). Announcement also was made by the Royal Academy of Sciences of the award of the 1928 prize in physics to Prof. Owen Willans Richardson. The prizes were worth \$46,299 each.

Thomas Mann, the recipient of the prize in literature, was born in Lübeck, Germany, in 1875 and first achieved national popularity in Germany with the publication in 1901 of *Buddenbrooks*, a novel showing the social decline of a Lübeck senatorial family, into which he wove much of his own family history. His other works include *Tristan* (1903), *Der Tod in Venedig* (1913); *Tomo Kroger* (1914), *Betrachtungen eines Unpolitischen* (1918), *Rede und Antwort*, (1922), *Der Zauberberg* (1924); and *Unordnung und Frühe Leid* (1926). With the publication of *Der Zauberberg* (The Magic Mountain), one of his finest works, he attained the recognized position of dean of German novelists.

The Nobel chemistry award for 1929 was divided between Dr. Arthur Harden, head of the biochemistry department of the Leister Institute and professor of biochemistry in London University, and Prof. Hans von Euler-Chelpin, director of the Biochemical Institute, Stockholm, Sweden. Dr. Harden, who was born in Manchester, Eng-

land, in 1865 and was educated at the Universities of Manchester and Erlangen, has conducted most of his experimental work in the field of alcoholic fermentation. With Sir H. E. Roscoe, he is author of *A New View of the Origin of Dalton's Atomic Theory* and his other publications include *Alcoholic Fermentation* and *Inorganic Chemistry for Advanced Students*. Professor von Euler-Chelpin, the other recipient, was born in Augsburg, Germany, in 1873 and was educated at the Universities of Berlin, Göttingen, and Würzburg. His work, which also has been in the field of biochemistry, has dealt particularly with the chemistry of enzymes. In 1928 he was appointed director of the Biochemical Institute established, under the auspices of the Stockholm High School, through a grant of 25,000 crowns from the Rockefeller Foundation and an equal sum contributed by Swedish patrons.

The recipients of the 1929 Nobel prize in medicine were Prof. Christian Eijkman of the University of Utrecht, the Netherlands, and Sir Frederick Gowland Hopkins, professor of biochemistry in the University of Cambridge, England. Professor Eijkman was the first scientist to produce experimentally a disease of dietary origin, succeeding when director of the hygienic laboratory in Batavia, Dutch East Indies, in 1889 in producing polyneuritis in fowl by feeding them a diet consisting exclusively of polished rice. He had previously noted that this disease closely resembled the disease beri-beri occurring in human beings. Lord Hopkins, who was born in London in 1861 and was educated at the University of London, has done considerable research since 1906 on the nature of the accessory substances known as vitamins, which are necessary for the growth, reproduction, and maintenance of animal life.

The Nobel Prize in physics for 1929 was awarded to the Duc de Broglie who was the pioneer in the development of that branch of physics known as wave mechanics, propounding the theory that matter consisted of a series of waves as well as of corpuscles. He was born in Paris in 1875 and was educated at the French Naval Academy, serving for a time as a naval officer. He rejoined the navy at the outbreak of the World War and served throughout the conflict. In 1918 he was awarded the cross of the Legion of Honor in recognition of his invention of a wireless receiver permitting submerged submarines to communicate with the shore.

Prof. Owen Willans Richardson, who received the Nobel Prize in physics in 1928, was born in Dewsbury, England, in 1879, and was educated at Trinity College, Hartford, Conn., and at the University of Cambridge. Since 1924 he has been at King's College, London. He is also a fellow of the Royal Society and is best known for his researches on the theory of electrons, his published works including *The Electron Theory of Matter* and *The Emission of Electricity from Hot Bodies*. From 1906 to 1914 he was professor of physics at Princeton University, where he conducted researches which led to the establishment of Richardson's law of thermionics, governing the motions of electrons emanating from hot bodies, and which was later instrumental in making possible the development of the radio.

NORMAL SCHOOLS. See EDUCATION IN THE UNITED STATES, UNIVERSITIES AND COLLEGES.

NORTH CAROLINA POPULATION. According to the Fourteenth Census, the population of

the State on Jan. 1, 1920, was 2,559,123. The estimated population on July 1, 1928, was 2,938,000. The capital is Raleigh.

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929

Crop	Year	Acreage	Prod Bu	Value
Tobacco	1929	764,000	508,000,000 *	\$93,991,000
	1928	728,000	499,408,000 *	97,885,000
Cotton	1929	1,782,000	735,000 *	61,872,000
	1928	1,800,000	826,000 *	77,730,000
Corn	1929	2,259,000	48,568,000	48,568,000
	1928	2,305,000	42,642,000	43,921,000
Hay	1929	865,000	880,000 *	14,641,000
	1928	849,000	816,000 *	13,888,000
Potatoes	1929	74,000	8,130,000	9,756,000
	1928	95,000	10,545,000	6,854,000
Sweet potatoes	1929	78,000	9,126,000	8,218,000
	1928	80,000	7,840,000	6,664,000
Peanuts	1929	230,000	249,900,000 *	9,996,000
	1928	205,000	239,400,000 *	11,781,000
Wheat	1929	467,000	5,347,000	7,539,000
	1928	444,000	5,156,000	7,528,000
Oats	1929	258,000	6,192,000	4,664,000
	1928	191,000	4,202,000	3,278,000

* Pounds * Bales * Tons

MINERAL PRODUCTION The stone production of 1927 exceeded the clay products of the State for that year in total value, and consequently took the lead in the mineral industries of the State. There were produced in 1927, 2,250,870 short tons of stone, exclusive of marble, and in 1926, 1,813,480 tons, the value of such stone produced in 1927 was \$4,913,177, in 1926, \$4,005,087. Clay products attained a value for 1927 of \$3,860,950, for 1926, of \$4,256,901. No other mineral product of the State had a total value of \$1,000,000 for 1927. In 1928, however, the production of copper increased to the quantity of 8,207,000 pounds, from 5,362,041 pounds for 1927, and thus attained a value in excess of \$1,000,000 for the year's product. The relatively large production of crude feldspar increased to 100,756 long tons for 1927, from 91,433 tons for 1926, in value, to \$612,214 for 1927 from \$602,020 for 1926. Coal and iron ore continued to be produced in minor amounts. The total value of the mineral products of the State was \$11,703,671 for 1927, for 1926, \$10,992,793.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 5222.86. There was no reported construction of additional line in 1929.

At the end of 1929 the total installation of hydro and steam plants in North Carolina amounted to 1,655,900 horse power or an increase of 20.6 per cent over the previous year. Of the total installation, 944,900 horse power was hydro and 711,000 was developed by steam. In hydro-electric power the increase in a year amounted to 16.4 per cent and in steam, 26.8 per cent. Approximately 57 per cent of the 1929 total installation was hydro and 43 per cent steam.

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to the operations of 1927, there were in the State, in 1927, 2984 manufacturing establishments. These employed 204,590 wage earners, whose wages for the year totaled \$158,394,434. Materials and supplies used in production cost \$560,819,236. Manufactured products attained the combined value of \$1,154,046,612.

EDUCATION In deference to the recognized need for a minimum school year of 8 months, the

Legislature made an appropriation of \$1,250,000 for State aid to schools. For the academic year 1928-29 the population of school age was estimated at 1,013,900. There were enrolled in the public schools 855,882 pupils. Of these, 745,349 were in elementary and 110,533 in high schools. The current expenditures of the year for public-school education totaled \$26,580,686. The yearly salaries of teachers averaged \$796.

CHARITIES AND CORRECTIONS The State Board of Charities and Corrections as operating in 1929 consisted of 7 members, one by law a woman, all elected by the General Assembly upon recommendation of the Governor, for six-year terms. A Commissioner of Public Welfare acted as the executive officer of the Board. There were maintained divisions of child welfare, mental health, institutions, county organizations, school attendance, and work among Negroes. Institutional work in the State was largely on a county basis. Under the Board's supervision were the following institutions: State Hospital for the Insane, Raleigh; State Hospital for the Insane, Morgantown; State Hospital for the Colored Insane, Goldsboro; Caswell Training School, Kinston; State Prison, Raleigh; East Carolina Training School for Boys, Rocky Mount; Stonewall Jackson Training School for Boys, Concord; State Home and Industrial School for Girls, Sauratown; Morrison Training School for Delinquent Negro Boys, North Carolina Orthopedic Hospital, Gastonia.

LEGISLATION The regular biennial session of the State Legislature convened in January and sat for 70 days. The recommendations of Governor Gardner dealt chiefly with need for a system of workmen's compensation, for a ballot law, for reform of the tax system and for measures of public education. A comprehensive workmen's compensation act was passed. It provided \$6000 for dependents in case a workman should be accidentally killed at his employment. In cases of injury indemnity was fixed between the limits of \$7 and \$18 a week. A salaried commission of three members was created to administer the act. With regard to the ballot, a modification of the Australian ballot was adopted. Its form was such as to preserve the secrecy of a vote cast in the ordinary way, but the presence of persons at the polls to assist voters who might require it was allowed. These so-called ballot markers were designed ostensibly to aid and illiterate voters unable to handle their own ballots understandingly. The objection was raised that the markers might in many precincts virtually keep a restraining eye on the party regularity of voters. In party primaries, as distinguished from elections, no markers were to be allowed. With regard to fiscal matters no general plan of reform was adopted. The Legislature, however, increased the tax on gasoline to 5 cents a gallon, from 4 cents. It assigned to the several counties, for maintenance of county roads, \$3,000,000 of the proceeds of this tax. The special commission on taxation previously created reported to the Legislature that the general property tax was onerous, taking away over 26 per cent of the net income of farms, and the increase in the gasoline tax was in part designed to afford some alleviation of the direct levies on property. An effort to create a permanent administrative tax commission failed of passage. The special tax on chain stores enacted in 1927 having been declared unconstitutional, the Legislature passed

a new act, to tax such stores, to the estimated number of three or four hundred, \$50 for each store operated in excess of one. It was found not to be feasible to finance the aid needful to a proposed increase of the mandatory public-school minimum term to 8 months, from 6 months, but the yearly State aid to counties to enable them to maintain the six-month term was increased to \$2,000,000, and a special fund of \$1,250,000 a year was established for the aid of counties maintaining the eight-month term. The schools were required to teach pupils the harmful effects of alcohol and narcotics.

POLITICAL AND OTHER EVENTS. An outbreak of labor troubles in Southern textile mills, starting in the spring, became most severe and widespread in North Carolina. At Gastonia, about 1100 of the employees of the Loray tire-fabric yarn mills of the Manville-Jenckes Company, comprising half the working force, struck on April 2. They started a labor conflict that although but one of many, exceeded the rest in bitterness. The strike was called by the National Textile Workers' Union on account of the discharge of a number of the workers. After a mob had interfered with a sheriff's force protecting the plant, a National Guard force was sent to Gastonia on April 3 by Governor Gardner. A number of reputed Communist organizers gained control of the strikers, and demands were presented which according to one of the mill officials' reply amounted to a virtual request for the surrender of the plant. By April 7 there were estimated to be 4500 textile-mill workers on strike in the Piedmont region of the Carolinas. The United Textile Workers' Union, affiliated with the American Federation of Labor, declared through its president on April 17 that it would not participate in the movement at Gastonia, which it ascribed to Communist influence.

After a prolonged suspension of operations, matters at Gastonia entered a violent stage. While National Guard troops were still present, a mob opposed to the strike attacked the organizers' headquarters and wrecked their offices and a store run by relief workers. The organizers then set up headquarters outside the town, in a temporary camp. This camp was raided on the night of June 7 by L. Q. Aderholt, the town chief of police and a force of aides, not including militia, who had meanwhile been recalled. Persons in the tent camp fired shots and Aderholt received wounds, from which he died a day later. Fifty-nine strikers and organizers were arrested, charged with his murder or with assault with intent to kill. Radical groups in many parts of the country contributed for their defense. A special grand jury found murder indictments against 15 of the prisoners. They were brought to trial on August 26, before Judge M. V. Barnhill of the Superior Court of Mecklenburg County, to which the defense had obtained a change of venue. The prosecution contended that the organizers had constructively committed murder by utterances inciting to violence. The State reduced the number prosecuted on the murder charge to seven. These were found guilty of murder in the second degree on October 21. They were sentenced to from 5 to 20 years of imprisonment, Fred Irwin Beal, an organizer, and two of his aides received the heaviest sentences. The International Labor Defense, an organization that had supported the defendants, charged that a "class verdict" had been rendered,

through prejudice against the defendants' beliefs.

Other acts of violence took place in the course of the strikes elsewhere in the States. At Marion on October 2 a group of strikers encountered 8 deputy sheriffs guarding the gate of the Marion Manufacturing Company and 6 strikers were shot and killed. The deputy sheriffs were tried for murder before a jury imported from another county, and were acquitted on testimony that their opponents had fired first. Cases against those charged with having been among the rioting mob were dropped. There occurred also floggings and other attacks by mobs antagonistic to the strikers and a number of evictions from company houses.

OFFICIALS. Governor, O. Max Gardner; Lieutenant-Governor, R. T. Fountain, Secretary of State, J. A. Hartness, Treasurer, Nathan O'Berry; Auditor, Baxter Durlham, Attorney-General, Dennis G. Brummitt, Superintendent of Public Instruction, A. T. Allen.

JUDICIARY. Supreme Court, Chief Justice, Walter P. Stacy, Associate Justices, W. J. Adams, Heriot Clarkson, George W. Connor, W. J. Brogden.

NORTH CAROLINA, UNIVERSITY OF. A State institution for the higher education of men in Chapel Hill, N. C., founded in 1795. The enrollment in the autumn of 1929 was 2024 regular students, with 3478 in extension courses. There were 1883 registered for the 1929 summer session. The faculty had 215 members. The productive funds of the institution amounted to \$2,232,575 and the annual income to \$1,293,797. The library contained more than 200,000 volumes and was housed in the new library building erected at a cost of \$625,000. The school of commerce also was installed in its new building, Bingham Hall. President, Harry Woodburn Chase, Ph.D., LL.D.

NORTH CENTRAL, formerly NORTHWESTERN, COLLEGE. A coeducational institution of higher learning in Naperville, Ill., founded in 1861. In the autumn of 1929, there was an enrollment of 533 students, of whom 285 were men and 248, women. There were 41 members on the faculty. The productive funds of the college amounted to \$754,000 and the current income for the year was \$148,350. The library contained 20,000 volumes. In 1929 a new home for the president was purchased through the generosity of a friend of the college. Plans were prepared for the construction of a gymnasium and field house costing \$350,000. President, Edward Everett Rall, Ph.D.

NORTH DAKOTA POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 646,872. On July 1, 1925, it was 641,192 according to the census taken by the State. No estimate was made in 1928. The capital is Bismarck.

AGRICULTURE. The table on page 613 gives the acreage, production, and value of the principal crops in 1928 and 1929.

MINERAL PRODUCTION. Coal, the only important mineral product of the State, was actively mined in 1928. There were produced 1,649,930 short tons of coal, as against 1,527,939 tons in 1927. The coal product of 1928 had a total value of \$2,780,000, that of 1928, a value of \$2,604,000. Of the other mineral industries, the manufacture of clay products and the digging of sand and gravel alone each slightly exceeded \$100,000 in the value of its output for 1927. The total value

Crop	Year	Acreage	Prod Bu.	Value
Wheat	1929	9,918,000	93,396,000	\$ 91,008,000
	1928	10,810,000	155,358,000	125,926,000
Barley	1929	2,550,000	36,210,000	15,208,000
	1928	2,179,000	55,564,000	28,898,000
Hay	1929	2,671,000	2,486,000	19,312,000
	1928	2,280,000	3,988,000	20,905,000
Flaxseed	1929	1,463,000	6,876,000	19,734,000
	1928	1,148,000	5,384,000	16,771,000
Oats	1929	1,934,000	84,812,000	11,140,000
	1928	1,934,000	59,254,000	17,986,000
Rye	1929	985,000	8,415,000	6,896,000
	1928	1,298,000	14,378,000	10,851,000
Corn	1929	1,057,000	16,384,000	11,141,000
	1928	997,000	24,426,000	14,900,000
Potatoes	1929	145,000	6,960,000	7,308,000
	1928	141,000	14,805,000	4,442,000

* Tons

of the mineral product of the State was \$2,869,663 for 1927, for 1926, \$2,804,837.

FINANCE State expenditures in the year ended June 30, 1928, as reported by the U S Department of Commerce, were for maintenance and operation of governmental departments, \$8,468,192 (of which \$1,427,149 was for local education), for public-service enterprises, largely the Mill and Elevator Association, \$4,084,330, for interest on debt, \$1,875,152, for permanent improvements, \$3,115,730, total, \$17,543,404 (of which 3,657,707 was for highways, \$1,084,682 being for maintenance and \$2,373,025 for construction) Revenues were \$18,722,234 Of these, property and special taxes formed 24 1 per cent, earnings of departments and compensation paid the State for officers' services 97, sale of licenses, 179 (including gasoline taxation of \$1,387,696) The State's funded debt of June 30, 1928, contracted entirely for the Mill and Elevator Association, for State real-estate loans and for the Bank of North Dakota, was \$34,857,500 outstanding, or \$4,027,170 net of sinking funds On a property valuation of \$995,509,739 were levied in the year State taxes of \$3,932,263

TRANSPORTATION The total number of miles of railroad line under operation on Jan 1, 1929 was 5274 60 There were built, in 1929, 22 98 miles of additional second track

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to the operations of 1927, there were in the State, in 1927, 307 manufacturing establishments These employed 3260 wage earners, whose wages for the year totaled \$1,808,122 Materials and supplies used in manufacture cost \$34,271,002 Manufactured products attained the combined value of \$47,003,022

EDUCATION For the central direction of rural schools there were established two full-time supervisors A beginning was made with the modification of the curricula of the institutions for the training of public school teachers with the object of grouping in the initial year of their courses such subjects as were essential to those intending to take positions in the rural schools The power of the State education associations or teachers' organizations was increased by provisions that were made for the creation of a representative body to transact these organizations' business

CHARITIES AND CORRECTIONS A Board of Administration in 1929, held control over the State almshouse, the State reformatory, as well as over the State University and eight other State schools of higher learning The State institutions of care or custody were School

for the Deaf, Devil's Lake; School for the Blind, Bathgate; Tuberculosis Sanatorium, Dunketh; Institution for the Feeble-minded, Grafton, Hospital for the Insane, Jamestown; State Training School, Mandan, State Penitentiary, Bismarck

LEGISLATION. The twenty-first Legislative Assembly of the State convened in regular biennial session in January and adjourned March 9 One of its chief enactments was that parallel with a measure passed about the same time by the Legislature of Montana, to promote the storage of grain on the farm, instead of its premature sale to elevators. The act was designed to render farm-stored grain of members of farmers' organizations acceptable as security for loans from Federal Intermediate Credit banks. The State tax on gasoline was increased to three cents, from two cents A rebate to dealers, to the extent of 1½ per cent of the tax, was provided, to serve as a collection fee The appropriations of the session totaled \$10,752,696 for the ensuing two years All divisions of the State were required to adopt the budget system, in their finances The State bank-guarantee law, which had been operating under increasing difficulties, was repealed The Legislature approved for submission to popular vote two constitutional amendments increasing the terms, respectively, of Supreme Court and of District Court judges

POLITICAL AND OTHER EVENTS Plans for agricultural relief made headway through the granting by the Federal Farm Board on September 18 of an initial loan to the North-Dakota-Montana Wheat Growers' Association Governor George F Shafer, who was inaugurated in January, adopted a conservative course and departed from the tendencies to State Socialism that had marked North Dakota in preceding years In consequence of his attitude no further extension of the system of State enterprises was undertaken. The Attorney-General conducted a campaign for the prosecution of numerous evaders of the State tax on cigarettes The State Industrial Commission assumed in December the functions of an active board of directors of the State Bank of North Dakota

OFFICERS Governor, George F Shafer, Lieutenant-Governor, John W Carr, Secretary of State, Robert Byrne, Treasurer, Berta E. Baker, Auditor, John Steen, Attorney-General, James Morris; Superintendent of Public Instruction, Bertha R Palmer.

JUDICIARY. Supreme Court Chief Justice, John Burke. Associate Justices, Luther E. Birdzell, A M Christianson, A G Burr, W L Nuesle

NORTH DAKOTA, UNIVERSITY OF. A State institution of higher education at University Station, Grand Forks, N D, founded in 1883 The enrollment for the autumn of 1929 was 1769, of whom 1130 were men and 639 women These were distributed as follows Graduate, 49; liberal arts, 715; commerce, 144; education, 436; engineering, 181; law, 70; medicine, 57; and high school, 67. For the summer session of 1929, the total registration was 351, of whom 161 were men and 190 women The faculty numbered 143. The productive funds totaled \$1,700,000 and the income for the year, exclusive of boarding department and trust funds, amounted to \$837,855, received from the following sources Federal land funds, \$65,000; student fees and rent, \$71,400; other local income, \$10,000. State appropriation for maintenance, \$527,400; State appropriations for build-

ings and improvements, \$143,745, State appropriation for public service, \$20,310 The general university library contained 95,215 volumes. President, Thomas F. Kane, Ph.D., LL.D.

NORTHERN EPIRUS. See GREECE, under *History*

NORTHERN LAND Although it was popularly spoken of as Lenin Land, Nicholas II Land has been officially renamed Northern Land by the Soviet government. Located in Lat 79°N and Long 103°E to the north of Cape Chelyuskin, it is separated from this northernmost extension of Asia by a strait of 32 nautical miles. It was discovered by the Russian Hydrographical Expedition to the Arctic, 1912-1915, and its east and south coasts were then mapped.

NORTHERN TERRITORIES. See GOLD COAST

NORTHERN TERRITORY. A territory belonging to the Commonwealth of Australia, situated in the central and northern part of the island continent, transferred to the Commonwealth, Jan. 1, 1911, divided for administrative purposes into two territories, North Australia and Central Australia, on Mar. 1, 1927. Area, 523,020 square miles, population, according to the census of 1921, exclusive of aborigines, 3867, estimated in 1929, 4024. The aborigines are estimated to number about 20,000. Principal town, Darwin, on the Harbor of Port Darwin. While the soil is capable of a varied production of crops of tropical and semi-tropical zones, agriculture has not been developed chiefly because the climate is unsuitable for Europeans. The value of all minerals produced in 1928 was \$11,346. The imports in 1928-29 were \$31,943, exports, \$53,730. Revenue in 1926-27 totaled \$122,062; expenditure, \$143,512, the public debt, \$3,564,445. Government Resident for North Australia, R. H. Weddell, for Central Australia, J. C. Cawood.

NORTH POLE. See POLAR RESEARCH

NORTH SHORE FESTIVAL. See MUSIC

NORTHWESTERN UNIVERSITY. A co-educational institution of higher learning in Evanston and Chicago, Ill., founded in 1851. It is composed of a college of liberal arts, a graduate school, and schools of engineering, commerce, journalism, music, education, and speech, in Evanston, and schools of law, medicine, dentistry, commerce, and journalism, in Chicago. For the autumn term of 1929, there was an enrollment of 11,836, of whom 6000 were registered in evening classes in Chicago. For the summer session of 1929, 2200 students were enrolled. The faculty numbered 662 members of the rank of instructor or above. The endowment as of June 30, 1929, was \$17,184,683, and the income from these funds for the fiscal year 1928-29 was \$862,936. In the various libraries of the university there were approximately 300,000 bound volumes and 175,000 pamphlets. President, Walter Dill Scott, Ph.D., LL.D.

NORTHWEST PROVINCES. The Prairie Provinces of Canada. See CANADA

NORTHWEST TERRITORIES. The term applied to the large tract in Canada to the east of the Yukon Territory, stretching northward to the Arctic from the Prairie Provinces and eastward to the north of Hudson Bay and Hudson Strait comprising the territories formerly known as Rupert Land and the Northwestern Territory, excepting those portions which form part of the provinces of Manitoba, Saskatchewan, Alberta, and the Yukon Territory. Area, 1,308,082 square miles, population estimated at 12,000, in-

cluding 7100 Eskimos and 3800 Indians. They are under the administration of the Northwest mounted police, directed by a commissioner at Ottawa, aided by a deputy commissioner, and a council of five Commissioners in 1929, William Wallace Cory.

NORWAY. A constitutional monarchy of northwestern Europe, occupying the western and northern half of the Scandinavian Peninsula and separated from Sweden by the Kjölen Mountains, with an extreme length of 1110, and an extreme width of 250, miles, formerly united with Sweden, but separated, June 7, 1905. Capital, Oslo, reigning King in 1929, Haakon VII.

AREA AND POPULATION. The area is 125,017 square miles and the population according to the census of 1920, 2,649,775, of whom 1,864,371 lived in rural districts, estimated population in 1928, 2,810,592. The capital, Oslo, had a population of 258,483 on Dec. 1, 1920, estimated in 1928, 253,472. Other large cities with their estimated populations in 1928: Bergen, 96,772, Trondhjem, 55,218, Stavanger, 47,179. Before Jan. 1, 1925, the capital, Oslo, was called Christiania. During the years 1924 to 1928 the average annual number of births was 53,338 and of deaths 30,336, the excess of births being 23,002. Emigrants during the same period averaged 9109 annually, of whom 68 per cent went to the United States.

EDUCATION. Primary education is compulsory, the school age being from 6½ to 14 years, in urban districts and 7 to 14 years in rural districts. During 1926-27 the number of pupils in elementary schools was 394,018 and in secondary schools, 23,447. There is only one university, that at Oslo, which had 3562 students in 1927.

PRODUCTION, ETC. About 75 per cent of the area of Norway is unproductive and forests are the principal resource of the remainder. In 1928 the area of arable land was 1,704,000 acres or 2.4 per cent of the total land area, there were 622,000 acres of permanent meadows, and 18,531,000 acres of forests. In 1928 there were 1,221,000 cattle, 1,654,000 sheep, 283,000 swine, 293,000 goats, and 182,000 horses. The area and production of the principal crops in the same year were as follows: Wheat, 25,000 acres and 676,000 bushels, rye, 23,000 and 612,000, barley, 150,000 and 5,600,000, oats, 240,000 and 11,608,000, potatoes, 123,000 and 34,606,000, hay, 1,040,000 acres and 2,081,000 metric tons, fodder beets, 1,506,000 metric tons. The year was a fairly satisfactory one for Norwegian farmers, there being larger yields of most crops and slightly higher prices. In 1929 grain crops were about average while the yield of fruits was poor. The fish catch in 1928 was valued at \$19,400,000 as against \$15,100,000 in 1927, in 1929 the value increased to about 80,000,000 crowns (\$21,344,000). In the latter year the canning industry was prosperous, exports of canned fish being valued at about 45,000,000 crowns. There has been a steady expansion of the Norwegian whaling industry. Production in the 1927-28 season totaled 801,500 barrels valued at \$18,100,000 as against 689,000 barrels valued at \$15,100,000 in the previous year.

In 1928 the output of leading mine and factory products was as follows: pyrites, 750,000 metric tons, iron ore, 500,000 metric tons, ferroalloys, 111,310 (exports only), aluminum, 19,000, zinc, 5500, chemical wood pulp, 275,000, silver (fine), 385,809 troy ounces. Silver ore, feldspar, titanium ores, pig iron, paper, margarine, and

beer are other products of the mines and factories. In 1929 the mining industry recorded the most favorable year since the World War.

Norway is one of the leading maritime nations of the world, with respect to merchant tonnage. On June 30, 1928, the merchant marine consisted of 1787 vessels of 100 tons or over with a capacity of 2,968,207 gross tons. Gross earnings of the merchant marine in 1928 totaled 396,500,000 crowns (one crown equalled \$0.2664), as against 422,700,000 crowns in 1927. There was a steady decrease in earnings of the merchant fleet after 1920. Shipbuilding plants were active in 1929 after several years of comparative inactivity. The national wealth in 1929 was estimated at 7,957,000,000 crowns and the national income for the year at 2,140,000,000 crowns, as compared with the estimates of 8,097,900,000 crowns and 2,252,435,000 crowns, for wealth and income, respectively, in 1927.

COMMERCE. While imports in 1928 were valued at \$271,427,000, or 7 per cent more than in 1927, the exports increased by only 2 per cent to \$179,435,000, leaving an adverse visible balance of trade of \$91,992,000. This heavy adverse balance is normal in Norwegian economy and is rectified by the earnings of the merchant marine, emigrant remittances, etc. In 1927 the United Kingdom took 29.3 per cent of the total Norwegian general exports and supplied 20.5 per cent of the imports. Germany took 12.6 per cent of the exports and furnished 20.2 per cent of the imports, while the share of the United States in Norway's trade was 10.7 and 14.7 per cent, respectively. The leading exports are fish and fish products, whale oil and fats, pulp-wood and wood products, newsprint and other paper, aluminum and other minerals, and hides and skins. Ships, iron and steel, coal, textile fabrics, foodstuffs, and various other finished manufactures are the chief imports. Both imports and exports continued to increase in 1929. Imports rose to \$283,556,000 and exports to \$200,032,000, leaving an unfavorable balance of \$83,524,000, according to preliminary figures.

FINANCE. The budget for the fiscal year ending June 30, 1929, estimated receipts and expenditures at 354,233,000 crowns. In the preceding year the actual receipts were 400,736,000 crowns, or about 4,600,000 more than the budget estimates, affording a surplus of 2,000,000 crowns which was used to reduce the national debt. Owing to a deficit in the operation of the state railways, expenditures in 1927-28 exceeded the estimates by about 6,000,000 crowns. The budget for 1929-30 was made to balance at 388,400,000 crowns. The national debt on June 30, 1928, was reported at 1,634,800,000 crowns as compared with 1,568,400,000 crowns a year earlier. There was a change in the net debt, however, as a result of a conversion loan obtained in March, 1928, to fund the floating debt was practically intact on June 30. Of the total debt, 823,395,000 crowns was held internally. Actual budget operations for 1928-29 showed a small surplus of 211,000 crowns.

COMMUNICATIONS. On June 30, 1928, the length of railway lines in Norway totaled 2349 miles, of which 216 miles were government owned and operated. Due to heavy construction costs, steep grades making it impossible to haul heavy loads, and the sparse population, the state railways usually operate at a deficit. This was estimated at 2,187,000 crowns in the budget for 1928-29. In 1929-30, however, the income and operating expenses were expected to balance. In

1927-28 the railways carried 19,301,000 passengers and 9,014,000 metric tons of freight, the gross receipts amounting to 84,055,000 crowns (\$22,527,000). In 1927 the number of vessels engaged in foreign trade, including Norwegian ports totaled 9004 of 7,727,000 tons registered tons and those clearing totaled 8891 of 6,939,000 tons. The telegraph and telephone systems, the greater part of which are state owned, had 8387 and 512,162 miles of wire, respectively, in 1927.

GOVERNMENT. Executive power is vested in the King, who acts through a cabinet or council of state, and legislative power in the Parliament, or Storting, of 150 members, elected for three years by universal suffrage without distinction as to sex. As a result of the elections held in November, 1927, the following parties were elected for the period 1928-30: Labor party, 59, Conservatives and Moderate Liberals, 31, Liberals, 31, Agrarian party, 26, Communists, 3. King Haakon VII was born Aug. 3, 1872, and elected King Nov. 18, 1905, upon the secession of Norway from its union with Sweden. The members of the cabinet appointed Feb. 13, 1928, were as follows: Prime Minister and Foreign Affairs, J. L. Mowinkel; Education and Ecclesiastical Affairs, S. M. Haaland; Justice, H. M. Evjen; Agriculture, H. I. Aarstad; Public Works, O. M. Mjelde; Social Affairs, T. Vaeland; Finance, P. Lund; Defense, T. Andersen-Rysst; Commerce and Industry, L. Oftedal.

HISTORY. The agitation of Norwegian Nationalists against Danish influences, which found expression in the change of the name of the capital from Christiania to Oslo in 1925, provoked violent repercussions in 1929. Disregarding the protests of citizens of Trondheim, Parliament in June voted to change the name of that city to Nidaros, effective Jan. 1, 1930. The action provoked serious rioting in Trondheim and in Bergen, which the Nationalists proposed to rename Bjergvik and there were demonstrations of sympathy with these protests in Oslo and other communities.

Another important event of the year was the wedding of Crown Prince Olaf of Norway and Princess Martha, daughter of Prince Carl and a niece of King Gustav of Sweden. The friendly relations existing between Sweden and Norway since their peaceful separation in 1905 was emphasized in the various events held in connection with the wedding. Later in the year a movement developed for the elimination of the neutral zone established between the two countries by the agreement under which they separated. It was contended that the proposal would further improve relations between the two nations.

A radical revision of the constitution was proposed in September by the Labor party, which held 59 of the 150 seats in the Storting. Changes advocated included the modification of the provision made for compensating owners of expropriated property, omission of the section providing for the adoption of *ex post facto* laws, abolition of the practice of issuing laws in the name and over the seal of the King, abolition of the King's suspensive veto and of his right to open and close the sessions of Parliament, revocation of the right of the courts to pass upon the constitutionality of laws, and abolition of conscription.

Steps toward the revision of the laws regulating the sale of liquor and wines were taken by the Department of Social Affairs, following criticism of the conduct of the Norwegian Wine

Monopoly, a semi-public institution controlling the sale of wine and other intoxicating beverages in the country.

On May 8 the Norwegian Parliament voted to annex the island of Jan Mayen in the Arctic Ocean, which had been used as a base of operations by Norwegian whalers for many years. The island lies between Stalbard (Spitzbergen) and Greenland.

NORWEGIAN LITERATURE. See SCANDINAVIAN LITERATURE.

NOTRE DAME, UNIVERSITY OF. A Roman Catholic institution for the higher education of men in Notre Dame, Ind., founded in 1842. The enrollment for the autumn term of 1929 was 3054, representing an increase of 63 over 1928-29. The summer session enrollment was 1132, an increase of 109 students. There were 170 faculty members, 26 of whom were new appointees. The library contained approximately 200,000 volumes. President, the Rev. Charles L. O'Donnell, C.S.C., Ph.D.

NOURSE, EDWARD EVERETT. American theologian and professor, died Apr. 30, 1929, in West Hartford, Conn. He was born in Bayfield, Wis., Dec. 24, 1863, and was graduated from Lake Forest University in 1888 and from Hartford Theological Seminary in 1891. In 1894-95 he studied at the University of Jena. He was ordained in the Presbyterian ministry in 1893. He was pastor of the Second Congregational Church in Berlin, Conn., from 1895 to 1898, when he went to Hartford Theological Seminary as an instructor, becoming professor of Biblical theology in 1905. From 1903 to 1916, Dr. Nourse also lectured at Mount Holyoke College. He contributed to the *New International Encyclopedia* and the *Encyclopedia of Religion and Ethics*. He was one of the editors of the *Standard Dictionary of the Bible* (1909) and of the *New Standard Dictionary of the Bible* (1926). He was the author of *The Epistles of Paul* (1911), republished as *Selected Epistles of Paul* (1915).

NOVA SCOTIA, *nō'va skō'shā*. One of the Maritime Provinces of Canada. Area, 21,428 square miles, population, according to the census of 1921, 523,837, estimated in 1929, 550,400. Capital, Halifax, with a population in 1921 of 53,372. Other large towns: Sydney, 22,545, Glace Bay, 17,007, Amherst, 9998, Dartmouth, 7899, New Glasgow, 8074, Sydney Mines, 8327, Truro, 7562, Yarmouth, 7093. In 1927 there were 11,054 births, 6360 deaths, and 3040 marriages. Education is free, compulsory, and undenominational. In 1927 there were nine universities and colleges, and 3113 elementary and secondary schools with 3305 teachers and 112,556 pupils. Nova Scotia is largely an agricultural and fruit-growing country. The chief product is apples, the output of which, in 1927 was about 900,000 barrels. The output of the chief minerals in 1926 was Coal, 7,071,876 long tons (6,000,000 tons in 1928 and 6,250,000 in 1929), pig iron, 284,906 tons, coke, 399,000 short tons, and small quantities of steel ingots, limestone, and dolomite. Nearly 20,000 men are employed in the fisheries, which, next to those of British Columbia, are the most extensive in Canada. The total market value of fish caught in 1929 was estimated at \$12,000,000 (\$11,570,387 in 1928). The province's first paper mill commenced operation in 1929. There are 12,000 square miles of forests. The imports for consumption in 1927 were valued at \$23,479,462, and the exports at \$53,226,985. There are 1451 miles of railway.

Executive power is vested in a lieutenant-governor appointed by the Dominion Government of Canada for five years, who acts through a responsible ministry or council and legislative power in a council of 21 members appointed for life by the Crown, and an assembly of 43 members. The province is represented in the Dominion Senate by 10 members and in the House of Commons by 16. Lieutenant-Governor in 1928, James C. Tory, Premier, Provincial Secretary, and Treasurer, E. N. Rhodes, Public Works and Mines, Col. G. S. Harrington, Attorney-General, W. L. Hall, *Minister of P. C. Black*; Natural Resources, J. F. Mahoney, Ministers without portfolios, Dr. B. A. Le Blanc, J. F. Fraser, Doctor W. N. Rehfus, O. P. Goucher, J. Doull.

A plebiscite on the question of prohibition was held in the province on Oct. 31, 1929, in which 30,422 voted against and 20,862 for the continuance of the existing temperance act. Of the same 51,284 voters, 36,503 voted in favor of the sale of liquor under government control and 9682 against governmental control. At a plebiscite held in 1919, 80,000 voted in favor of prohibition and 23,000 against. See CANADA.

NOVAYA ZEMLYA, (*No'va Zem'bla*). An archipelago to the north of European Russia belonging to Soviet Russia. Under a decree issued June 30, 1924, a Soviet commissioner, with headquarters at Archangel, supervises the affairs of these islands, of which the most important are the north and south islands of Novaya Zemlya, Kolguev, and Waigatch.

NOVEL. See LITERATURE, ENGLISH AND AMERICAN, FRENCH LITERATURE, GERMAN LITERATURE, ITALIAN LITERATURE, SCANDINAVIAN LITERATURE, SPANISH-AMERICAN LITERATURE, SPANISH LITERATURE.

NURSERY SCHOOLS. See EDUCATION IN THE UNITED STATES.

NUT CULTURE. See HORTICULTURE.

NUTRITION. See FOOD AND NUTRITION.

NYASALAND, or **NYASSALAND, PROTECTORATE.** A British protectorate, formerly known as British Central Africa, situated on the southern and western shore of Lake Nyassa, extending northward to the Zambezi River. Area, 37,890 square miles, population on Dec. 14, 1927, 1829 Europeans, 982 Asiatics, and 1,304,123 natives. The chief towns are Blantyre and Zomba, the seat of the government. Education is in the hands of foreign missionary societies, under which there were in 1927, 2788 schools, with 154 European teachers, 166,022 pupils enrolled, and an average attendance of 112,883. Among the chief products are tobacco, coffee, cotton, tea, and livestock. In 1928 exports were valued at £676,000 and imports at £869,500. The chief articles of export are tobacco, cotton, fibres, corn, and tea, of import, manufactures of cotton, provisions, and raw materials. The British Empire supplied more than half of the imports. Revenue for 1926-27 was estimated at £348,320 and expenditures at £318,899. The public debt on Mar. 31, 1927, was £775,062. The administration is under a commander-in-chief, aided by an executive and legislative council, composed of nominated members. Governor and Commander-in-Chief in 1929, Sir C. C. Bowring.

OATS. The 1929 production of oats of 27 countries reporting to the International Institute of Agriculture, Rome, was placed at 3,260,206,000 bushels, which was 8 per cent below the yield of

1928 and slightly below the average of the 5-year period of 1923-27. The area devoted to the crop in these countries, 93,851,000 acres, was 1 3 per cent below the acreage of the preceding year and 2.7 per cent below that of the 5-year period. Production in 1929 of the leading oats-growing countries, not including the United States, was reported as follows: United States, 481,106,000 bushels, France 396,755,000 bushels, Canada 297,787,000 bushels, Poland 174,991,000 bushels and England and Wales 101,920,000 bushels. In 1928 the Soviet Republics reported a yield of over 1,100,000,000 bushels, Argentina, the leading oats-producing country of South America, reported a yield of 65,172,000 bushels for the crop year 1928-29. The Canadian acreage as compared with that of 1928 was reduced 5 per cent, but the yield, largely due to drought, indicated a reduction of 38 per cent.

The oats crop of the United States in 1929 was estimated by the Department of Agriculture at 1,238,654,000 bushels, a decrease of about 200,000,000 bushels from the crop of 1928 and of 106,426,000 bushels from the average crop of the 5-year period 1923-27. The decrease was due partly to the smaller average yield of 30.8 bushels per acre compared with 34.5 bushels in 1928 and partly to a decrease of 1,517,000 acres below the area of the preceding year. The area harvested in 1929, 40,217,000 acres, was 2,599,000 acres below that of the 5-year average. The average farm price of oats Dec. 1, 1929, was 43.5 cents per bushel as against 40.9 cents the year before and on this basis the total farm value of the crop was \$538,445,000 in 1929 and \$589,048,000 in 1928. In production of oats the United States continued to stand first among the countries of the entire world.

Production of oats was reported by all States, the yields of the leading States being as follows: Iowa, 219,928,000 bushels, Minnesota, 153,738,000, Illinois, 141,783,000, Nebraska, 86,304,000, Wisconsin, 85,215,000, and South Dakota, 64,382,000. The average yield per acre ranged from 14 bushels in Florida to 45 bushels in Washington and the average farm price on Dec. 1, 1929, from 32 cents per bushel in North Dakota to 89 cents per bushel in Florida. The average yields per acre are usually highest in the extreme northwestern States and lowest in the extreme southwestern States.

During the calendar year 1929, the United States exported 6,908,727 bushels of oats valued at \$3,389,111, as compared with 10,421,056 bushels valued at \$6,217,414 in 1928. There also were exported 81,245,501 pounds of oatmeal (flaked and rolled oats) valued at \$4,220,140, as compared with 84,074,152 pounds valued at \$4,203,478 in 1928. The imports of oats during the year amounted to 111,796 bushels valued at \$43,420, as compared with 489,368 bushels valued at \$320,608 in 1928. The average cost of producing an acre of oats in 1928, as determined by the Department of Agriculture on the basis of 2621 reports from all parts of the country, was \$18.40, the range being from \$15.98 in the West North Central States to \$25.15 in the North Atlantic States. The average cost per bushel was 50 cents with a range from 44 cents in the East North Central and West North Central States to 70 cents in the South Atlantic States.

OBERLIN COLLEGE. A nonsectarian institution for the higher education of men and women in Oberlin, Ohio; founded in 1833. The registration for the first semester of 1929-30 was

1625, while that for the summer session of 1929 was 141. In 1929-30 the faculty had 262 members. The productive funds of the institution as of Aug. 31, 1929, amounted to \$17,020,532, and the income for the year was \$1,655,832. The library contained 311,500 bound, and 204,061 unbound, volumes. President, Ernest Hatch Wilkins, Ph.D., Litt. D., LL.D.

OBITUARY RECORD OF THE YEAR. See NECROLOGY

OBSERVATORIES. See ASTRONOMY

OCEANIA, Ōshē-ān'ū. FRENCH ESTABLISHMENTS IN A French colonial possession consisting of groups of small islands scattered throughout a wide area of the eastern Pacific. The total area of the Establishments is estimated at 1520 square miles, population in 1926, 35,862, of whom 29,644 were natives. The principal island is Tahiti, which contains the chief town, Papeete, with a population of 4601, of whom 2126 were French. The group of islands of which Tahiti forms a part is known as the Society Islands. The other groups are the Marquesas Islands, Tuamotu Island, Leeward Islands, the Gambier, Tubuai, and Rapa groups, and a number of outlying islands. Various tropical fruits are grown and exported. Pearls and mother-of-pearl are important products. For the island of Tahiti, imports in 1927 totaled 50,596,237 francs and exports 49,032,248 francs. The chief imports are tissues, wheat, flour, and metal work, and the chief exports, copra, mother-of-pearl, vanilla, coconuts, and phosphates. The local budget for 1927 balanced at 15,167,573 francs. The most important islands communicate by a New Zealand steamship service with San Francisco, New Zealand, and Australia. The administration is in the hands of a governor assisted by an administrative council. Governor in 1929, M. B. M. V. Siadou, appointed Jan. 13, 1928. See EXPLORATION.

OCEANS. See METEOROLOGY

OCHS, SIEGFRIED A distinguished German choral conductor, died in Berlin, Feb. 6, 1929. He was born in Frankfurt-on-Main, Apr. 19, 1858. He received his musical education under Kiel and Urban at the Königl. Hochschule für Musik in Berlin, and profited greatly by his intercourse with Hans von Bulow. In 1882 he organized the Philharmonischer Chor, which soon became world-famous. Besides model performances of the works of classic and romantic composers, the organization gave the first performances of many important choral works of contemporary composers, such as Bruckner, Tinel, Wolf, A. Mendelssohn, Taulman, Koessler, Fried, and others. The unfavorable conditions of the post-war period, brought about the dissolution in 1921 of this remarkable organization, part of which was absorbed by the chorus of the Staatliche Hochschule für Musik. Ochs himself then joined the faculty of this institution as professor of choral music and conductor of the chorus, which posts he filled with distinction until his death. To perpetuate the memory of this great leader, six months after his passing the original members of the famous choir were reassembled and reorganized under Otto Klemperer as conductor. Ochs wrote the text and music of an opera, *Im Namen des Gesetztes* (Hamburg, 1888), two operettas; male choruses; and songs. He is the author of *Der deutsche Gesangsverein* (4 vols., 1923), *Über die Art Musik zu hören* (1926); and an autobiography under the title, *Geschehenes, Gesehenes* (1922).

O'CONNOR, THOMAS POWER ("TAY PAY") Irish journalist and parliamentarian, died in London, Nov 18, 1929. He was born Oct 5, 1848, in Athlone, Ireland, and was educated at the College of the Immaculate Conception there and at Queen's College, Galway. He began his journalistic work as junior reporter on Saunders's *News-letter* in Dublin in 1867, moving in 1870 to London, where for seven or eight years he struggled as a freelance journalist. With the publication of *Lord Beaconsfield: A Biography*, in 1879, a frankly partisan attack on the Prime Minister Disraeli, he won public recognition. He became sub-editor of the *Daily Telegraph* and later was in the London office of the *New York Herald*. He founded and was first editor of the *Star* (1888-90), the *Sun*, the *Weekly Sun*, *M A P*, and *T P's Weekly*. He began to edit *T P's and Cassell's Weekly* in 1923. In 1880 he entered Parliament as an Irish Nationalist member for Galway, was returned in 1885 for Galway and Liverpool, and in 1886, and thereafter until his death, for Liverpool. Because of his many years of service, Mr. O'Connor was known as the "Father of the House of Commons." To his friends, he was "Tay Pay." In 1881 and again in 1906, he visited America for the purpose of furthering the Irish cause. He was made a Privy Councillor in 1924. Mr. O'Connor was the author of *Gladstone's House of Commons* (1885); *The Parnell Movement* (1886); *Some Old Love Stories*, *Napoleon*, *The Phantom Millions*, *The Story of the Great Firch Fraud* (1902). His *Memoirs of an Old Parliamentarian* (March, 1929) gave a vivid and dramatic picture of the eighties.

O'FALLON DECISION. See **RAILWAYS**

OFFICERS RESERVE CORPS. See **MILITARY PROGRESS**

O'HIGGINS, HARVEY J. An American writer, died in Martinsville, N. J., Nov. 14, 1876. Born in London, Ont., Canada, Nov. 14, 1876, he attended the University of Toronto, 1893-97. After working on *The Toronto Star*, he joined the *New York Globe* in 1899. While with that paper, he wrote short stories and sketches of New York, and in 1905 published his first novel, *The Smoke Eaters*, a story of the New York Fire Department. His subsequent books, both fictional and analytical, were realistic in method and intended to explain the attitude of average Americans, he was particularly successful with his descriptions of Irish-Americans, notably in the short stories *Tammany Titles*, which was used as a campaign document during the World War, 1917-18, he was associate chairman of the committee on public information, Washington, D. C. Mr. O'Higgins's books include *Don-a-Dreams* (1906); *A Grand Army Man* (1908); *Old Clinkers* (1909); *The Heat and the Jungle*, with Judge Ben B. Lindsey (1910); *Under the Prophet in Utah*, with Frank J. Cannon (1911); *The Argyle Case*, with Harriet Ford (1912); *The Dummy*, with Harriet Ford (1913); *Polygamy* (1914); *Silent Sam* (1914); *Adventures of Detective Barney* (1915); *Mr. Lazarus*, with Harriet Ford (1916); *From the Life* (1919); *On the Hving Line*, with Harriet Ford (1919); *The Doughboy's Religion*, with Judge Ben B. Lindsey (1919); *The Secret Springs* (1920); *Some Distinguished Americans* (1922); *The American Mind in Action*, with Dr. Edward H. Reede (1924); *Julie Kane* (1924); and *Clara Barron* (1925).

OHIO. POPULATION. According to the Fourteenth Census, the population of the State on

Jan 1, 1920, was 5,759,394. The estimated population on July 1, 1928, was 6,826,000. The capital is Columbus.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929

Crop	Year	Acreage	Prod Bu	Value
Corn	1929	3,518,000	128,407,000	\$100,517,000
	1928	3,646,000	136,725,000	103,911,000
Hay	1929	3,062,000	5,018,000	50,146,000
	1928	2,787,000	3,706,000	48,839,000
Wheat	1929	1,712,000	83,770,000	39,172,000
	1928	872,000	9,475,000	12,888,000
Oats	1929	1,680,000	49,826,000	22,422,000
	1928	2,413,000	89,281,000	37,498,000
Potatoes	1929	116,000	11,136,000	17,261,000
	1928	123,000	12,054,000	9,040,000
Tobacco	1929	51,800	39,782,000	7,041,000
	1928	40,500	32,198,000	7,084,000
Barley	1929	108,000	2,420,000	1,476,000
	1928	33,000	9,191,000	5,515,000
Sugar beets	1929	22,000	185,000	*
	1928	88,000	266,000	1,897,000

* Tons * Pounds

MINERAL PRODUCTION. In the production of pig iron, an industry in which Ohio ranks next after Pennsylvania, activity grew in 1928. The blast furnaces of the State shipped in that year 9,266,936 long tons of pig iron, in value, \$8,184,006 tons for 1927, in value, \$11,000,000, for 1928 and \$150,125,790 for 1927. The State imports from without its borders the iron ore needed for this industry, but it produces other raw material, namely coal, and its derivative, coke. The coal production of Ohio fell slightly to 15,641,225 short tons for 1928, from 15,799,697 tons for 1927. The output of 1928 was valued at \$26,439,000, that of 1927, at \$30,376,000. The production of coke, on the other hand, rose for 1928, to 7,786,199 short tons, from 7,213,619 tons for 1927. The value of by-product oven coke produced was \$33,008,863 for 1928 and \$34,681,465 for 1927. Ohio maintained her lead over other States in the production of lime in 1928, the quantity produced rising for that year to 1,015,000 short tons (estimated), from 987,726 tons for 1927. Lime produced had an estimated value of \$8,082,000 for 1928 and a value of \$9,497,324 for 1927. The clay products of Ohio for 1927 had a total value of \$92,363,801, a decline from the \$97,873,102 of 1926. This decrease affected both the brick and tile and the pottery branch of the industry, and while common to almost all the States manufacturing clay products, was more conspicuous in Ohio as the leading producer. The petroleum production of Ohio was 7,030,000 barrels, in value \$14,500,000 (estimated) for 1928, for 1927, 7,593,000 barrels, valued at \$14,970,000. The output of natural gas rose to 51,381,000 M cubic feet for 1927, the latest reported year, from 47,363,000 M for 1926, in value to \$28,881,000 for 1927 from \$25,403,000 for 1926. There were produced in 1927, 15,631,240 short tons of stone, and in 1926, 13,103,140 tons, in value, \$16,789,636 for 1927 and \$13,763,207 for 1926. Gypsum production was 474,320 short tons for 1927 and 521,205 tons for 1926, the value of gypsum produced was \$5,041,879 for 1927 and \$5,797,221 for 1926. The shipments of Portland cement from producing factories increased to 9,364,338 barrels in quantity and \$14,028,183 in value for 1928, from 8,727,879 barrels, or \$14,242,901 for 1927. There is a heavy production of sand and gravel. The total value of the mineral product of the State, exclusive of pig iron, was \$228,731,200 for 1927, for 1926, \$255,883,995.

FINANCE. For the year ending Dec. 31, 1929, the State Treasurer reported receipts of \$88,333,100 and disbursements of \$82,837,457, leaving a surplus of \$5,495,643. The surplus, added to the balance of \$18,188,593 outstanding Dec. 31, 1928, increased the balance in the Treasury as of Dec. 31, 1929, to \$23,684,236. Receipts of the principal funds for 1929 were given as follows: general revenue, \$40,948,943; gasoline-tax excise, \$33,524,047; highway, \$10,049,934; World War compensation, \$3,421,496. Disbursements from the same funds were: general revenue, \$36,265,903; gasoline-tax excise, \$13,985,122; highway, \$24,715,375; World War compensation, \$2,975,000. The sum of \$4,270,278 was disbursed from the educational equalization fund, which had receipts of \$1792. The total public indebtedness of the State at the end of 1929 was \$7,501,665, of which all except \$1665 represented the outstanding World War Compensation Fund bonds issued Jan. 1, 1922, in the amount of \$25,000,000.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 8866.52. There were built, in 1929, 29.31 additional miles of first, 6.56 of second, 12.53 of third, and 2.36 of fourth or other track.

MANUFACTURES. At the biennial Census of Manufactures by the U. S. Department of Commerce in 1929, there were in the State, in 1927, 10,961 manufacturing establishments. These employed 444,447 wage earners, whose wages for 1927 totaled \$968,181,165. Materials and supplies used in manufacture cost \$2,877,126,245. The manufactured products attained the total value of \$3,230,323,268.

EDUCATION. As reported by State Director of Education Clifton in the *Journal of the National Education Association* some 500 one-room schools were eliminated in the course of a year by the operation of the State's newly established plan for strengthening weak school districts. The population of school age was estimated at 1,495,780. There were enrolled in the public schools of the State 1,249,612 pupils. Of these 36,441 were in kindergartens, 23,252 in classes for the exceptional, 855,867 in elementary grades, 86,245 in junior high schools, 62,207 in junior-senior high schools, 29,189 in senior high schools and 152,753 in four-year high schools. Expenditures for public-school education in 1928 were: current, \$103,201,730; total including outlays, \$168,353,903. The yearly average of teachers' salaries approximated \$1386.

CHARITIES AND CORRECTIONS. A great number of functions with regard to the dependents and delinquents of the State were exercised in 1929 by the Department of Public Welfare. This department, as reconstituted by the reorganization code of 1921, had at its head a single Director. It administered 21 State institutions, dealt with applications for incorporation of child-welfare agencies, supervised county homes, jails and reformatories, and child-care agencies, performed the placement and guardianship of dependent children, hospitalized child cripples, dealt with applications for pardons and paroles, maintained facilities for identification and investigation of criminals, carried on work for the prevention and cure of blindness, and conducted prison industries. The institutions under its direct care were: State hospitals (mental) at Athens, Cleveland, Columbus, Dayton, Lima, Longview, Massillon, and Toledo, the Ohio Hospital for Epileptics, Institution for the Feeble-minded, Columbus; Insti-

tution for the Feeble-minded, Orient, Ohio State Sanatorium, Ohio Soldiers' and Sailors' Home, Madison Home, Boys' Industrial School; Girls' Industrial School, Ohio Penitentiary, London Prison Farm, Ohio State Reformatory, Ohio Reformatory for Women; Bureau of Juvenile Research. The inmates of all State institutions averaged, for the calendar year 1928, 31,210 in number.

LEGISLATION. The State Legislature met in regular biennial session on January 7 and adjourned on April 16. Among its chief acts was the repeal of the Pence Utility law, which permitted utilities to collect, under bond, increases in rates in advance of final decision of the Utilities Commission on the validity of such increases. In order to reduce the delays that had afforded the reason for the Pence Law there was created in the Utilities Commission a division of investigation. The time before new railroad rates might become effective was increased to 120 days, from 30 days. The Utilities Commission was empowered to make regulations for safety. Railroads were authorized to maintain parallel main tracks in excess of six. The State tax on gasoline was increased to four cents, from three cents. Provision was made for the erection of a new State office building by the imposition of a direct tax levy of two-tenths of a mill on the dollar. In order that cities might meet the expense of pensions for policemen and firemen, they received power to levy up to three mills on the dollar. Separate penalty was imposed on tax delinquencies. The excise tax on premiums of foreign insurance companies was diminished to 2 per cent, from 3.

State aid for weak school districts was appropriated to the extent of \$4,000,000 a year, and the amount taxable per capita of school children needful to the obtaining of such aid was raised to \$4000. The general county school equalization fund was made subject to a method assuring more widespread benefit among school districts. School boards were permitted to employ dentists for the care of the children's teeth. With regard to roads, 20 per cent of the proceeds of the added cent of gasoline tax were earmarked for the improvement of township roads. Assessment of abutting owners for construction of State highways was abolished, save in cases where such owners might of themselves assent. Of the proceeds of the extra cent on gasoline, after provision for township roads, 60 per cent was assigned to State and 10 per cent to county road improvement. Highway speed limits were raised to 45 miles an hour in open country and proportionately elsewhere.

In social legislation, the list of occupational diseases compensable under the workmen's compensation law was somewhat increased, and the Industrial Commission was allowed to employ referees to accelerate the disposal of compensation claims. Firms engaged in salary buying were subjected to the law regulating small loans. The session's appropriations approximated \$135,000,000 for the ensuing two years. State examination of State banks was required twice a year, instead of once. A habitual-criminal act was passed, requiring that third offenders should serve the maximum sentence for the crimes of their last convictions and that fourth offenders should serve for life. The old law, allowing the sale of investment securities which had failed to prevent the placement of certain issues notoriously calamitous to investors in the State, was replaced by a codification, the Herbert Act, designed chiefly to clarify

investment regulations. The act, furthermore, admitted without scrutiny the listed securities of the chief domestic exchanges and those of other recognized classes. In the case of the remainder it required assurance that the issuing company had earned above operating costs for a term of years and that its realty was not mortgaged above two-thirds of appraised value. Full and satisfactory history and prospectus of every such company was likewise required.

The election code was revised by the Herbert-Martin Act, making new provisions against fraud, providing permanent registration in cities of over 16,000 inhabitants combining the dates of State and presidential primaries, rendering it possible to obtain a recount on furnishing a small bond in any precinct, to be refunded if discovered error attained to 3 per cent of the vote, and allowing the use of voting machines in subdivisions of the State. Against Bert B. Buckley, State Treasurer, who had previously been convicted in a Federal court of trying to bribe a Federal Prohibition enforcer, but who had failed to resign his office, impeachment proceedings were started by the Legislature, hastening Buckley's resignation.

POLITICAL AND OTHER EVENTS. A basic change in the fiscal system of the State was brought about by the result of a State-wide referendum vote on November 5. This vote confirmed a resolution of the State General Assembly to amend the State Constitution so as to do away with the provision requiring that all direct taxation of property be at the same rate ad valorem for different sorts of property. In its stead was inserted a provision that no property might be directly taxed in excess of 1½ per cent of its value for State and local purposes, save by a majority vote in localities, in certain cases. The effect of this change was to render it possible to vary the tax rate, up to 1½ per cent, for different classes of property, and especially, as was expected, to make it more feasible to tax intangibles. The municipal elections yielded Democratic gains on the councils of several of the chief cities. In Cleveland the Republican majority among the councilmen was much reduced. At a special poll held on August 20, Cleveland had voted for the retention of government by city manager. Columbus voted on August 13 against proposals to ratify an ordinance setting the gas rate at 53 cents, to remove trees from Broad Street, and to extend local taxation by an amendment of the charter.

United States Senator Theodore E. Burton having died in office, Governor Cooper appointed Roscoe C. McCulloch of Canton, Republican and chairman of the State Utilities Commission to serve until March, 1931. The State Treasurer, Bert B. Buckley, was tried in a Federal court in January on a charge of conspiracy to bribe a Federal officer in activities connected with the protection of a Cincinnati brewery. He was convicted and was sentenced on March 13 to two years, six months, and one day in prison. In advance of a movement to impeach him, he had resigned his State office.

The Ohio statute permitting cities to condemn land in excess of the amount requisite to a public improvement, a typical excess-condemnation statute, was held invalid by the United States Circuit Court of Appeals in a decision rendered in October in a case affecting Cincinnati. A Federal Master Commissioner rendered on July 19 a report in the action of several Columbus National banks, recommending that the county treasurer

be enjoined from collecting taxes on the banks' stocks and holding levies of this sort, which produced about \$2,000,000 a year in the several taxation districts, invalid. Governor Cooper directed during the spring a campaign of prosecutions against betting at dog races.

On October 22, President Hoover at Cincinnati dedicated the completed deep waterway system of the Ohio River, a Federal improvement providing a 9-foot channel from Pittsburgh down to the junction with the Mississippi at Cairo, interspersed with some 50 locks and dams and costing about \$125,000,000. The building of a new State institution for the feeble-minded at Apple Creek started in August. Governor Cooper undertook in September to hasten by conferences with rural county authorities the abandonment of the old-type one-room schoolhouses, of which there still remained about 4700 in the State.

In Cleveland the city government gained a point in its rate-making conflict with the East Ohio Gas Company, in a decision of the Cuyahoga County Court of Appeals sustaining the Miller Act, under which the utility company must obtain consent of the State Utilities Commission before it could cease its service. A grand jury in Cleveland started in January the investigation of charges of corruption against city officials and found indictments against three councilmen, of whom one pleaded guilty and another was convicted. On May 15 at the Cleveland Clinic occurred one of the year's great fatalities. A store of old X-ray films in a brick room near the furnace caught fire, spontaneously or from overheating due to a leaky steampipe, and deflagrated, flooding a part of the building with fumes produced by nitrogen dioxide, possibly mixed with bromine. Persons within were overcome, and also many of those who rushed in to aid them, 124 lives were lost.

At Columbus the opening of a municipal airport and of service by the Transcontinental Air Transport, Inc., was marked by ceremonies starting July 7. The cost of the airport was stated to be \$900,000. A union bus station to accommodate the vehicles of 12 bus companies was projected, to be situated on East Town Street. The Mayor of Dover, Peter J. Groh, charged with violation of the Federal Prohibition law, was removed from office by Governor Cooper, but was later acquitted, the charges against him being dismissed in a Federal Court.

OFFICERS. Governor, Myers Y. Cooper, Lieutenant-Governor, John T. Brown, Secretary of State, Clarence J. Brown, Treasurer, H. Ross Ake, Auditor, Joseph T. Tracy, Attorney-General, Gilbert Bettman, Director of Education, J. L. Clifton.

JUDICIARY. Supreme Court: Chief Justice, Carrington T. Marshall, Associate Justices, Reynolds R. Kinkade, James E. Robinson, Thomas Jones, Edward S. Matthias, Robert H. Day, Florence E. Allen.

OHIO RIVER CANALIZATION. See CANALS.

OHIO RIVER CELEBRATION. See CELEBRATIONS.

OHIO STATE UNIVERSITY. A State institution for the higher education of men and women in Columbus, Ohio, founded in 1870. The enrollment for the autumn term of 1929 totaled 10,656, distributed as follows: Graduate school, 984; agriculture, 831; applied optics, 29; liberal arts, 2182; arts-education, 97; commerce and

administration, 1977; dentistry, 233; education, 1707; engineering, 1635; law, 307; medicine, 304, nursing, 74, pharmacy, 175, veterinary medicine, 120 There were, in addition, 3871 students registered in the summer quarter of 1929 The faculty numbered 958, an increase of 75 over 1928. The endowment amounted to \$1,163,033 The total income for the year was \$7,998,230, while the total expenditures were \$7,900,771. The university also had current assets amounting to \$5,718,163, and the buildings and equipment were valued at \$17,188,011 The library contained 350,000 volumes. President, George W. Rightmire, LL.D.

OHIO NORTHERN UNIVERSITY. An institution for the higher education of men and women in Ada, Ohio, founded in 1871 and under the direction of the Methodist Episcopal Church. It consists of the George Franklin and Sarah Catherine Getty College of Liberal Arts, the Warren G. Harding College of Law, the A. D. Juilliard College of Music, colleges of education, engineering, and pharmacy, school of commerce, and departments of expression, fine arts, and physical education. In the autumn of 1929 there were 1173 students registered and in the summer school, 453 The faculty had 62 members. The productive funds of the institution amounted to \$450,114, and the income for the year was \$226,847. There were 15,000 volumes in the library. Acting president, Robert Williams, A.M., D.D.

OHIO UNIVERSITY. A State institution for the higher education of men and women in Athens, Ohio, founded in 1804. The student enrollment for the autumn term of 1929 was 2330, of whom 1180 (845 men and 335 women) were in the college of liberal arts and 1150 (351 men and 799 women) in the college of education. In the liberal arts college, the students were distributed as follows: Seniors, 155, juniors, 207; sophomores, 264, freshmen, 491, specials, 11, special music students, 44, graduate students, 8. The distribution in the college of education was as follows: Seniors, 141, juniors, 168, sophomores, 307, freshmen, 528; specials, 1, graduate students, 5. Of the registration of 1339 students in the 1929 summer session 355 were men and 984 women. The faculty numbered 224. The library contained 63,000 bound volumes. President, Elmer Burritt Bryan, LL.D., LL.D.

OHIO WESLEYAN UNIVERSITY. An institution for the higher education of men and women in Delaware, Ohio, under the control of the Methodist Episcopal Church, founded in 1844. For the autumn semester of 1929 the total enrollment was 1828, distributed as follows: Seniors, 248, juniors, 384, sophomores, 494, freshmen, 615, special students, 15, music, 18, art, 15, graduate students, 39. The faculty numbered 161. The productive endowment of the university amounted to \$3,100,000 and the income for the year 1928-29 to \$659,978. The library contained more than 123,000 volumes. President, Edmund D. Soper, D.D., LL.D.

OIL. See CHEMISTRY, INDUSTRIAL, PETROLEUM **OIL ENGINES.** See INTERNAL-COMBUSTION ENGINES

OKLAHOMA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,028,283. The estimated population on July 1, 1928, was 2,426,000. The capital is Oklahoma City.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929

Crop	Year	Acreage	Prod. Bu.	Value
Cotton	1929	4,492,000	1,200,000 *	\$94,300,000
	1928	4,243,000	1,205,000 *	103,630,000
Corn	1929	8,020,000	48,320,000	38,173,000
	1928	8,080,000	70,150,000 *	47,702,000
Wheat	1929	4,236,000	44,478,000	44,038,000
	1928	4,413,000	59,576,000	59,576,000
Grain sorghum	1929	1,884,000	20,483,000	13,314,000
	1928	1,709,000	80,762,000	19,072,000
Hay	1929	1,224,000	1,364,000 *	15,686,000
	1928	1,068,000	1,335,000 *	14,027,000
Oats	1929	792,000	20,592,000	8,864,000
	1928	890,000	28,140,000	10,876,000
Potatoes	1929	44,000	3,294,000	4,282,000
	1928	68,000	5,038,000	3,778,000
Sweet potatoes	1929	15,000	990,000	1,138,000
	1928	20,000	1,780,000	1,691,000

* Bales * Tons

MINERAL PRODUCTION. Oklahoma was one of the States in which the production of petroleum was sharply reduced in 1928, to some extent through efforts to check wasteful exploitation. In consequence, the position of the State as a petroleum producer fell from first place among the States for 1927, to second place, Texas taking the first rank, as to quantity. In estimated value of its petroleum product for the year, however, Oklahoma retained the lead in 1928, by virtue of an average price in excess of that for Texas. The quantity of petroleum produced in the State fell to 249,558,000 barrels for 1928, from 277,775,000 for 1927, the value fell to \$347,100,000, for 1928 (estimated), from \$397,200,000. Second in importance, the production of natural gas, for 1927 (the latest reported year), attained the quantity of 326,864,000 M cubic feet and the value of \$41,391,000, for 1926, of 286,421,000 M feet and \$42,140,000. There were manufactured from natural gas 616,300,000 gallons of gasoline in 1928 and 548,109,000 in 1927, in value, \$40,550,000 for 1928 (estimated) and \$29,114,000 for 1927. Despite heavy production of other fuels the State continued its production of coal, which attained 8,501,325 short tons for 1928, as against 3,818,054 tons, in value, \$10,305,000 for 1928 and \$11,570,000, for 1927. Zinc production fell to 180,252 short tons for 1928, from 206,611 for 1927, its value was \$21,990,774 for 1928 and \$26,446,208 for 1927. Lead mined attained 43,687 short tons for 1928, and 51,680 for 1927, in value, \$5,067,692 for 1928 and \$6,511,680 for 1927. Gypsum was produced in 1927 to the value of \$2,073,994, in 1928 to that of \$2,301,049. The value of the State's mineral product, duplications excepted, was \$524,591,732 for 1927, for 1926, \$569,518,693.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 6018.41. There were built, in 1929, 85.90 miles of first and 3.10 of second track.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and dealing with the operations of 1927, there were in the State in 1927, 1373 manufacturing establishments. These employed 27,932 wage earners, whose wages for the year totaled \$35,785,266. Materials and supplies used in production cost \$269,418,221. Manufactured products attained the combined value of \$371,718,409.

EDUCATION. The county certification of teachers was brought to an end, and in its place was established a system for the certification of teachers throughout the State by the single authority of

the State Board of Education. This change did away with the diversity of requirements that had been possible under the old system, under which over four hundred separate bodies had held power to issue certificates. The number of persons of school age in the State in the academic year 1927-28, stated as having been found by enumeration, was 740,379 between the ages of 6 and 21 years. There were enrolled in the public schools 682,259 pupils. Of these, 588,038 were in elementary and 94,221 in high-school grades. Salaries of teachers averaged, by the year, \$830 in the elementary and \$1131 in the high schools.

CHARITIES AND CORRECTIONS The central organization of the State dealing with institutionalized persons, as operating in 1929, was twofold. An elected Commissioner of Charities and Corrections, with a small yearly budget, performed duties of investigating public charities and corrections throughout the State and dealt with all institutions deriving their support from the State or one of its subdivisions in any part. A State Board of Public Affairs administered the chief of the State institutions. This board consisted of two appointive members. In addition to directing institutions this board had charge of building construction, not only for such institutions but for a number of the other State departments. The institutions under its control, with their populations (average or on specific dates in 1929), were State Penitentiary, McAlester, 2937; State Reformatory, Granite, 843; Central Oklahoma Hospital (insane), Norman, 1843; Eastern Oklahoma Hospital (insane), Vinita, 1593; Western Oklahoma Hospital (insane), at Supply, 860; State Training School (boys), Pauls Valley, 220; State Industrial School for Girls, Tecumseh, 234; Whitaker State Orphans' Home, Pryor, 271; West Oklahoma Home (orphans'), Helena, 216; Institute for the Feeble-minded, Enid, 630; State Training School for Negro Boys, Boley, 105; Deaf, Blind and Orphans' Home for Colored Children, Taft, 317; State Training School for Negro Girls, Taft, 35; A State School for the Blind, at Muskogee, and a State School for the Deaf, at Sulphur, were administered by the State board of Education.

LEGISLATION The regular biennial session of the State Legislature convened on January 8 and adjourned March 30. It devoted its attention to carrying out the majority group's purpose to oust Governor Henry S. Johnston, to the exclusion of progress in almost all other business. The same group that had unsuccessfully tried in 1927 to convene the Legislature of its members' own motion for impeachment purposes controlled the new Legislature. The anti-Johnston and anti-Klan Democrats formed a coalition with the chief part of the Republican minority and a committee of the Lower House was created on the opening day to investigate the conduct of the State's departments. The House of Representatives, following the report of this committee, voted impeachment on 10 charges, and presented the impeachment to the Senate on January 21. The Senate on the following day suspended the Governor by an overwhelming vote. The charges, which were of great variety, included illegal diversion of State funds to the State Banking Department and to the Issues Board, illegal employment of an under-cover man in the bureau of criminal investigation and a charge of general incompetence. The Senate sat as a court and on March 20 found against Johnston on the sole charge of general incompetence, thus automati-

cally removing him from office. This charge had to do chiefly with allegations that Johnston had submitted to undue influence on the part of his private secretary, Miss O. O. Hammonds, and that he had been swayed in his acts by astrological beliefs, a charge that he testified had no basis but a remark made in plesantry to a group of newspaper men. Some officials who had supported the Governor were likewise impeached, one of them, Justice J. W. Clark of the State Supreme Court was subsequently acquitted. The State Legislature adjourned its session after the impeachment proceedings against the Governor had ended.

Governor Holloway, who had succeeded Johnston, called a special session, which convened on May 16 and adjourned on July 5. It enacted a number of measures of importance. One of these was a run-off primary act providing that in case neither of the leading candidates in a State primary should receive a full majority of the party vote a second primary should be held to choose between these two a fortnight later. As a means to rid the State of toll bridges an act was passed giving the State Highway Commission power to purchase toll bridges and, in case the owners would not sell, power to bring condemnation proceedings. Moneys of the State's highway construction and maintenance funds were made available for such purchases. Inter-State bridges as well as those within the State were made subject to purchase. An increase of salaries to elected State officials, carrying the pay of the Governor to \$12,500 a year and those of Supreme Court judges to \$9000, was voted. Institutional and departmental salaries finally approved totaled \$27,982. The Legislature voted in favor of popular ratification of constitutional amendments. Amendments were passed to put the State agricultural schools under a board of regents and to put the State university under regents' control.

POLITICAL AND OTHER EVENTS Governor Johnston having been impeached and convicted (see *Legislation*, above), he was automatically removed from office, and Lieutenant Governor William J. Holloway became Governor on March 20. He worked in harmony with the legislative majority in the ensuing special session. A commissioner appointed by the United States Supreme Court to locate the boundary between Oklahoma and Texas along the 100th meridian rendered on July 15 a report according disputed territory to Texas. Its expected effect was to transfer to Texas about 28,500 acres of land previously under Oklahoma's jurisdiction. The Court deferred giving its decree on the boundary suit of the two States, with a view to their arriving at a settlement out of court. Efforts were made in Oklahoma to acquire the territory from Texas. As Texas territory had never been part of the Federal public domain, and as the settlers in the disputed strip held their title through Federal grants, they ran risk of losing title if their land became part of Texas. Committees of the Legislatures of the two States conferred on the subject. The Texas committee apparently was not averse to a sale of Texas's claim, but expressed doubt of the Legislature's constitutional power to part with the State's territory.

A conflict of authority between the State Supreme Court and its Court of Criminal Appeals, arising out of the criminal prosecution of O. O. Owens, a Tulsa oil man, was submitted in August to the Federal Circuit Court of Appeals. The State law placing all cotton gins under the regulation of the State Corporation Commission was

declared invalid on July 30 by a Federal Court decision. Sentence of death was passed on a 17-year-old youth on October 19 in the Tulsa District Court, for robbery with firearms, in accordance with the severe State law permitting such sentence even though no murder had been committed.

The State Highway Commission initiated work in its task of doing away with toll bridges by starting in July with plans for a free highway bridge across the South Canadian River between Purrell and Lexington. The effort at voluntary restriction of petroleum production in the State came to grief in the spring. Producers voted on May 9 to end the State-wide proration, which the State Corporation Commission had carried on, by consent, at the total of 650,000 barrels a day. The production thereafter rose until it approached 750,000 barrels. In August the producers of the Oklahoma City field agreed to a temporary shutdown necessitated by overproduction. A number of highly productive oil and natural-gas wells had been driven in the neighborhood of the city earlier in the year. A conduit to convey more water from Lake Overholser to Oklahoma City was finished in August, with a capacity of about 20,000,000 gallons a day.

OFFICERS Governor, Henry S. Johnston (impeached and removed), succeeded by W. J. Holloway; Lieutenant-Governor (later Governor), W. J. Holloway; Secretary of State, Graves Leeper; State Auditor, A. S. J. Shaw; Attorney-General, F. D. Dabney (resigned and was succeeded, September 23, by E. Berry King); State Treasurer, R. A. Sneed; Superintendent of Public Instruction, John S. Vaughan; State Examiner and Inspector, John Rogers.

JUDICIARY Supreme Court Justices: Charles W. Munson, E. F. Lester, James B. Cullison, Charles Swindall, Robert A. Heffner, Albert C. Hunt, Thomas G. Andrews, J. W. Clark, Fletcher Riley.

OKLAHOMA, UNIVERSITY OF A State institution for the higher education of men and women in Norman, Okla., founded in 1890. The enrollment for the autumn of 1929 totaled 5112, of whom 3341 were men and 1771, women. These were distributed as follows: Graduate school, 230; arts and sciences, 2108; business, 603; education, 144; engineering, 910; fine arts, 380; law, 295; medicine, 224; nursing, 100; and pharmacy, 119. For the summer session of 1929, 2058 students were registered. There were 392 faculty members. The productive funds of the university amounted to \$3,200,000, and the income for 1929-30 was \$2,003,620. The library contained 110,000 volumes. President, William Bennett Bizzell, Ph.D., LL.D.

OLCOTT, Oskot, EBEN ERSKINE An American mining engineer and capitalist, died June 5, 1929, in New York City, where he was born Mar. 11, 1851, and was graduated in 1874 from the Columbia University School of Mines. He practiced as a mining and metallurgical engineer in the Western States, in Mexico, and in South America. He later became president of the Hudson River Day Line and of the Mary Powell Steamboat Company of New York, and organized and promoted the Hudson-Fulton celebration of 1909.

OLD-AGE PENSIONS. Just as workmen's compensation legislation and widows' pensions have swept the United States since the World War decade, there were unmistakable indications pointing to similar action for the guarantee of old-age security. The increase of longevity, the

rapid mechanization of the entire industrial civilization leading to technological unemployment, the growth of industrial mergers with the resulting increase in "white-collar" unemployment, the low birth rate making the support of the superannuated a greater burden on fewer children, all were contributing to keep the subject constantly before the public attention. The half-hearted attempts of philanthropic organizations to retain the problem of the dependent aged as a private charity have won few supporters. Social workers confidently expected that New York State, which has taken leadership among the States of the Union in the passage of welfare laws, ere long would write an old-age pension bill on its statute books. With such an entering wedge, it was difficult to see how the other States could fail to capitulate.

The legislative year 1929 saw the presentation of 50 old-age security bills before 27 State legislatures. In New York State alone, 10 bills were introduced. The results of these attempts were the following: The enactment of laws in the States of California, Minnesota, Wyoming, and Utah, increasing the total roll of States to 10. In several States, measures were defeated only by the closest margins. In such important States as Illinois, New Jersey, Texas, Washington, Nebraska, and Delaware, bills passed one House of the Legislature. In New York State, as a result of the action urged by Governor Roosevelt and Governor Lehman, the Legislature created a commission for the purpose of bringing in a report to the 1930 Legislature. The Maryland Legislature authorized a commission to study the State's poorhouses. The California bill passed the State Senate unanimously and met with but one dissenting vote in the Lower House.

According to the American Association for Old Age Security, California's law is the soundest measure yet adopted by an American State. The law is a mandatory one. The maximum pension is fixed at \$30 a month. Administration is to be handled by the county and city boards of supervisors, with a State bureau in the Department of Welfare created for the purpose of providing uniform and adequate supervision. The law further specifies that the State Department of Welfare "shall follow the policy of giving the aid provided for under the Act to each and every applicant in his own, or some other suitable home, in preference to placing him in an institution." The law requires that the applicant for pensions be 70 years of age, a citizen of the United States for 15 years and a resident of California for the same period. Applicants must not have children able to support them. Like Canadian schemes, the cost of the plan is to be shared equally between the State and the cities and counties. In Wyoming and Utah, the pensionable age is set at 65, while in Minnesota it is to be 70 years. In Minnesota and Wyoming, the maximum pension is \$30 a month; in Utah, it is limited to \$25. In these three States, as in California, the plan is on a county basis. It is to be noted that adoption is mandatory on the counties in Utah and Wyoming, as well as in California.

PRESENT EXPERIENCES. It may be well at this point to review the progress of old-age pension systems in this country. At the close of 1928, old-age-pension laws were in effect in six States, i.e., Colorado, Kentucky, Maryland, Montana, Nevada, and Wisconsin, and also in the territory of

Alaska. In all six States, the system was based upon optional acceptance by the county and the total costs (except in Wisconsin) were to be borne by the counties themselves. In Wisconsin, one-third of the cost of the plan was to be borne by the State. The Bureau of Labor Statistics in 1928 attempted to ascertain to what extent the counties of the six States in question were seeking to establish old-age-pension systems. It circularized the 351 counties of these six States and received reports from 262. It was ascertained that of these 262 counties only 52 reported the adoption of pension systems.

In Montana (law passed in 1923), 42 of the 56 counties in the State reported pension systems. In Colorado (law adopted 1927), one of the 63 counties had inaugurated a scheme. In Kentucky (law passed 1926), three of the 120 counties reported a pension scheme. In Maryland (law passed 1927), none of the 4 counties reported a system. In Nevada (law adopted 1925), two of the 17 counties reported systems. In Wisconsin (law adopted 1925), four of the 71 counties reported pension plans. In these 52 counties, there was a total of 1003 persons receiving pensions. The average pension per month was \$17.37 and ranged from \$10 a month in the one county of Colorado to \$19.20 per month in Wisconsin. The total cost per year in the five States granting pensions was \$208,624. Wisconsin's grants totaled \$66,185, while Colorado's grants totaled \$120 for one pensioner.

The experiences of Wisconsin may be detailed at greater length. Of the 295 persons on the county pension rolls in 1927, 178 were men and 117, women, 164 had lost husband or wife, 84 were married, 31 were single, 9 were separated from husband or wife, and seven were divorced. The ages of the pensioners ranged from 70 to 94 years, 75 per cent being between 70 and 80 years. Approximately 60 per cent were native-born Americans. The following statement shows the cause of dependency of the pensioners: old age, 159 persons, disease, 21, crippled, 18, deformity or loss of limbs, 17, partial disability, 10, total disability, 8, blindness, 2, deaf and dumb, 1, other, 21, not reported, 38.

NEW YORK. The New York Commission for Old Age Security, created by the New York Legislature as a result of a consistent agitation carried on before the people of the State by Governor Roosevelt and Lieutenant-Governor Lehman, began to hold hearings in September, 1929. Testimony before the Board was unanimous in approving the creation of some scheme for the purpose of providing for old-age dependents. The representative of the National Industrial Conference Board (a manufacturers' association) showed that a canvass of leading manufacturers of the State indicated a change of mind and that provision for old-age care was no longer being looked upon as socialistic or paternalistic. The experience of the philanthropic organizations was significant. The representative of one of the leading New York family-welfare societies declared that his association was spending approximately \$250,000 annually for the care of 450 to 500 aged persons. Over \$100,000 was being paid out in monthly allowances to old people in their own homes. On the other hand, the association showed that institutional care in its own Home for the aged averaged \$1100 a year per person. He went on to say that about 600 aged persons are now on the waiting lists of New York

homes for the aged and that apparently no places would be available for these in the near future.

The testimony of Abraham Epstein, secretary of the American Association for Old Age Security, and the leading American expert on the subject, placed the probable annual expense for a New York State old-age-pension system at about \$10,000,000. He estimated that there were approximately 35,000 persons in the State who would qualify under the old-age-pension law. Mr. Epstein went on record as believing that neither bank savings nor private insurance adequately can cope with the problem. He quoted figures to prove that workers' savings have actually decreased since pre-war days. He was critical of the value of industrial-insurance policies. He was authority for the statement that annually eight to nine times as many industrial insurance policies are permitted to lapse as are actually paid out in legitimate claims. The value of these lapsed policies amounts to 13 to 14 times as much as the sums paid out in claims. Mr. Epstein also pointed out that the inauguration of a pension scheme would go a long way in eliminating present restrictions against the employment of middle-aged persons.

It was generally agreed by authorities that the inauguration of private pension schemes by manufacturers had been one of the important factors in producing middle-aged unemployment. Other experts to testify before the commission were Dr. I. M. Rubinow, a social insurance expert, William F. O'Connell, Welfare Council of New York City, and Commissioner E. S. H. Winn, chairman of the British Columbia Workmen's Compensation Board. The commission adjourned its hearings in New York City and then moved to Buffalo for the purpose of obtaining testimony in the northern counties.

It was the plan of the commission to submit a report to be placed before the 1930 Legislature. The chairman of the commission was Senator Seabury C. Mastick, Dr. Luther Gulick was appointed executive secretary and placed in charge of the commission's research work.

EUROPEAN COUNTRIES. In Czechoslovakia, a number of amendments were made to the Social Insurance Act of 1924. All wage earners are to be compulsorily insured against sickness, invalidity, old age, and death. The waiting period for invalidity, old age, and death benefits has been reduced from 150 to 100 weeks, and the basic pension also has been raised. Widows' pensions have been improved to allow the grant of pensions to widows with two or more dependent children under 17 years.

In Finland, the 1928 Parliament passed a compulsory insurance bill for protection against old age and death for all citizens over 21 years. The scheme was to be a contributory one and provides for contributions from the insured persons, the State, and local authorities. The population is divided into five income classes and contributions are to vary with income. The pensionable age is 65 years. The fund is to be administered by the Ministry of Social Affairs.

Word came from Germany that the German Social Insurance System was undergoing constant expansion. During 1928 the income derived from the invalidity and old-age-insurance fund increased by 200,000,000 marks and reached a total of a little more than a billion marks. Some notion of the great growth of the German system may be obtained from the following figures. The income

contributions to the workers' invalidity and old-age-insurance funds in 1913 amounted to 290,000,000 marks, by 1928 these contributions had risen to 1,075,000,000 marks. During the same 15-year period, the total contributions to the various social-insurance funds in Germany increased from 1,312,700,000 to 3,865,000,000 marks.

The Labor Party in Great Britain, in one of its campaign pledges prior to the general election, promised the electorate that it would enforce amendments in the insurance old-age-pension law. Among the reforms that it advocated were the following: an increase of pensions for men and women employed in the coal-mining industry. This was due to the fact that there were approximately 135,000 persons still unemployed in the British coal mines. It also called for the reduction of the retirement age to 60 years from the existing 65-year minimum.

In Poland, the government presented a bill calling for the extension of insurance against invalidity, old age, and death to all Polish territory. It was expected that the new bill would cover from four to five million persons. It was expected that the worker's contribution would amount to 12 per cent of the wages received.

Further changes were incorporated in the now very liberal pension schemes on the Statute books of Russia. New amendments provided for the retirement at half-pay of all workers reaching the age of 60 who had been employed for at least 25 years. In dangerous occupations, e.g., mining, the age limit was fixed at 50 years, in the case of women, the retiring age was to be 55. In the beginning, the pension system was to apply only to workers in the mining, metal, textile, and transport industries.

By a decree issued March 22, 1929, Spain saw established a system of maternity insurance for those women workers who came under the operations of the Old Age Pension Insurance Act. The fund was to be made up of contributions from the insured women, an equal amount paid by employers, state subsidy, and contributions from the municipal authorities.

The Swiss Government took initial steps in 1929 to provide the country with a Federal pension scheme. While some of the cantons had been paying old-age pensions for a number of years, the country as a whole was without this type of protection. The bill to be presented to the Swiss Parliament called for a compulsory-insurance scheme against old age and death. The main provisions of the bill were as follows: Insurance against old age and death was to be compulsory for all persons between the ages of 19 and 65. The fund was to be built up from annual contributions from the insured persons, then employers, and from the cantons and the Federal Government. The pensionable age was to be 60 years. Orphans' pensions were to be payable up to the age of 18. The fund was to be administered by the Federal insurance administration, and the Government planned to set aside the proceeds of the taxes on tobacco and spirits for the building up of the fund.

British Columbia (Canada) reported that, during the twenty months of the administration of its Old-age Pensions Act, there had been filed 5063 applications for pensions and of these 3935 had been granted. More than 50 per cent of all the residents in the province over 70 years of age had applied for pensions. Administrative costs

were relatively low, amounting in 1928 to 155 per cent of the total pensions. See LABOR LEGISLATION.

OLD-TESTAMENT ARCHAEOLOGY. See ARCHAEOLOGY

OMAN. An independent Moslem state in southeastern Arabia, extending for about 1000 miles along the southern coast of the Gulf of Oman, guaranteed in its integrity by Great Britain and France. Area, about 82,000 square miles, population estimated at 500,000, chiefly Arabs, but with a considerable Negro element along the coast. The capital, Muscat, and the neighboring town of Matrah, have a combined population of about 20,000 made up almost entirely of Negroes and Baluchis Imports, which consist chiefly of rice, coffee, and cotton piece goods, and exports, which comprise dates, dried limes, pomegranates, and dried fish, are exchanged principally with India. In 1927-28 imports were valued at £370,659 and exports at £148,285. The reigning Sultan in 1929 was Seyyid Taimur bin Feisal, who succeeded his father Oct. 5, 1913. See ARABIA.

ONTARIO. The second province in size of the Dominion of Canada (after Quebec), situated between Quebec on the east and Manitoba on the west. Area, 407,262 square miles, population according to the census of 1921, 2,933,662, estimated in 1929, 3,271,300. The capital is Toronto, with a population in 1921 of 521,893, estimated in 1928, 569,899, excluding suburbs. Other large cities: Ottawa (capital of the Dominion), 121,000; Hamilton, 127,447; London, 66,132. In 1927-28 there were 7150 elementary schools and 431 secondary schools, attended by 725,085 pupils, and taught by 19,517 certified teachers.

Agriculture is the chief occupation of the province. The land under cultivation was estimated at 14,000,000 acres. The total estimated value of agricultural products in 1927 was \$506,604,000, including field crops, \$255,900,000, dairy products, \$103,185,000, farm animals, \$72,896,000, poultry and eggs, \$41,296,000, fruits and vegetables, \$18,344,000. In 1927 the gross agricultural wealth was estimated at \$2,261,678,000, including farm lands, \$808,124,000, buildings, \$491,330,000, implements and machinery, \$169,954,000, livestock, \$261,673,000, poultry, \$22,005,000, and animals on fur farms, \$1,988,000. Mineral production of the province in 1929 was estimated at \$110,000,000, or 10 per cent more than in 1928.

Ontario has 240,000 square miles of forest lands. In 1927 there were 9512 manufacturing establishments, with a capital of \$2,134,181,377, which employed 296,031 workers and produced goods to the value of \$1,758,005,575. In the same year there were about 11,000 miles of railway line. The Ontario Publicity Bureau estimated that 2,500,000 tourists, mostly from the United States, visited the province in 1929. Their expenditures were estimated at \$150,000,000 as compared with about \$103,000,000 in 1928.

The executive power is vested in a lieutenant-governor, appointed for five years, by the Governor-General of Canada, and a responsible ministry, legislative power is in a single chamber of 112 members, elected for four years. Women have the franchise and the right to election to the chamber. Ontario is represented in the Dominion Senate by 24 members and in the House of Commons by 82. Lieutenant-Governor in 1929, W. D. Ross, Prime Minister and President of the Council, G. H. Howard, Attorney-General, W. H. Price, Minister of Education, J. D. Monteith,

Secretary and Registrar, L. Goldie; Education, G. Howard Ferguson; Agriculture, J. S. Martin; Public Works, H. H. Henry; G. S. Henry, Lands and Forests, W. H. Kinney; Mines, Charles McCrea; Labor and Health, Dr. Forbes Godfrey; Ministers without Portfolio, R. J. Cooke, Edward A. Dunlop, and Frederick T. Syme.

Prohibition was the "hot" issue in the election of Oct. 30, 1921, and the conservative government's programme of government control and sale of liquor was overwhelmingly approved. The Progressives, who demanded honesty legislation, lost eight of their 11 seats in the provincial parliament, while the Liberals, who favored a plebiscite on the question whenever a demand for a change should become manifest, lost 18 of the 21 seats formerly held. The Conservatives increased their parliamentary representation from 77 to 99 members. They initiated government control and sale of liquor following their victory in the election of 1926. The members of the Ferguson Cabinet were all reelected. See CANADA.

OPERA. See MUSIC.

OPTANTS. See HUNGARY under History.

OPTICS. See PHYSICS.

ORANGE FREE STATE. A province of the Union of South Africa Capital, Bloemfontein. See SOUTH AFRICA, UNION OF.

ORANGES. See HORTICULTURE.

ORCHESTRAS. See MUSIC.

ORDNANCE. See MILITARY PROGRESS.

ORE DEPOSITS. See GEOLOGY.

ORE DRESSING. See METALLURGY.

OREGON. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 783,389. The estimated population on July 1, 1928, was 902,000. The capital is Salem.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Wheat	1929	1,058,000	23,114,000	\$25,554,000
	1928	1,027,000	23,318,000	24,083,000
Hay	1929	1,166,000	2,217,000 *	11,381,000
	1928	1,140,000	2,323,000 *	26,446,000
Oats	1929	304,000	12,464,000	6,980,000
	1928	304,000	10,944,000	5,581,000
Apples	1929		4,000,000	4,400,000
	1928		7,600,000	6,940,000
Potatoes	1929	42,000	3,780,000	5,292,000
	1928	52,000	6,240,000	4,368,000
Hops	1929	17,000	18,445,000 *	2,213,000
	1928	17,000	17,000,000 *	3,400,000
Corn	1929	86,000	3,010,000	2,950,000
	1928	82,000	2,952,000	2,952,000
Barley	1929	116,000	4,292,000	3,105,000
	1928	105,000	3,675,000	2,646,000

* Tons * Pounds

MINERAL PRODUCTION. Stone, sand, and gravel furnished not far from one-half of the total value of minerals produced in the State in 1927, as in immediately previous years. The stone production of 1927 was 1,863,830 short tons, as against 2,139,910 tons for 1926, in value it was \$1,051,631 for 1927 and \$2,152,512 for 1926. In metal mining the production of no metal attained important magnitude. That of gold, which led, was 10,931 fine ounces, or \$225,968, for 1928, and marked a decrease of 26 per cent from 14,076 ounces, or \$303,383, of 1927. The chief loss was in yield of placer gold. The combined silver, copper, and lead produced in the State in 1928 was \$70,478, of which copper contributed \$51,619. A small

quantity of platinum, in 1927, 25 ounces, in value \$2432, was produced. The yield of mercury in 1927 was 2082 flasks, with a value of \$242,761. The value of the clay products of 1927 totaled \$656,503. Coal mining is maintained on a minor scale. The total value of the mineral product of the State, duplications eliminated, was \$6,821,224 for 1927; for 1926, \$6,941,355.

The total value of gold, silver, copper, and lead produced from ore sold or treated in Oregon in 1929 was about \$529,000. There were increases in the output and value of all four metals, gold and copper showing the largest gains. Production came mostly from gold and copper operations in southwestern Oregon. The gold yield of 1929 was about 18,400 ounces, valued at about \$380,300. Its increase was partly due to the resumption of dredging by the Superior Leasing Co. in Baker County.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 3416.27. These were built, in 1929, 1996 miles of additional first track.

MANUFACTURES. According to the Federal biennial Census of Manufactures published by the Department of Commerce in 1929 and dealing with operations of 1927, there were in the State, in 1927, 1779 manufacturing establishments. These employed 61,401 wage earners, whose wages for the year totaled \$75,716,972. Materials and supplies used in production cost \$187,771,163. Manufactured products attained the combined value of \$342,852,371.

EDUCATION. Through a conference of high-school principals there was established a scheme of uniform records, grading and high-school standards. The population of school age in 1929 was estimated at 256,885. There were enrolled in the public schools 199,516 pupils. Of these, 157,088 were in elementary and 42,428 in high-school grades. The expenditures for public-school education in 1926, the latest year for which figures had been assembled, totaled \$23,500,000. The monthly salaries of teachers in the academic year 1927-28 averaged \$170.25 for men and \$127.91 for women.

CHARITIES AND CORRECTIONS. The State Board of Control exercises the central authority over a system of State institutions for the care of certain of the sick, and the delinquent, the blind, the deaf, the feeble-minded, and the dependent veteran soldiers. The board, as created by statute of 1913, consists of the Governor, the Secretary of State, and the State Treasurer. It appoints executive heads from the several institutions and makes the institutions' purchases legally, though not strictly in practice, the Governor has sole direction of the State Penitentiary. The Board has visitatorial power over a number of State-aided institutions. The State institutions proper, under its own control in 1929, were Oregon State Hospital (mental), Salem, Eastern Oregon State Hospital (mental), Pendleton, State Institution for the Feeble-minded, Salem, Oregon State School (delinquent boys), Salem, and the State Tuberculosis Hospital, Salem, State School for the Blind, and State School for the Deaf, Salem, State Industrial School for Girls, Salem; State Soldiers' Home, Roseburg, Oregon Employment Institution for the Blind, Portland.

LEGISLATION. The State Legislature held its regular biennial session convening in January. It enacted a new amendment of the prohibition law, designed to render the possession of liquor a misdemeanor punishable by a fine of not more

than \$500 for the first offense. By an error in drafting the measure was made to set the \$500 fine as a minimum, no maximum being fixed, and the law was in consequence contested later on the ground of unconstitutionality. An excise tax was placed on the net income of banks, including building and loan associations, in the proportion of 5 per cent of such income. No exception was made for income derived from tax-exempt securities. A Board of Higher Education was created to administer the University of Oregon, the State Agricultural College, and the three State normal schools, with a view to eliminating duplicate courses and departments and checking political rivalry among the institutions affected.

POLITICAL AND OTHER EVENTS An exceptionally slight rainfall in the spring and summer had untoward effects in some portions of the State. Oregon largely escaped the heavy loss from forest fires suffered in the neighboring State of Washington, but the lack of water greatly reduced the production of hydroelectric power at some stations. Plans for reorganizing the finances of the Ochoco Irrigation District and certain other embarrassed irrigation or improvement districts were set under way. The movement to reorganize the affairs of such districts was in accordance with an act of the Legislature of 1927 giving the State Reclamation Commission authority to act. The need for the State to take title to depleted timber lands and hold them for the growth of future tree crops was urged by Secretary of the Interior Wilbur on a visit to Portland in July. The purchase of land for a Federal building in the downtown part of Portland was completed. A market for contracts for future delivery of grain, the Portland Grain Exchange, was opened at Portland on June 19.

OFFICERS Governor, I. L. Patterson, Secretary of State, and State Auditor, Hal E. Hoss, Treasurer, Thomas B. Kay, Attorney-General, J. H. Van Winkle, Superintendent of Public Instruction, Charles A. Howard.

JUDICIARY Supreme Court Chief Justice, John L. Rand, Associate Justices, Thomas A. McBride, Henry J. Bean, George M. Brown, George Rossman, Harry H. Belt, O. P. Coshaw.

OREGON, UNIVERSITY OF A State institution of higher education in Eugene, Oreg., founded in 1872. The enrollment for the autumn term of 1929 was 3223, distributed as follows: Undergraduates, 2791, graduates, 125, law school, 77, medical school, 230. Of the total, 1885 were men and 1338, women. In the summer session of 1929, the registration totaled 1504, of whom 369 were men and 1135 were women, of these, 1259 were undergraduate and 245, graduate students. The faculty for the autumn term numbered 213. The total income for the year Oct. 1, 1928, to Sept. 30, 1929, was \$2,001,915. The endowment for the year was \$166,467, with a productive income of \$8493. The main library contained 204,700 volumes and the medical-school library more than 11,000 volumes.

Gifts from various individuals included \$7874 to the medical-school library, \$6425 to the Doernbecher Hospital, and \$4353 to the medical school for research work. The Junior League of Portland donated \$4500 to the medical school, and the citizens of Eugene donated \$45,000 of a pledge of \$100,000, to be paid over a period of three years, to the Fine Arts Building Fund.

Mrs. Murray Warner presented gifts, totaling \$52,000 in value, to the Murray Warner Collection of Fine Arts, the estimated value of the entire collection being \$500,000. During the summer of 1929, work was begun on a \$200,000 central unit of the proposed \$500,000 Fine Arts Building, the construction cost being entirely financed by gifts from various individuals and organizations. The School of Sociology was made a department in the College of Literature, Science, and Arts, and the School of Applied Social Science was opened, making a total of nine professional schools. President, Arnold Bennett Hall, J. D., LL.D.

OREGON STATE AGRICULTURAL COLLEGE. A Federal and State institution for the higher education of men and women in Corvallis, Oreg., founded in 1868, when the State designated Corvallis College as the recipient of the Federal land-grant funds and began to appropriate State funds, the institution was permanently designated as the State Agricultural College in 1870 and became wholly a State institution in 1885. Degrees are granted in 10 schools: Agriculture, chemical engineering, commerce, engineering and mechanic arts, forestry, home economics, military science, mines, pharmacy, and vocational education. The enrollment for the autumn term of 1929 was 3412, of whom 2276 were men and 1136, women. The summer session registration was 1380. There were 314 members on the teaching faculty in 1929-30. The income for the same period from the original land grant fund and other Federal funds from the State of Oregon (millage tax), student fees, etc., as well as from certain appropriations from Oregon counties for extension work, totaled \$2,158,993. This was apportioned as follows: Resident instruction, \$1,449,262; agricultural experiment station, \$335,565; extension service, \$374,166. There were 86,700 catalogued volumes in the library. During 1929 the institution received a gift of \$10,000 to be used for fellowships in forestry. By act of the 1929 State Legislature, the college, along with other State institutions of higher learning, was placed under a new State Board of Higher Education, composed of nine members appointed by the governor. President, William Jasper Kerr, D.Sc., LL.D.

ORGANIC CHEMISTRY. See CHEMISTRY.

ORGANISTS. See MUSIC.

ORIENTAL FRUIT MOTH. See ENTOMOLOGY, ECONOMIC.

ORIENTAL RESEARCH. See ARCHEOLOGY.

ORNITHOLOGY. See ZOOLOGY.

OSBORNE, THOMAS BURR. An American research chemist, died in New Haven, Conn., Jan. 29, 1929, where he was born Aug. 5, 1859. He was graduated from Yale in 1881 and, specializing in chemistry, received the Ph.D. degree in 1885. Working at the Connecticut Agricultural Experiment Station, he became a world authority on nutrition, particularly on the value of proteins. Dr. Osborne also carried on his research at the Carnegie Institution of Washington, D. C., and at Yale. At the university, he worked with Prof. Lafayette B. Mendel, and in 1920 they announced that, through selective breeding, diet, and environment, they had accelerated the growth of animals by one-third the normal rate. Among other American scientific societies, Dr. Osborne was elected to the National Academy of Science, was a fellow of the American Academy of Arts and Sciences, and president of the American Society of

Biological Chemists, 1910; he was also an honorary member of the London Chemical Society, an associate member of *La Société des Sciences Médicales et Naturelles de Bruxelles*, and a member of the *Kaiserlich Deutsche Akademie der Naturforscher zu Halle*. Yale conferred on him the Sc.D. degree in 1910, and he received the Paris (Gold Medal in 1900, and the John Scott Medal in 1922) Dr Osborne was associate editor of the *Journal of Biological Chemistry*, and besides numerous papers on nutrition, he wrote: *Proteins of the Wheat Kernel* (1907), and *The Vegetable Proteins* (1909, rev. ed., 1924).

OSCILLOGRAPH. See ELECTRIC POWER TRANSMISSION AND DISTRIBUTION.

OSTIA, DISCOVERIES AT. See ARCHAEOLOGY.

OTTER, GEN. SIR WILLIAM DILLON. A retired officer of the Canadian Army, died in Toronto, May 6, 1929. He was born near Clinton, Ont., Dec. 3, 1843, and was educated at Upper Canada College and at the Royal Military School of Toronto. He saw service in the raids made upon Canada by Fenians from the United States in 1866 and again in 1871. During 1883-89 he was commandant in the School of Infantry at Toronto. In the Northwest Rebellion of 1885 he commanded a column under General Middleton and was himself in command at the battle of Cut Knife Creek. In the South African War he was in command of the 2d Battalion of the Royal Canadian Regiment. He was commanding officer in the Western Ontario District in 1905-08, chief of the General Staff at headquarters in 1908-10, inspector general and chief military adviser to the Minister of Militia in 1910-12, and, from 1914 to 1919, director of internment operations. In 1920 he was retired with the rank of general. From 1883 to the year of his retirement, General Otter served in the permanent Militia of Canada, and for 22 years in the Queen's Own Rifles, the active Canadian Militia. He was knighted in 1913.

OXYGEN. See PHYSICS.

PACIFIC RELATIONS, INSTITUTE OF. An organization formed in Honolulu in 1925 to serve as an unofficial body in studying the conditions of the Pacific peoples with a view to the improvement of their mutual relations. It holds biennial conferences, promotes and coordinates research by other agencies, conducts research through its own secretariat, and endeavors to stimulate the mood of inquiry regarding Pacific problems on the part of the public generally. The support of the institute and of its constituent national councils is derived from contributions by individuals, organizations, and foundations. It is governed by a Council consisting of one representative from a recognized affiliated body of similar purposes in each country.

The main activities of the institute during 1929 were directed toward preparation for the third conference which was held in Kyoto, Japan, October 28 to November 9. Charles F. Loomis, the conference secretary, visited most of the constituent national councils, as a result of which there was closely coordinated work in all of the countries in tying up research work to the programme needs of the participants. Delegates to the conference numbered 183, representing, in the main, historians, economists, bankers, educators, labor leaders, and diplomats from Australia, New Zealand, Canada, Great Britain, China, Japan, the United States, and the Philippines. Observers also were present from the Netherlands, Java, Korea,

France, Mexico, Russia, the League of Nations, and the International Labor Office, making in all a total of 218 participants. Among the questions discussed at the round-tables were: Manchuria; China's extraterritoriality problem; food, population, and land utilization; diplomatic machinery in the Pacific for the settlement of international disputes and the maintenance of peace; press communications, cultural contacts; industrialization of the Orient with the related questions of trade and finance, Pacific dependencies. More than 100 certified data papers also were presented, and each of the national groups returned home with more or less well defined educational programmes for the furthering of the work of the institute among their peoples. The next conference was to be held in China in 1931.

The official periodical of the institute is *Pacific Affairs*, published in Honolulu. The chairman, Ray Lyman Wilbur, was succeeded on his appointment to President Hoover's cabinet, by Junnosuke Inouye of the Japanese council. Dr Inouye, however, resigned after a few weeks because of his own appointment as Minister of Finance and was succeeded by David Z. T. Yui, chairman of the Chinese council, who served as chairman throughout the Kyoto Conference. Officers elected at the conference were chairman, Jerome D. Greene of Lee, Higginson & Co., New York City; first vice chairman, Inazo Nitobe of Japan, second vice chairman, Newton Rowell of Toronto, Canada; treasurer, F. C. Atherton of Honolulu, chairman of the international research committee, Charles P. Howland of New York City, research secretary, John B. Condliffe, J. Merle Davis, the general secretary, resigned during the Kyoto conference but agreed to continue to serve until such time as a new secretary was appointed. Headquarters of the institute are in Honolulu and of the American Council at 129 East Fifty-second Street, New York City. Jerome D. Greene is also chairman of the council and Edward C. Carter, honorary secretary and treasurer.

PACIFIST MOVEMENTS. See PEACE AND PEACE MOVEMENTS.

PACKING INDUSTRY. See LIVESTOCK.

PAHANG, PA-HANG. See FEDERATED MALAY STATES.

PAINTING. When the year 1929 is compared with other years it becomes evident that never before had the recognition of modern art been so wide. The attitude of the public toward what was to it new and strange had gradually been developing and had reached a period of rather general tolerance if not approval. Such an exhibition as that at the Reinhardt Galleries in New York of portraits of women and children, in which old and modern masters were hung in one brotherhood, made a natural and pleasing impression. In the world of museums there was more zeal in collecting moderns. The establishment of a museum of modern art in New York was the culmination of a similar desire to meet the growing interest of the public. Incidentally, the removal of a number of pictures from the Luxembourg to the Louvre, though officially for reasons of space, was not without its significance for the honor of the impressionists.

This state of affairs had its result for the artist himself. It was easier for the original artist to get a showing. The academies were less exclusive, they even were inviting outsiders. There was little for the Independents to be independent about; their battle for equality was well won. An event

of interest to lovers of art which indicated a certain backsliding in this democratic spirit was the attempt to reintroduce a tariff on works of art. This, however, was not accomplished except in the case of rugs.

A number of discoveries were made during the year: A hitherto unnoticed painting in England was found to be a Holbein. Certain parts of the picture indicated a later period, but treatment with X-rays revealed underpainting which made the attribution unquestionable. A picture of Pieter Rubens of David fighting the bears was found in Berlin after having been lost since 1827. This picture was authenticated by Wilhelm von Bode and Ludwig Burchard. A painting of Christ supported by an angel, brought to light at Lovere and described in an ancient manuscript was found to be by Giorgione with some work by Titian. Other discoveries were a fresco of the Virgin and Child by Giotto found in the Franciscan Basilica in Assisi, a portrait of Rodrigo Vazquez by El Greco, found in Russia, a giant sarcophagus unearthed near the battle field of Metana not far from Rome, important frescoes of the fifth century in the catacombs of San Gennaro near Naples, and Romanesque frescoes in Spain, discovered by the College Art Association in their investigations there.

NECROLOGY The number of deaths of important artists and critics of art was exceptionally large. One of the most deeply regretted was Wilhelm von Rode, Director of the Department of Paintings of the Kaiser Friedrich Museum known in all countries as connoisseur and scholar. Other men of note in Europe were Charles Alexander, Hugo von Habermann, the most distinguished leader of art in Munich after von Stuck, Henry Tuke, R.A., painter, the Italians, Vincenzo Volpe and Francesco Paolo Michetti. In America, Robert Henri, leading American painter, John C. Huntington, marine painter, William Turner Dannat, painter, Emil Fuchs, sculptor and painter, Birge Harrison, noted painter of landscape, Richard Lantry Pattington, portrait painter, H. Irving Marlatt, portrait and landscape painter; and John Cotton Dana, Director of the Newark Museum and the Newark Public Library.

BIBLIOGRAPHY Among the significant publications of the year may be included the following three new works from the Pegasus Press: *North Italian Painting of the Cinquecento*, by Corrado Ricci, with Correggio as its hero, *Florentine Painting of the Trecento*, by Pietro Toesca, laying most stress on Giotto, *Neapolitan Painting of the Seicento*, by Arnaldo de Rinaldis; *Fra Angelico*, by Wilhelm Hausenstein, a spiritual appreciation translated from the German, *Agnolo Bronzino*, by Arthur McComb, the first book written in English on this painter, two German books on Leonardo, one by Edmund von Hildebrandt, the other, *Leonardo-Zeichnungen*, by Anny E. Popp, entirely on his drawings, *The Drawings of G. B. Tiepolo* by Detlev von Hadelin, *The Italian Renaissance*, by Elie Faure, a brilliant piece of aesthetics, *Giorgione*, by Sir Martin Conway, an appreciation of his art as a landscapist, *Titian*, by Emil Waldmann, two other books by the same author, *Englische Malerei*, a history of English painting, and *Manet* (another book on Manet was an intimate biography by Antonin Proust; the important *Corot*, by Julius Meier-Graefe; *The Life of Sir Peter-Paul Rubens*, by Anthony Bertram, a good and exact biography free from psychoanalysis; a work treating a neglected pupil of this master;

Largelière, by Georges Pascal; *Painting in Islam*, by Sir Thomas W. Arnold, a much needed survey. See ART EXHIBITIONS, ART MUSEUMS; and ART SALES.

PALEONTOLOGY. See GEOLOGY.

PALESTINE. A territory comprising that part of historic Palestine which lies to the west of Trans-Jordan and between Syria on the north and Egypt; formerly a vilayet of the Turkish province of Syria. Captured by the British during the World War, it has been administered since Sept. 29, 1923, by Great Britain under a mandate of the League of Nations. The mandate confirmed the Balfour Declaration of Nov. 2, 1917, in which the British government pledged its aid in establishing in Palestine "a national home for the Jewish people."

AREA AND POPULATION. The area of Palestine under British mandate is about 10,000 square miles. The population, according to the census of Oct. 23, 1922, was 757,182, of whom there were 590,890 Moslems, 83,794 Jews, 73,024 Christians, 7028 Druses, 163 Samaritans, 265 Bahais, and the remainder Sikhs, Hindus, and Metawilehs. On June 30, 1929, according to official statistics, there were 816,084 inhabitants, or 21,500 more than on the same date in 1928. Of the total, there were 572,433 Moslems, 154,330 Jews, and 89,225 Christians. Capital, Jerusalem, with a population in 1922 of 62,078. Other large towns, with their populations in 1922, are Jaffa, 47,709; Haifa, 24,634; Gaza, 17,480; Hebron, 16,577; Nablus, 15,947.

The Jewish settlements are grouped in the four districts of Judea, Samaria, and upper and lower Galilee. The total population of Jews permanently settled in Palestine had risen since the World War from 55,000 to nearly 154,000, or about 18 per cent of the total population. In 1927 there were 2713 Jewish immigrants and 5071 Jewish emigrants. In the same year the movement of population was as follows: Births, 39,193; deaths, 21,806. See JEWS.

EDUCATION. Schools in Palestine in 1928 consisted of the following: 315 government schools, with 20,079 students, most of whom were Moslems; 191 schools controlled by the Zionist Organization, with 17,688 students, 84 schools controlled by other Jewish organizations, with 8803 students, 192 Christian schools with 15,782 students, and 53 private Moslem schools, with 4500 pupils. Most of the non-government schools receive a grant-in-aid from the Department of Education. There is also a Hebrew University on Mount Scopus, Jerusalem, opened April 1, 1925.

PRODUCTION. Palestine is primarily an agricultural land, the production of the principal crops in 1927 being as follows: Wheat, 99,406 tons, barley, 44,524 tons, durra, 37,441 tons, olives, 1866 tons, olive oil, 3737 tons, and lentils, 3155 tons. Drought and locusts depressed agriculture in 1928. The orange crop, which is the principal export item, totaled 2,214,000 cases in 1926-27 and further acreage was being devoted to orange cultivation. Approximately 1,000,000 timber, fruit, and shade trees were planted in 1927 and the government has received 800,000 dunums (dunum equals 0.227 acre) of a total area of 1,200,000 dunums of natural forest land as state forest. In 1927 there were 242,625 sheep, 385,762 goats, and 22,569 camels.

Rock salt, gypsum, and sulphur are found in the country and in the Dead Sea, the exploitation of

which was authorized under a concession granted a British company in 1929, are vast quantities of potash, salt, carnallite, and bromide.

COMMUNE The foreign trade of Palestine has been characterized since the World War by a large excess of imports, due principally to expenditures in that country by Jews abroad who are interested in the creation of a Jewish national home. In 1928 imports totaled \$35,000,000 and exports \$9,000,000, as against imports of \$31,339,416 and exports of \$9,251,400 in 1927. Flour, cement, sugar, wood and timber, cotton fabrics, motor cars, rice, kerosene, and unrefined olive oil are the principal imports, laundry soap, oranges, watermelons, wine, sesame, hides and skins, raw wool, and almonds, the principal exports. In 1928 exports to the United Kingdom totaled 11,308,024 and imports from that country, 1,683,711; exports to the United States, \$280,000, imports from that country, \$1,506,000. Egypt and Syria were the chief sources of origin of imports in 1927 and ranked after the United Kingdom as the principal purchasers of Palestinian exports.

FINANCE Both receipts and expenditures considerably exceeded the budget estimates in 1928. The receipts had been estimated at \$11,289,464 and the expenditures at \$11,876,260. According to the report of the British government to the Permanent Mandates Commission of the League, actual income for the year amounted to \$12,900,000 and actual expenditures to \$16,900,000, of which \$3,240,000 was applied to Palestine's share of the pre-war Ottoman debt.

COMMUNICATIONS The railways, which are government-owned, had a total length of 774 miles in 1928. There were also 403 miles of surfaced roads, which carried a heavy motor traffic. Vessels entering the ports of the country in 1927 included 697 steamers of 1,570,542 tons and 1919 sailing vessels of 35,171 tons, while vessels clearing totaled 699 steamers of 1,550,922 tons and 1901 sailing vessels of 35,997 tons.

GOVERNMENT Under the constitution adopted on Sept. 1, 1922, executive power is vested in a High Commissioner and an executive council, and legislative power in a body of 22 members besides the High Commissioner, consisting of 10 official and 12 unofficial members. The latter are elected and there must be not less than two Christian and two Jewish members. This legislative council had not yet been elected in 1929 because of the absence of many Arabs from political affairs. The Jewish population is represented by an unofficial elected National Committee in its dealings with the administration. The British government and the Palestine administration recognize the World Zionist Organization which in Palestine is represented by the Palestine Zionist Executive, as the agency of the Jewish people in all matters pertaining to the upbuilding of the Jewish national home. High Commissioner, in 1929, Lieut.-Col. Sir John Robert Chancellor, appointed July 6, 1928, Chief Secretary, H. C. Luke.

HISTORY A long-smouldering dispute between Arabs and Jews over the specific question of rights to the Wailing Wall in Jerusalem and the general question of Jewish and British policy in Palestine flamed into fierce disorders in August which spread from Jerusalem throughout the country. More than 200 were killed and 300 injured before order was restored by British troops. Probably the most important result of the disorders was the development of sentiment in Great Britain and elsewhere adverse to the Zionist pro-

gramme of eventual political dominance in Palestine and a demand for the thorough reexamination of the whole question of British policy in that country. In a joint letter published on December 20, David Lloyd George, the Earl of Balfour, and General Jan Christiaan Smuts urged the appointment of a government commission to investigate the workings of the Palestine mandate on the ground that while the Balfour pledge of support to the establishment of a Jewish national home was "unequivocal," in order to fulfill it "a considerable readjustment of the administrative machine might be desirable." All three statesmen were members of the war cabinet which authorized the Balfour Declaration.

The crux of the difficulty in Palestine lay in the various interpretations given to the phrase "Jewish national home" as employed in the Balfour Declaration. The Zionists for the most part contended that it meant that Palestine was to become a Jewish state in a political sense, with the Jews in control of the government. Among the Arabs, a minority of the Jews, the Palestine Christians, and a section of public opinion in Great Britain, the phrase was understood to mean that the Jews might establish in Palestine a cultural centre for the preservation and development of Jewish ideals and religious principles.

Fears of the Arab majority that they were to be displaced as a result of the steady infiltration of Jews and extensive purchases of Arab lands were further aroused by the organization in England in February, 1929, of a Seventh Dominion League. The League's aim was to promote the project for a Jewish national home in Palestine by stimulating immigration of Jews into that country, seeking the establishment by the Palestine government of a special Colonization Department for Jews, securing the admission of more Jews to administrative posts in the Government, and conciliating the Arabs so that they would "welcome and profit by the advent of Western civilization." A Jewish High Commissioner for Palestine and unrestricted Jewish colonization of both Palestine and Trans-Jordan was demanded by the Zionist Revisionist party. The Jewish threat to Arab predominance became still more potent with the formation of an enlarged Jewish agency, enlisting both Zionist and non-Zionist Jews in the task of colonizing Jewish settlers in Palestine, at the Zionist Biennial Congress held at Zurich early in August.

The Palestine Arab Congress, representing both the Arab and Christian populations of Palestine, forecast coming events in a memorandum submitted to the League of Nations. Pointing out that the Zionist policy had resulted in a strong Arab Nationalist movement, the memorandum warned that "serious trouble is hidden under a thin layer of sham peace like fire under ashes." A parliamentary government which would give the Arabs a voice in proportion to their numbers was demanded.

The disturbances at the Wailing Wall, a spot sacred to both Jews and Moslems, began on August 3 but were held in check by the police until August 23, when Moslems returning from services at the Mosque of Omar and the Jews engaged in violent fighting. Nine Jews and three Arabs were killed, according to reports, and more than 100 wounded. Disorders spread throughout the country, with the Arabs in general taking the offensive but in places meeting stubborn opposition from the Jews. Martial law was proclaimed, a



Associated Press Photo

THE WAILING WALL AT JERUSALEM

press censorship imposed, and British troops were rushed to the scene by airplane from Egypt and by ship from Malta. Seventy Jews, including 12 alleged American citizens, were killed at Hebron on August 25, 20 more were killed and many wounded at Safed, and the looting and burning of Jewish homes and property was reported from numerous localities. Arab feeling in Trans-Jordan and Syria became aroused and British troops were stationed along the border to prevent a threatened invasion by armed bands intent upon aiding their Palestinian coreligionists. In New York, London, and other cities, Jews held mass demonstrations of protest against the alleged negligence of the British authorities. By September 1, however, the British troops had the situation in hand, the press censorship was lifted, martial law was ended, and the task of punishing the guilty was commenced by the civil courts.

The British Foreign Minister, Arthur Henderson, reported to the League of Nations on September 6 that official reports showed that up to August 31, 109 Jews, 83 Moslems, and 4 Christians had been killed and 183 Jews, 122 Moslems, and 10 Christians wounded. He announced that a British commission of inquiry under Sir Walter Shaw had been appointed. This inquiry was limited "to the immediate emergency" and excluded considerations of major policy, which Mr. Henderson indicated would be taken under advisement later.

The British commission went to Palestine in October and continued its hearings into the causes of the disorders until December 26, when it returned to London to draft a final report. The period during which its investigations in Palestine were under way was marked by an intensification of the antagonism between Arabs and Jews. An All-Arab Congress, attended by 800 Arabs representing Palestine, Trans-Jordan, Syria, Iraq, and Egypt, met in Jerusalem on October 27 to formulate a policy with respect to the situation in Palestine. Demanding the repeal of the Balfour Declaration, the delegates voted to demand the suspension of Jewish immigration, to withhold land from sale to Jews, to support an anti-Jewish boycott which had been instituted by many Arab communities in Palestine, and to ask the withdrawal of the new Wailing Wall regulations promulgated by the government. It was also decided to urge the Arab population not to pay taxes until they were accorded suitable representation in the administration of the affairs of the country, to inform the Commission of Inquiry that there could be no peace until the Balfour Declaration had been abrogated, and to telegraph the British Colonial Office of their lack of confidence in the High Commissioner, who was charged with a pro-Jewish policy. Another evidence of the state of tension was the attempt made by an Arab youth to assassinate Norman Bentwich, Attorney-General of Palestine, and a British Jew and Zionist. A number of Arabs were sentenced to death and others to long terms of imprisonment by the civil courts conducting the trials of those accused of taking part in or inciting the riots. Collective punishment was inflicted upon a number of Arab villages.

The situation in Palestine was still acute at the close of the year, but there was hope that more effective measures for settling the complicated problems involved would be forthcoming in 1930. In November the Permanent Commission on Mandates of the League of Nations secured the

consent of the Council to meet in March to prepare recommendations with regard to the situation in Palestine. The commission also agreed to the request of the British government that it appoint a special committee to attempt the solution of the Wailing Wall dispute. See GREAT BRITAIN, under *History*, and JEWIS, under *Consult John Haynes Holmes, Palestine Today and Tomorrow: A Gentle's Survey of Zionism* (New York, 1929). See ARCHAEOLOGY, JEWIS, under *Zionism*.

PALLEN, pil'len, CONDE BENOIST. An American Roman Catholic editor and author, died May 26, 1929, in New York City. He was born in St. Louis, Mo., Dec. 5, 1858, and was graduated from Georgetown University in 1880 and from St. Louis University, with the Ph.D. degree, in 1885. He was editor of *Church Progress* and the *Catholic World* 1887-97, and was Catholic revision editor of the NEW INTERNATIONAL ENCYCLOPEDIA and other reference works. From 1904 to 1920, Dr. Pallen was managing editor of the *Catholic Encyclopedia* and president of the Encyclopedia Press, Inc., publishers of that work, from 1912 to 1920. After 1885 he was widely known as a lecturer on literary subjects, and a writer on literary and philosophical subjects for Catholic publications. He was editor of the Universal Knowledge Foundation and in 1924 became president of the Associated Arts Corporation. He wrote *The Philosophy of Literature* (1897), *Epochs of Literature* (1898), *What is Liberalism?* (1899), *New Rubaiyat* (poems, 1899), *The Feast of Thalarchus* (dramatic poem, 1901), *The Death of Sir Lancelot and Other Poems* (1902), *The Meaning of the Idylls of the King* (1904), *Collected Poems* (1915), *Education of Boys* (1916), *Crucible Island* (1919), *A Man to Man* (1927).

PANAMA. A republic of Central America, lying between Costa Rica and Colombia, constituting an independent state after November, 1903, formerly a department of Colombia. Capital, Panama.

AREA AND POPULATION. Panama has an extreme length of 480 miles, and its width varies from 37 to 110 miles. The area is estimated at 32,380 square miles excluding the Canal Zone, population, according to the census of 1923, 442,522. A national census was scheduled for 1930. The natives are a mixed race, combining Spanish, Indian, and Negro blood. The larger cities are Panama, the capital, 59,458, Colon, 31,203. For the five-year period 1924-28, the average annual number of births was 11,862 and of deaths, 6537, the excess of births being 5325.

EDUCATION. Primary instruction is free and compulsory for all children from 7 to 15 years of age. There were about 95,000 children of school age in 1928 and 79,626, or 84 per cent, were attending school. The number of students enrolled in the National Institute in 1926 was 1573.

PRODUCTION. Although the soil of Panama is very rich, only a small part of it is properly cultivated. The principal agricultural products are bananas, cacao, coconuts, coffee, rubber, sugar, tobacco, and castorilla. Mahogany and other woods are produced. Cattle raising is successfully carried on. Banana shipments in 1928 totaled 4,446,000 bunches, as against 4,623,000 bunches in 1927. The banana blight reduced production in the Bocas del Toro district from 5,160,000 bunches in 1919 to 1,134,000 in 1928, but production in the Canal Zone has been increasing and new planta-

tions in Chiriqui Province started producing in 1929. Coffee production in 1928 totaled about 1,800,000 pounds, as compared with 1,700,000 pounds in 1927. Cacao is replacing bananas as the chief crop, exports to the United States in 1928 amounting to 5,013,000 pounds, as against 4,287,000 pounds in 1927. Mining and manufacturing are relatively unimportant. Small quantities of manganese and gold are produced. Manufacturing is confined largely to articles for local consumption.

COMMERCE. In 1928 imports totaled \$10,331,000 (exclusive of shipments to the Canal Zone), or about 10 per cent more than in 1927, when imports were valued at \$14,710,000. The value of exports amounted to less than one-quarter that of the imports, the total for 1928 reaching \$4,113,000, as compared with \$3,910,000 in the previous year. The trade balance is more even than appears from the reports, which do not take into account sales to tourists, the undervaluation of exports, and numerous shipments into the Canal Zone.

Bananas constituted more than 65 per cent of the reported exports, with cacao, coconuts, ivory nuts, cattle hides, cabinet woods, and mother-of-pearl shells as other leading items. The United States supplied 67.2 per cent of the total imports and took 90 per cent of the domestic exports in 1927. In 1928 the United States furnished 68 per cent of the imports, Great Britain 10 per cent, and Germany 6 per cent. Preliminary returns for 1929 placed the total imports at \$18,400,000, or \$2,069,000 more than in 1928. Of the total, \$12,360,000 represented imports from the United States.

FINANCE. For the fiscal year ending June 30, 1928, revenues totaled 7,781,842 balboas (\$7,781,842) and expenditures 10,650,060 balboas (one balboa equals \$1). The excess of expenditures was due to the inclusion in the total figure of 1,014,742 balboas spent on the construction of the Chiriqui Railway, 855,034 for roads, and 549,237 on the account of the previous fiscal year. The expenditures of the departments amounted to 7,186,981 balboas. Panama operates on a biennial budget. The new budget for 1929-31, which became effective July 1, 1929, was formulated in accordance with recommendations of a commission of American financial experts employed to aid in the reorganization of the national finances as authorized by Congress. The budget balanced the revenues and expenditures for 1929-30 at 17,031,907 balboas. Expenditures were distributed as follows: Department of Government and Justice, 3,768,943; Foreign Relations, 572,000; Treasury, 1,588,264; Public Instruction, 3,327,937; Agriculture and Public Works, 1,428,588; service of the public debt, 4,126,174; for charity, 2,220,000. The latter item was to be paid for from proceeds of the national lottery. The annuity from the United States amounts to \$500,000.

The public debt in September, 1929, totaled 18,686,000 balboas, as compared with 13,491,000 on Oct. 1, 1927, of which 16,293,000 balboas was external and 2,393,000 internal.

COMMUNICATIONS. Railways in Panama, including the Canal Zone, totaled about 295 miles in 1928, of which the Panama Railroad (154 miles) was the principal unit. In 1927-28 this line carried 517,000 passengers and 344,000 tons of freight, the gross receipts totaling \$6,298,000. The merchant marine in 1928 consisted of 31 vessels of 100 tons or more with a total gross ton-

nage of 72,242 tons. Air-mail service between Panama and the United States was inaugurated on Feb. 6, 1929.

GOVERNMENT. The constitution of Feb. 13, 1904, which was amended in 1918 and again in 1928, vests legislative power in the Chamber of Deputies of 46 members elected for four years, which meets biennially on September 1, and executive power in the President elected by direct vote for four years and ineligible for reelection. President in 1929, Florencio Harmodio Arosemena, who assumed office Oct. 1, 1928.

HISTORY. Negotiations for a new treaty between the United States and Panama to replace both the treaty of 1903, under which the Panama Canal Zone was ceded, and the unratified treaty signed in 1926, were commenced in the fall of 1929 at the request of Panama. The treaty signed in 1926, which was intended to supplant the 1903 pact and to settle points of difference between the two countries with respect to the status and administration of the Panama Canal, was declared unjust by the Panamanian government and remained unratified by the Congresses of both countries.

Steps toward the peaceful settlement of boundary disputes with both Costa Rica and Colombia were taken during the year. Enrique Fonseca Zufiga, the newly appointed Costa Rican Minister to Panama, voiced the hope that the two countries would soon be able to adjust their difficulties which resulted in hostilities in 1921. The Panamanian members of a joint Panama-Colombia boundary commission were appointed by President Arosemena in November. An aerial survey of the unexplored boundary region was made in 1928. Roy Taskoe Davis, former United States Minister to Costa Rica, was appointed Minister to Panama in 1929, succeeding Dr. John G. South. See PANAMA CANAL and PANAMA CANAL ZONE.

PANAMA CANAL. The total number of commercial vessels transiting the Panama Canal during the calendar year ended December 31, 1929, aggregated 6430, and the total tolls collected was \$27,592,715.84. Tolls collected during the calendar year 1929 exceeded the previous high mark for a year's tolls collection (fiscal year 1929 with \$27,127,376.91) by \$465,338.93. The number of commercial transits in the calendar year 1929, while exceeding the number of vessels passing through during the calendar year 1928, and the fiscal year 1929, fell short by 26 of the record of 6456 established during the fiscal year 1928. In addition to the high record for tolls collected, new high figures for tons of cargo and ship tonnage

	Totals for month	
	Transits	Tolls
January	603	\$2,502,815.12
February	522	2,211,961.20
March	586	2,343,865.55
April	540	2,281,087.27
May	524	2,296,546.57
June	503	2,127,805.87
July	537	2,259,582.37
August	541	2,327,437.86
September	523	2,201,789.40
October	564	2,485,897.71
November	525	2,244,895.94
December	522	2,309,030.88
Totals, calendar year, 1929	6,480	\$27,592,715.84
Totals, calendar year, 1928	6,384	\$26,375,962.41
Totals, calendar year, 1927	6,085	\$26,231,022.94
Totals, fiscal year, 1929	6,413	\$27,127,376.91

were likely to be established during the year, the exact figures not being available at the end of the year.

The daily average number of commercial transits during the year was 17 62, as compared with 17 31 for the calendar year 1928. The daily average

States, British, German, Norwegian, Japanese, Dutch, Swedish, French, Colombian, Danish.

The accompanying tabulation shows the total commercial traffic through the Canal during the calendar year 1929, segregated according to nationality of vessels.

COMMERCIAL TRAFFIC THROUGH THE PANAMA CANAL DURING 1929

Nationality	No of ships	Panama Canal net	United States equipment	Tonnage		Tolls	Tons of cargo
				Gross	Net		
Argentina	1 *					\$ 1,268 00	
Belgian	17	89,946	74,975	119,700	69,991	85,048 23	102,038
British	1,667 *	8,551,957	6,417,940	10,546,948	6,466,247	7,694,711 96	8,262,855
Chilean	16 *	142,947	107,802	213,358	118,471	148,800 95	104,290
Colombian	104	10,950	27,994	47,733	28,740	33,774 51	29,901
Costa Rican	2	662	665	971	581	646 95	600
Danish	94	378,253	284,793	451,760	285,196	344,190 14	496,451
Dutch	10	181,166	156,901	266,085	150,749	165,618 51	182,308
French	141	688,003	481,572	809,021	479,305	593,408 45	698,038
German	4	10,604	8,844	11,560	8,483	10,008 00	14,700
Italian	113 *	638,004	422,719	674,105	412,333	522,823 76	578,491
Japanese	402 *	1,477,224	1,016,710	1,685,505	1,011,394	1,355,859 41	1,532,149
Peruvian	46	176,930	125,260	198,977	122,531	149,932 55	251,144
Swedish	83	499,794	375,047	640,315	383,898	457,310 45	511,757
United States	150 *	733,679	620,356	928,767	610,564	779,801 22	910,719
Yugoslavia	53	222,436	170,335	270,270	169,583	206,479 85	345,527
Mexican	2 *	2,159	1,599	2,769	1,899	2,374 75	1,140
Norwegian	392	1,509,923	1,173,847	1,928,887	1,165,465	1,362,977 79	1,784,651
Nicaraguan	1	140	151	270	237	113 25	
Panama	57	96,759	68,187	118,348	73,218	78,691 54	88,894
Peruvian	23	50,790	30,852	77,741	39,192	48,174 88	36,711
Spanish	10 *	15,476	29,184	44,304	29,566	36,543 22	48,256
Swedish	140	614,405	452,718	1,091,169	547,994	519,071 40	664,502
United States	2,861	14,304,446	11,080,268	17,916,452	11,063,183	13,107,468 87	14,844,369
Totals, 1929	6,430	10,351,189	7,118,682	38,061,989	21,241,639	27,592,715 84	31,450,493

* Naval vessel of 2516 displacement tons.

* Includes 5 naval vessels with a total displacement of 25,145 tons.

* Includes naval vessel of 29,784 displacement tons.

* Includes 2 naval vessels with a total displacement of 24,945 tons.

* Includes naval vessel of 6057 displacement tons.

* Includes 1 naval vessel with a total displacement of 40,520 tons.

* Includes naval vessel of 1227 displacement tons.

* Includes naval vessel of 1383 displacement tons.

age tolls collection amounted to \$75,596 48, as compared with \$72,065 46 for the year 1928.

In the following tabulation, the number of commercial transits and the amount of tolls collected are shown for the calendar year 1929, with comparative totals for the calendar years 1928 and 1927, and the fiscal year ended June 30, 1929.

The number of commercial transits for 1929 (6430), while exceeding the number of ships passing through during the calendar year 1928 and the fiscal year 1929, fell short by 26 of the record established during the fiscal year 1928.

The accompanying tabulation shows the number of transits, tonnage, tolls collected, and tons of cargo carried during the 1929 calendar year, as compared with the corresponding totals for the previous record years, and increases or decreases.

PANAMA CANAL TRANSITS, TONNAGE AND TOLLS FOR 1929

	Calendar year 1929	Previous high record	Year	Increase or decrease
Number of transits	6,430	6,456	Fiscal year, 1928	— 26
Tonnage				
Panama Canal net	30,353,189	29,837,794	Fiscal year, 1929	+ 515,395
United States net	23,138,682	22,861,796	Fiscal year, 1928	+ 274,886
Registered gross	38,061,989	37,464,792	Fiscal year, 1929	+ 597,197
Registered net	33,241,639	32,002,317	Fiscal year, 1929	+ 341,322
Tolls	\$27,592,715 84	\$27,127,376 91	Fiscal year, 1929	+ \$465,338 93
Tons of cargo	31,450,493	30,663,006	Fiscal year, 1929	+ 787,487

Vessels of 24 nationalities made up the commercial traffic through the Panama Canal during the calendar year 1929. Forty-four and five-tenths per cent of the total commercial transits were vessels of the United States, 25 9 per cent were British, and the remaining were distributed among 22 nationalities. In the order of number of transits, the 10 leading nationalities were United

PANAMA CANAL ZONE The strip of land 5 miles wide on each side of the Panama Canal ceded to the United States by Panama in the treaty of Nov 18, 1903. Area, 554 square miles, of which 163½ are taken up by Gatun Lake, civil population in June, 1929, 30,300 of whom 7689 were Americans. Including military and naval forces the total population was 39,137, as compared with 37,512 in June, 1928. The treaty of 1903 gave the United States control over sanitation and quarantine in the cities and harbors of Panama and Colon, although they remained within the jurisdiction of Panama. The status of the Canal Zone is that of a military reservation under the Governor of the Panama Canal, appointed by the President of the United States. Governor in 1929, Col H. Burgess, U.S.A. See PANAMA CANAL.

PAN-AMERICANISM. Throughout the year the Pan American Union devoted much of its efforts toward making effective the resolutions of the Sixth International Conference of American States, held in Havana, Cuba, in January, 1928. The most important accomplishments in this direction were as follows:

(1) The conferences on conciliation and arbit-

tration, trade marks, highways, and customs procedure and port formalities were held.

(2) The time and place of meeting were fixed for the Inter-American Conference of Rectors, Deans, and Educators, the Inter-American Conference on Agriculture, Forestry, and Animal Industry, and the Second Pan-American Congress of Journalists.

(3) The union formulated a project of organization of the Inter-American Institute of Intellectual Cooperation.

As a result of the Havana meeting the Pan American Union was made, for the first time, the depository of the instruments of ratification of most of the conventions signed at the Sixth International Conference. These instruments were properly catalogued and filed, and the necessary notices of the receipt of ratification sent to all the signatory states.

Among the Pan-American events of outstanding importance during the year were the following:

THE INTERNATIONAL CONFERENCE OF AMERICAN STATES ON CONCILIATION AND ARBITRATION. This meeting was held pursuant to a resolution adopted by the Sixth International Conference of American States. The delegates assembled at the Pan American Union on Dec. 10, 1928, and remained in session until Jan. 5, 1929. All the countries members of the Pan American Union were represented, with the exception of Argentina. As a result of the deliberations, two important instruments were signed. A general treaty of arbitration, together with a protocol of progressive arbitration and a general convention of international conciliation. The republics of America thus again assumed a position of leadership in the great movement for the pacific settlement of international disputes.

BOLIVIAN AND PARAGUAYAN PROTOCOL. Coincident with the assembling of the International Conference of American States on Conciliation and Arbitration, difficulties arose between Bolivia and Paraguay relative to their jurisdiction over the Gran Chaco, and the conference immediately tendered its good offices, appointing a special commission to conduct the negotiations. A protocol was signed by the representatives of Bolivia and Paraguay at Washington, providing for the establishment of a commission of inquiry and conciliation consisting of two representatives from each of the countries party to the dispute, and one each from Mexico, Colombia, Uruguay, Cuba, and the United States, which met at the Pan American Union on March 13. See **ARBITRATION**, also **BOLIVIA** and **PARAGUAY**.

THE PAN AMERICAN TRADE MARK CONFERENCE. This group assembled at the union on February 11, pursuant to the resolution adopted by the Sixth International Conference of American States, and continued in session until February 20. This subject was considered at the Havana meeting, when it was deemed essential to submit the matter to a conference of specialists. The conference finally adopted a general inter-American convention for trade mark and commercial protection and a protocol of the inter-American registration of trade marks.

CONFERENCE OF DIRECTORS OF THE PAN AMERICAN SANITARY BUREAU. The Pan American Sanitary Bureau which met in Lima, Peru, in October, 1927, adopted a resolution providing for the assembling in Washington of the directors of the Pan American Sanitary Bureaus. The directors met at the union on May 27 and continued in session

until June 8. There was every reason to expect that as a result of this meeting the scope of action and sphere of usefulness of the bureau would be considerably extended.

COLUMBUS MEMORIAL LIGHTHOUSE ARCHITECTURAL COMPETITION. During the year the first stage of the architectural competition for the Columbus Memorial Lighthouse was initiated and was carried to successful conclusion with the announcement of the findings of the international jury of award, rendered at Madrid on April 20. The permanent committee of the governing board then undertook the formulation of the conditions governing the second and final stage of the competition, which would be limited to the authors of the ten designs placed first in the preliminary competition.

THE SECOND PAN AMERICAN CONGRESS OF HIGHWAYS. This conference convened in Rio de Janeiro, Brazil, August 16-28. Representatives were in attendance from 19 of the republics of the American continent, and definite conclusions were reached relative to the technical, administrative, and financial aspects of highway construction.

PAN AMERICAN COMMISSION ON CUSTOMS PROCEDURE AND PORT FORMALITIES. For the purpose of considering the simplification and standardization of customs procedure and port formalities in the countries of the American continent, the Pan American Union convened the Pan American Commission on Customs Procedure and Port Formalities which met at the union November 18-26. The decisions reached by the commission covered such important matters as: Simplification in the variety of bases upon which customs duties are levied; consolidation of customs charges; central authority to decide customs controversies; confiscation of merchandise for false customs declarations made with intent to defraud; entrance and clearance fees; anchorage, moorage, dockage, and wharfage; improvement of ports and harbors.

INTER AMERICAN COMMISSION OF WOMEN. As its first subject of investigation and study, the Inter American Commission of Women, appointed by the Pan American Union, took up the question of the nationality of women and of their children. According to Miss Doris Stevens, representative of the United States upon, and chairman of the Commission, it was empowered to study the status of women in the 21 republics of the Western Hemisphere. According to a statement made by Miss Stevens:

It seems the part of wisdom to begin with the question of their nationality, since the nationality of women is one of the questions before the World Conference on the Codification of International Law which has been called by the League of Nations to meet at The Hague in 1929. Both member and non member States will take part. The whole civilized world will be represented. Women are eager for an opportunity to correct some of the existing evils. There is no uniformity in laws on nationality. A woman may find herself possessed of several nationalities or of none. In some countries of our Western Hemisphere, a married woman takes the nationality of her husband in all cases. Sometimes, as in the Dominican Republic and Costa Rica, she loses her nationality on marrying a foreigner, provided that her husband's country gives her his nationality. In some countries, as in Ecuador, she loses her nationality on marrying a foreigner only if she goes to her husband's country to live and if that country gives her his nationality. Also in Ecuador, and elsewhere, after having lost her nationality by marriage with a foreigner, a woman may resume it upon dissolution of the marriage, if she so desires. Sometimes, as in Costa Rica, when a woman loses her nationality by such marriage with a foreigner, she can only regain it by coming back into her own country as a foreigner herself, and being naturalized.

In some countries the law works both ways. A native woman who marries a foreigner takes his nationality, a foreign woman who marries a native man takes his nationality. This is true in Haiti, for instance. On the other hand, there are countries in which the law works only one way. Again, as in Guatemala, a woman is given an option as to her nationality. She may keep her own or take her husband's, as she prefers, if she makes a definite statement to this effect in the marriage agreement.

In other countries, the naturalization law is different for men and for women. In Ecuador, for instance, the naturalization of a man carries with it the naturalization of his wife and children, but the naturalization of a married woman, on the other hand does not carry with it the naturalization of her husband and children.

In some cases, most illogical and lamentable of all, a woman has no nationality. An Englishwoman, for example, married to an Argentine ceases to enjoy English nationality according to British law, but does not become Argentine by Argentine law. There is no remedy whatever for such a condition. In practice, however, Argentina gives the woman her passport and diplomatic facilities, but she is nevertheless not accepted by her husband's country and not accepted by her husband's band's.

In the United States, a woman retains her nationality upon marriage with a foreigner only when he is himself eligible for United States citizenship. In other words, a woman may lose her nationality upon marriage, a man never does.

Again, in the United States, a woman who marries a foreigner and lives two years in her husband's country is presumed to have lost her nationality, and to maintain it must overcome this presumption. A man under the same circumstances is never presumed to have lost his nationality. If a woman from the United States marries a foreigner and lives with him two years, anywhere outside her own country, according to United States law she is again presumed to have lost her nationality.

In some countries—the United States among them—when a child is born abroad, the country will give nationality to the child only if the father has that nationality. The country gives the mother's nationality to the child in such cases only when the child is illegitimate.

The work of the Inter American Commission of Women will be of assistance in drafting a uniform proposal for the civilized world. Not women alone, but all governments are frankly in a quandary under the present system. The amount of hardship entailed is almost unbelievable, and has led the League of Nations to place this vexed question of nationality prominently on the agenda of The Hague Conference on International Law.

PAN AMERICAN UNION. An international organization maintained by the 21 American republics for the development among them of good understanding, friendly intercourse, commerce, and peace. It is controlled by a governing board composed of the Secretary of State of the United States and the diplomatic representatives in Washington of the other republics, and is administered by a director-general and assistant director chosen by this board.

During the year a number of important Pan-American conferences were held. See **PAN-AMERICANISM**. The union also followed its usual custom of furnishing illustrated material and programmes of study for stimulating the study of Latin-American history and culture in the schools of the United States. Among its publications in use in schools, colleges, and universities of the United States and in various other lands are *Seeing South America*, *Ports and Harbors of South America*, *Seeing the Latin Republics of North America*, and *Viajando Por Los Estados Unidos*. In addition the union publishes every month the *Bulletin* in Spanish, Portuguese, and English.

Statistical matter compiled by the union related to inter-American commerce and included a general survey of the trade of each of the republics of Latin America. The counselor's office continued to stimulate the interest of women's clubs and other civic and literary organizations in the study of the history, civilization, and prob-

lems of the countries of Latin America. For this purpose the union considerably enlarged its loan service of books, including vocal and instrumental selections by Latin-American composers. The counselor's office also had charge of the concerts of Latin-American music which were broadcast over a nation-wide network of stations and thus made available to millions.

The practical service performed by the Pan American Union was greatly strengthened by the publication in Spanish and Portuguese of four special series, dealing with agriculture, education, public health and social welfare, and finance, industry and commerce. During the year the title of the division of education was changed to the division of intellectual cooperation in order to correspond more closely to the larger aspects of its work. Under its auspices 21 Argentine educators and professional men visited the United States in January and February, 1929, the trip having been made possible by the efforts of the Argentine-American Cultural Institute, the Institute of International Education of New York, and financial assistance from the Carnegie Endowment for International Peace. The Pan American Sanitary Bureau placed at the disposal of the republics of the continent the result of the sanitary progress of the year. It issues the *Pan American Sanitary Bulletin*, a monthly. The director of the Pan American Union in 1929 was Dr. L. S. Rowe, assistant director, Dr. Esteban Gil Borges. Headquarters are in the Pan American Union Building, Washington.

PANIC OF 1929. FINANCIAL SEE BANKS AND BANKING, BUSINESS REVIEW, FINANCIAL REVUE.

PAN-PACIFIC UNION. An organization founded in 1907 to "secure and collate accurate information concerning the material resources of Pacific lands, to study the ideas and opinions that mold public opinion among the peoples of the several Pacific races, and to bring men together who can understandingly discuss these ideas and opinions in a spirit of fairness, that they may point out a true course of justice in dealing with them internationally." The union is in no way the agency of any Pacific government but has the goodwill of all its honorary heads are the presidents, premiers, or governor-generals of Pacific lands—the United States, Australia, New Zealand, China, Netherlands East Indies, Canada, Japan, Siam, Mexico, Peru, Chile, Indo-China. It is supported in part by government and private appropriations and subscription, chambers of commerce, boards of education, scientific societies, and other organizations being affiliated and working with it. Its central office is in Honolulu, because of the location of the Hawaiian Islands at the ocean's crossroads. Its management is under an international board of trustees.

Among the important conferences which the Pan-Pacific Union has called since 1920 are the Pan-Pacific scientific educational, press, commercial, food conservation, and fisheries conferences. Most of these bodies in 1929 were autonomous, calling and financing their own conferences. The most important meeting of 1929 was that of the Pan-Pacific surgical conference which was held in Honolulu in August and at which a constitution for permanent organization of this body was drawn up. It was to be followed by a Pan-Pacific medical conference to be held in Honolulu in 1933 in cooperation with the Far Eastern Tropical Medical Association, the Pan-American

Medical Association, and the Australasian branches of the British Medical Association. The second Pan-Pacific women's conference was scheduled to meet in Honolulu in 1930 for the purpose of perfecting an autonomous organization, the second Pan-Pacific food conservation conference will be held in 1931; and the following year the second Pan-Pacific commercial and the Pan-Pacific ethical and cultural conferences were to be held. The official periodical of the society is the *Mid-Pacific Magazine*, an illustrated monthly. It also publishes the *Bulletin of the Pan Pacific Union*. The president in 1929 was Wallace R. Farrington, former Governor of Hawaii, the director was Alexander Hume Ford. The executive offices are in Honolulu, T. H.

PAPER AND PULP. The statistical estimate of the American Paper and Pulp Association, covering the year 1929, indicated increased production of both wood pulp and paper in the United States. Pulp production for 1929 was stated at over 4,030,000 tons, as compared with 4,510,800 tons in 1928, with an increase in the production of all grades but soda pulp.

UNITED STATES WOOD PULP PRODUCTION, 1929 [Tons of 2000 pounds]

Mechanically ground wood pulp	1,640,000
Sulphite	1,635,000
Unbleached	865,000
Bleached	770,000
Sulphate	880,000
Unbleached (kraft)	836,000
Bleached	44,000
Soda	475,000
Total	4,630,000

WOOD PULP PRODUCTION BY QUANTITY AND PROCESS [Tons of 2000 pounds]

Process and Condition	1928	1927
Mechanically ground wood		
Not steamed	1,546,240	1,435,321
Steamed	64,748	175,088
Sulphite		
Unbleached	836,751	872,411
Bleached	722,107	680,288
Sulphate		
Unbleached (kraft)	733,674	603,253 *
Bleached	40,551	..
Soda, unbleached and bleached *	488,641	487,478
Semi-chemical	29,967	11,983
Screenings		
Mechanical	4,701	8,229
Chemical	43,420	39,352
Total	4,510,800	4,318,403

* Not shown separately in order to avoid disclosing the production of individual establishments

PRODUCTION OF WOOD PULP BY STATES [Tons of 2000 pounds]

	1928	1927
Maine	970,690	942,162
Wisconsin	720,781	690,921
New York	683,182	710,227
Washington	349,107	288,349
Louisiana	226,708	179,876
Pennsylvania	218,598	216,597
New Hampshire	198,587	200,324
Virginia	189,925	170,680
Michigan	196,203	198,539
Oregon and California *	218,407	200,869
Minnesota	194,399	191,220
Massachusetts	32,370	31,822
Vermont	19,881	32,562
Other States	347,012	284,313
Total	4,510,800	4,318,403

* Combined in order to avoid disclosing quantities reported by individual establishments

Following the biennial Census of Manufactures in 1927, the U. S. Bureau of the Census, in co-operation with the Forest Service of the Department of Agriculture, made available statistics of pulp-wood consumption and wood-pulp production for 1928. The accompanying tables give wood-pulp production by quantity and process and by States.

UNITED STATES PAPER PRODUCTION IN 1929 [Tons of 2000 pounds]

Newsprint	1,390,000
Book paper, uncoated	1,440,000
Cover paper	28,500
Writing paper	595,000
Wrapping paper	1,641,000
Board paper	4,500,000
Tissue paper	875,000
Building paper	498,000
All other grades	526,500
Total	10,984,000

The paper production in the United States also increased during 1929, being estimated by the American Paper and Pulp Association at 10,984,000 tons, as compared with 10,403,338 tons in 1928. Of the 1929 total, the largest individual item of production was board paper, 4,500,000 tons. Wrapping paper followed with 1,641,000 tons, book paper, uncoated, 1,440,000 tons, and newsprint paper, 1,390,000 tons.

According to the aforementioned report of the Bureau of the Census, the production of paper and paper boards by class, kind, and quantity was as follows in 1927 and 1928.

PRODUCTION OF PAPER BY KIND AND QUANTITY [Tons of 2000 pounds]

Kind	1928	1927
Newsprint, standard	1,415,450	1,516,929
Hanging paper	96,390	112,658
Catalogue	138,660	188,338
Book paper, uncoated	1,334,826	1,269,821
Cover paper	27,043	28,331
Writing paper	550,472	508,808
Wrapping paper, sulphite	351,786	290,724
Wrapping paper, kraft	873,578	637,295
Boards		
Container boards	1,984,697	2,100,150
Folding boxboards	947,813	796,216
Set-up boxboards	620,809	444,228
Building boards	84,456	71,235
Binders' board	78,839	51,610
Cardboard	102,602	49,244
Leather board	18,911	24,195
Press board	7,775	6,938
Other	219,076	239,792
Tissue paper	348,174	316,070
Absorbent paper	74,768	68,766
Building paper	562,865	625,589
Other papers including wrapping paper other than sulphite and kraft	564,448	677,631
Total	10,403,338	10,002,070

There was an increase during 1929 both in quantity and value of imports of paper base stocks, which were valued at \$118,132,740 as compared with \$112,295,501 in 1928. They included the following: Pulp woods (rough, peeled, and resawed), 1,350,722 cords valued at \$14,598,949; mechanically ground wood pulp, 244,162 tons valued at \$6,245,776; unbleached sulphite wood pulp, 701,456 tons valued at \$35,328,982; bleached sulphite wood pulp, 334,235 tons valued at \$25,338,003; unbleached sulphate wood pulp, 384,005 tons valued at \$20,518,876; bleached sulphate wood pulp, 15,364 tons valued at \$1,139,820; other pulp,

6050 tons valued at \$514,139; rags for paper stock, 446,496,028 pounds valued at \$9,341,796; waste bagging and paper, 141,615,462 pounds valued at \$1,657,562; and old rope and all other paper stock, 131,084,841 pounds valued at \$3,448,438. The largest imports of sulphite wood pulp, 397,351 tons valued at \$21,929,767, and of unbleached sulphate wood pulp (kraft), 224,371 tons valued at \$11,327,331, were from Sweden, while Canada ranked second with 378,034 tons of sulphite wood pulp valued at \$23,600,440 and 110,366 tons of unbleached sulphate wood pulp (kraft) valued at \$6,792,782.

Paper and paper manufactures imported in 1929 were valued at \$163,184,327 as compared with \$156,406,552 in 1928. The principal item, as usual, was standard newsprint, which amounted to 4,845,401,341 pounds valued at \$144,492,736, as compared with 4,314,332,865 pounds valued at \$139,432,918 in 1928. Of this amount Canada supplied 4,389,174,594 pounds valued at \$132,282,041. Newfoundland and Labrador, 263,829,909 pounds valued at \$7,433,636, and Sweden, 101,438,043 pounds valued at \$2,576,079. Next in value were cigarette, book and cover papers, which totaled 11,687,109 pounds valued at \$3,921,984. Tissue and copying papers amounted to 5,008,881 pounds valued at \$2,667,680, surface-coated papers to 2,452,236 pounds valued at \$1,046,201, and pulpboards in rolls to 58,724,555 pounds valued at \$1,271,740.

Exports of paper and paper manufactures in 1929 were valued at \$37,379,685, exceeding the 1928 exports in value by \$6,446,554. The principal items were newsprint paper, 37,391,882 pounds valued at \$1,346,018, and book paper, not coated, 37,817,028 pounds valued at \$2,651,325. The largest exports of newsprint, 14,979,796 pounds, were to South America, while the Philippine Islands came second with 9,166,502 pounds. The largest exports of book paper, 12,198,178 pounds, were to Canada. Other important items were Wrapping paper, 43,882,689 pounds valued at \$2,957,204, paper board and strawboard, 47,315,391 pounds valued at \$2,096,798; box board, 53,458,595 pounds valued at \$1,014,535, surface-coated paper, 17,317,750 pounds valued at \$1,576,016, tissue and crepe paper, 4,798,279 pounds valued at \$1,061,250, paper bags, 12,061,231 pounds valued at \$1,010,522, boxes and cartons, 28,120,494 pounds valued at \$1,891,939, vulcanized fibre sheets, strips, rods, and tubes, 6,116,832 pounds valued at \$1,487,714, fiber insulating lath or board, 30,324,245 square feet valued at \$1,026,312, and wall board of paper or pulp, 68,049,488 square feet the value of which was \$2,220,879.

In Canada, the year 1929 was a trying one for the newsprint industry which had not fully recovered from the effects of the crisis through which it passed in 1928. This crisis arose from an over-expansion of the industry which resulted in an installed capacity for production from 20 to 25 per cent in excess of any possible market requirements. The first step which the provincial governments of Quebec and Ontario took to curb the ensuing price-cutting among manufacturers was to check the building of new mills, the second step was to cooperate with the newsprint industry so that a reasonable return could be obtained. As a result of conferences an agreement was reached for the restriction of the output to 80 per cent of the capacity of the mills—or rather to the capacity of the market to absorb the output

—and the pooling of orders for equitable distribution among the mills.

In spite of these measures, however, the production of newsprint in 1929 was greater than in any previous year, amounting to 2,728,827 tons as compared with 2,381,102 tons in 1928; but an increase in exports of almost 15 per cent over the total for 1928 helped to absorb this production. Of the 2,510,634 tons of newsprint exported in 1929, 2,173,087 tons were shipped to the United States, . . . to the Newsprint Institute conducted . . . auspices of the Canadian Pulp and Paper Association. Prices, however, remained inadequate, and in December the three largest Canadian paper manufacturers other than the Canadian International Company, namely the Abitibi Company, Canadian Paper & Paper Co. and Price Brothers, announced for 1930 a price for newsprint of \$60 a ton which was an increase of \$5 over the 1929 price with a drawback of \$5 for the first six months of the year in the case of a three years' contract. The International Paper Company at this time had not announced its price for the year 1930, and it was a question as to its policy. The United States publishers, the principal customers, stated that they would not yield to higher prices without a struggle, and at the end of the year the matter was far from settled.

The Canadian book and writing paper mills produced an increased tonnage during 1929 but reported that they could have manufactured a still greater volume had the demand justified it, the total output amounted to 67,408 tons, as compared with the 100,000-ton capacity of these mills. Especially detrimental to this industry was the tariff change which became effective in March, 1928, permitting an 80 per cent drawback on importations of book paper on behalf of certain Canadian magazine publishers. As a result of this measure imports of book paper had increased from 1,076,171 pounds in 1927, the year before the tariff change, to 5,689,720 pounds for the 11 months up to the end of November, 1929.

The Pulp and Paper Institute of Canada, devoted to the training of students in chemistry and technology directly applicable to the paper and pulp industry, was opened at McGill University, Montreal, on Jan. 25, 1929, the occasion of the sixteenth annual meeting of the Canadian Pulp and Paper Association. This institute representing an investment of \$500,000, accommodates the university's department of industrial and cellulose chemistry, the pulp and paper division of the Forest Products Laboratories (owned by the Canadian Government), and the headquarters of the Canadian Pulp and Paper Association.

In the United States the Lawrence College Institute of Appleton, Wis., organized by about 90 per cent of the paper manufacturers of Wisconsin was opened in September. These manufacturers subscribed a fund of \$300,000, augmented by over \$30,000 for library and fellowship purposes, and guaranteed an annual minimum income of \$50,000.

PAPUA, pa'pū-a. A territory of the Australian Commonwealth, comprising the southeastern part of the island of New Guinea and all the groups of small islands between 8° and 12° S latitude and 141° and 155° E longitude, formerly known as British New Guinea, transferred to the Australian government Sept. 1, 1906. Area, 90,540 square miles of which about 87,786

are on the Island of New Guinea. On June 30, 1928, the population was as follows. Europeans, 1428, Papuans (estimated), 275,000 Port Moresby is the capital and a port of entry Other ports of entry are Samarai, Daru, and Kulanmandau.

A large proportion of the natives are civilized, and many of them are taught in schools maintained by the five Christian missionary bodies in the territory On June 30, 1928, there were 61,370 acres of plantations The chief crops are coconuts (49,244 acres), rubber (8212 acres), and sisal hemp (3000 acres) The forests contain valuable timber, and the mineral resources, which are considerable, include gold, copper, osmiridium, lead, zinc, tin, and iron The only minerals exported have been gold, copper, and osmiridium Indications of petroleum have been found over an area of 1000 square miles, and borings were being continued in 1929 under the auspices of the Australian government The chief imports are foodstuffs, tobacco, drapery, and hardware, the chief exports are copra, gold, hemp, pearls, and rubber The exports in 1928 were valued at £350,363 and the imports at £403,501 There is a considerable trade between Australia and Papua, steamship communication being regularly maintained, 226,948 tons entered and cleared in 1927 The local revenue in 1928 was £107,052 and the expenditure, £158,964 The Australian government grants an annual subsidy of £50,000 The territory is administered by a lieutenant-governor appointed by the Governor-General of Australia, and an executive and a legislative council, both consisting of official or nominated members The lieutenant-governor and chief judicial officer in 1929, Sir J. H. P. Murray

PARAGUAY, pār'a-gwā. An inland republic of South America, bounded on the west and south by Argentina, on the east by Uruguay and Brazil, and on the north by Brazil and Bolivia Capital, Asunción

AREA AND POPULATION The estimated area of Paraguay proper, which lies between the Paraguay and Alto Paraná rivers, is estimated to be 61,647 square miles, in addition, Paraguay lays claim to a tract of 100,000 square miles between the Paraguay and Pilcomayo rivers known as the Chaco, the ownership of which was disputed by Bolivia Population at the census of 1899, 555,571, estimated in 1928, 798,969, excluding about 30,000 Indians in the Chaco

In Paraguay proper the people are of mixed blood, namely, Guaraní, Indian, Spanish, and Negro, the first mentioned predominating Immigration is small, there being but 406 new arrivals in 1928 The largest cities with their populations, estimated in 1926, are Asunción, the capital, 113,084, Villa Rica, 26,000, Concepción, 11,000, Luque, 13,000, Carapezú, 12,000

EDUCATION Education is free and nominally compulsory In 1928 there were 96,483 pupils in public primary schools and 5021 in private schools There were also three high schools, with 1000 students, seven normal schools with 534 students, and a university with 404 students in 1927

PRODUCTION Most of Paraguay is tillable, although only about 494,000 acres were under cultivation in 1926 Corn, oranges, and manioc covered the greater part of this area, and cotton, tobacco, and yerba maté, the remainder Tobacco production totaled 21,988,000 pounds in 1927-28 Yerba maté, a strong native tea, is the chief forest

product The production of cotton increased to 5,078,000 pounds in 1926-27 Another industry for which Paraguay is especially fitted is stock raising According to the livestock census of 1926, there were 3,270,000 cattle, 209,901 horses, 195,192 sheep, and 45,483 hogs Three meat-packing plants in 1926 slaughtered 115,707 cattle

Paraguay is rich in forest products, nearly two-thirds of its area being covered with hard and soft woods and quebracho trees Large quantities of logs and sawn timber are exported, mostly to Argentina and Uruguay The quebracho is highly prized for its tannin and is also used for railway ties In 1928 exports of quebracho extract amounted to 127,504,000 pounds, most of which went to the United States and Germany Iron, manganese, copper, and other minerals are said to be abundant, but there is practically no mining The principal manufacturing industries are meat packing and the production of animal by-products, quebracho extract, beverages, shoes, and flour

COMMERCE Both exports and imports increased in 1928, the exports to \$15,327,000 from \$13,754,000 in 1927, and imports to \$13,802,000 from \$11,535,000 in 1927 About 44 per cent of the exports were animal products, 36 per cent forest products, and 19 per cent agricultural products Argentina took more than three-fourths of the exports, largely for reshipment to the United States, Germany, and Great Britain, a large part of the imports from Argentina, amounting to 38.5 per cent of the total, originated in other countries The United States and the United Kingdom supplied 16 and 11.4 per cent, respectively, of the total imports The leading import items were cotton cloth, wheat, flour, grains, iron and steel, vehicles, machinery, mineral oils, meat and dairy products, animals, linen cloth, sugar and colonial produce, etc

FINANCE Revenues and expenditures during the fiscal year 1927-28 totaled 283,299,000 paper pesos (\$6,403,000) and 293,616,000 paper pesos (\$6,636,000), respectively (one paper peso equalled \$0.0226) Customs revenues, which constitute the most important source of revenue, totaled 178,768,000 pesos in 1927-28, as compared with 149,440,000 in the previous fiscal year The expenditures included extraordinary items amounting to 45,670,000 pesos The budget for 1928-29 calculated both revenues and expenditures at 253,478,000 pesos On Nov. 30, 1928, the external debt stood at 4,536,000 gold pesos and the internal floating debt at 15,000 gold pesos and 4,380,000 paper pesos Figures for the internal funded debt were not available The total national debt on July 31, 1928, was reported as 6,503,898 gold pesos and 27,267,179 paper pesos

COMMUNICATIONS Lack of adequate transportation and communication facilities is a major reason for the comparatively slow economic development of Paraguay In 1926 there were only 517 miles of railroad, 2223 miles of telegraph wire, and 138 miles of telephone wire, with 413 instruments There are few good navigable rivers are principally the boundaries of the country and therefore accessible only to the outlying regions Road construction around the capital made considerable progress in 1928 and in 1929 a 300,000,000 peso contract for the construction of an additional highway was let to an American firm Work on the new port at Asunción was begun by an American company in 1928, and in the same year an air-mail and pas-

senger service between Asunción and Buenos Aires was inaugurated and a new telephone system in Asunción completed.

GOVERNMENT Executive power is vested in a President elected for four years, who acts through a ministry of five members, and legislative power in a congress of two houses: a senate of 20 members and a house of representatives of 40 members elected directly by the people. President in 1929, Dr. José P. Guggiarri, who assumed office Aug. 15, 1928, for a four-year term.

HISTORY The outstanding issue in Paraguay during 1929 was the dispute with Bolivia over the ownership of the Chaco, which led to an armed clash between frontier guards in 1928. For details of the unsuccessful efforts to settle the major boundary dispute and to restore the *status quo* as it existed prior to the clashes at Fort Vanguardia and Fort Bouquillon, see *BOLIVIA*, under *History*, for territory under dispute, see above, under *Area and Population*, also see *URUGUAY* under *History*.

In Paraguay, as in Bolivia, the Chaco dispute was complicated by partisan struggles in the national congress. President Guggiarri, who had been attacked by the Opposition for his conciliatory attitude, on September 12 proclaimed a state of siege throughout the country and was reported to have followed this with the deportation of a number of Opposition deputies and newspapermen. The President justified his action by stating that drastic measures were required to check Communist activities. The state of martial law, originally proclaimed for a 90-day period, was extended for an additional three months on Dec. 13, 1929, by the Council of State. The Liberal party, which had controlled the government since 1922, was encouraged to adopt this means of stifling the Opposition as a result of elections earlier in the year which had strengthened its hold on both the Senate and the House of Representatives.

The intensity of the partisanship rampant in congress was illustrated in connection with the ratification on October 20 of a boundary treaty with Brazil, whereby Brazil recognized Paraguay's title to territory on the west bank of the Paraguay River constituting part of the Chaco territory claimed by Bolivia. Although the treaty apparently strengthened Paraguay's hand in dealing with Bolivia, party politics outweighed this aspect of the situation and the treaty was forced through the Chamber of Deputies only after three weeks of debate, including 15 days of consecutive sessions. The Senate ratified it on February 19. Ratification of the treaty was regarded as a victory for President Guggiarri over his political enemies.

The Chamber of Deputies ratified the Kellogg-Briand Pact in November after the Senate had given its approval in August.

PARAHYDROGEN. See **CHEMISTRY, INDUSTRIAL**.

PARASITES. See **VETERINARY MEDICINE**.

PARDEE DAM. See **DAMS**.

PARK COLLEGE. A nonsectarian institution for the higher education of men and women in Parkville, Mo., founded in 1875. The enrollment for 1929-30 totaled 515, distributed as follows: Seniors, 61, juniors, 95, sophomores, 115, freshmen, 237, and specials, 7. The faculty numbered 38, of which number three instructors were added during the year. The endowment funds amounted to \$1,687,500, from which the income was \$87,000. Tuition and fees amounted to \$92,000 and dona-

tions to \$25,000, \$20,900 was yielded from other sources. The library contained 38,500 volumes. A plan of honors work was adopted in 1927, to which about 10 per cent of each senior class is admitted. The departments represented include biology, chemistry, education, English, modern foreign languages, physics, sociology, classics, mathematics, and history. President, Frederick W. Hawley, D.D., LL.D.

PARKER, EDWIN B. An American lawyer, died Oct. 30, 1929, in Washington, D. C. He was born in Shelby Co., Mo., Sept. 7, 1868, was a student at Central College in Fayette, Mo., and received the law degree from the University of Texas in 1889. He was in the traffic department of the Missouri, Kansas & Texas Railway from 1890 to 1893, after which he began the practice of law in Houston, Tex., with the firm, Baker, Botts, Baker & Lovett, later becoming a partner. During the World War, he assisted in organizing at Washington the War Industries Board and was Priorities Commissioner on the resignation of Judge Lovett. After the Armistice, Mr. Parker was chairman of the United States Liquidation Commission. In 1923 he became umpire of the Mixed Claims Commissions of the United States and Germany, and after 1926 also sole commissioner of the Tripartite Claims Commission of the United States, Austria, and Hungary. He was awarded the Distinguished Service Medal of the United States and honorary medals from Italy, Belgium, and Poland. He also was made an officer of the French Legion of Honor.

PARKS, NATIONAL. The cent of the year in the maintenance parks

of the United States was the adoption by the Congress of a definite policy directing the acquisition of private holdings within the boundaries of the parks and authorizing the employment of the power of condemnation, if necessary, in order to accomplish this purpose. A fund of \$3,000,000 was authorized to carry out this plan, of which \$250,000 in cash was actually appropriated, these funds to be matched by equal amounts of private contributions. A friend of the parks immediately agreed to match as much of the funds as might be necessary to acquire the magnificent stands of sugar and yellow pine on private lands in Yosemite National Park, which were in imminent danger of destruction. Through this policy it was hoped to restore the integrity of the park system which was being threatened through the inability of the service to control private-land activities that not only increased the forest-fire hazard and threatened wild life protection but permitted the operation of various commercial activities wholly at variance with national-park policy.

The development of the educational possibilities of the parks progressed along broad lines, the most important single activity being the appointment by the Secretary of the Interior of an advisory board, headed by Dr. John C. Merriam, president of the Carnegie Institution of Washington, to assist the director of the National Park Service on matters pertinent to educational policy and developments in national parks. The advisory board recommended the establishment of an educational division in the headquarters office of the National Park Service to coordinate the various educational phases of the work, and an item covering the initial year's expenses of such a division was included in the estimates of appropriations needed for the 1931 fiscal year. The greatest museum activity was in Yellowstone

National Park where, under a grant of \$118,000 secured from the Laura Spelman Rockefeller Memorial by the Museum Association, a definite policy of museum expansion was in progress. The museum of hydrothermal phenomena, begun at Old Faithful in 1928, was completed and put into operation, a smaller branch museum at Norris Geyser Basin was under construction. A third museum was to be located at Madison Junction, near the site of the camp fire of the Washburn Expedition of 1870, at which

Yellowstone was discussed and the national-park idea first advanced. Museum service also was provided at Lassen Volcanic National Park in northern California through the gift by B. F. Loomis of a complete museum, on 40 acres of land, containing exhibits relating to the volcanic history of Lassen Peak.

The area of the national parks was increased during 1929 from 11,846 to 12,118 square miles and the area of the national monuments from 3723 to 3728 square miles. The establishment of the Grand Teton National Park in Wyoming by act of Congress approved Feb. 26, 1929, added the twenty-first park to the system and ended a thirty-one-year effort to give this outstanding area park status. The Arches National Monument in southern Utah also was established, increasing the number of national monuments administered by the National Park Service to 33. In this area there are extraordinary examples of the work of wind erosion in the form of gigantic arches, natural bridges, window openings, balanced rocks, and other unique wind-worn formations. The area of Yellowstone National Park was enlarged by 78 square miles through boundary revisions to the north and east, Lassen Volcanic Park was enlarged by the addition of 39 square miles, and the area of Lafayette National Park on Mount Desert Island, Me., was enlarged to 16 square miles and its name changed to Acadia.

Considerable work was made on the projects to acquire the national parks in the East. In the case of the Great Smoky Mountains project in Tennessee and North Carolina, funds amounting to \$4,500,000 were available toward purchasing the lands needed for park purposes, and title to more than half the area of the total minimum acreage of 427,000 acres specified by Congress had been acquired. The Mammoth Cave National Park Association reported that lands and money totaling about \$1,100,000 had been subscribed thus far for the Kentucky project, and more than half the amount needed to acquire the minimum of 327,000 acres for the Shenandoah (Va.) Park project had been acquired.

Under the direction of the fire-control expert appointed in 1928, detailed surveys of the fire hazards in a number of parks were made, and comprehensive plans were worked out for the prevention and suppression of forest fires in these areas. So effective were the control methods employed that fires originating within national parks were held down to a minimum, despite the fact that fire hazards were increased by the abnormally dry conditions. The serious Half Moon fire in August, which menaced Glacier National Park, originated on privately-owned lands 10 miles outside the park. The fire spread into both the Blackfoot and Flathead National Forests and on August 20, under a high southwest wind, entered the park near the administration headquarters at Belton, jumping the river on a half-mile front

and running 10 miles between 2 p.m. and midnight. In all, 50,000 acres of park forest were destroyed, 10,000 acres of which were old burns upon which reproduction had been started.

The most serious insect infestations during the year occurred in Crater Lake and Glacier National Parks. In the former an especially severe attack by the mountain pine beetle required prompt successive measures, while surveys made by representatives of the bureaus of Plant Industry and Entomology in Glacier, Acadia, and Mount Rainier National Parks showed a serious condition of white-pine blister rust. Several studies of the wild-animal situation in the national parks were inaugurated through the cooperation of interested organizations and individuals, the largest donations for this purpose being received from George Wright and Thomas Cochran. The first step also was taken in coordinating fish-culture work, a specialist being detailed, through a cooperative arrangement effected between the Department of Commerce and the Department of the Interior, to supervise fish-culture operations in the national parks and monuments.

The total appropriations to the National Park Service for the fiscal year 1929 were \$4,754,015,

VISITORS TO PARKS AND MONUMENTS

Name of Park	1929
Acadia	149,554
Bryce Canyon	21,997
Crater Lake	128,435
General Grant	44,781
Glacier	70,742
Grand Canyon	184,091
Grant Teton	51,500
Hawaii	109,857
Hot Springs	184,517
Lassen Volcanic	26,106
Mesa Verde	14,517
Mount McKinley	1,038
Mount Rainier	217,781
Platt	204,598
Rocky Mountain	274,408
Sequoia	111,385
Sullys Hill	21,004
Wind Cave	108,941
Yellowstone	260,697
Yosemite	461,257
Zion	33,283
Total	2,680,597
Estimated	

Name of Monument	1929
Arches (Utah)	500
Aztec Ruins (New Mexico)	18,193
Capulin Mountain (New Mexico)	12,000
Carlsbad Cave (New Mexico)	76,822
Casa Grande (Arizona)	37,344
Chaco Canyon (New Mexico)	2,750
Colorado (Colorado)	12,000
Craters of the Moon (Idaho)	7,710
Devils Tower (Wyoming)	12,000
El Morro (New Mexico)	2,625
Guan Quivira (New Mexico)	1,357
Hovenweep (Utah-Colorado)	450
Montezuma Castle (Arizona)	17,824
Muir Woods (California)	93,158
Natural Bridges (Utah)	100
Navajo (Arizona)	965
Papago Saguardo (Arizona)	87,600
Peterson Forest (Arizona)	69,150
Pinnacles (California)	10,756
Pipe Spring (Arizona)	24,883
Rainbow Lake (Idaho)	450
Scotts Bluff (Nebraska)	42,500
Sitka (Alaska)	3,500
Tumacacori (Arizona)	18,250
Verendrye (Nebraska)	11,500
Wupatki (Arizona)	550
Yucca House (Colorado)	250
Total	567,667
Estimated	

with additional authority to enter into contractual obligations for road work up to \$4,000,000. Cash donations to the national parks during the year amounted to \$16,255, while revenues derived from the operation of the parks amounted to \$840,272, an increase of \$41,017 over the 1928 revenue and the highest yet received despite the drastic cut made in automobile license fees several years ago. During the 1929 season, 2,680,507 persons visited the national parks and 567,667 persons, the national monuments, making a total of 3,248,264 visitors, an increase of 726,076 over 1928, previously the record year for travel. Increased winter use of the national parks was reported, 12 of these areas and several of the national monuments of the Southwest being accessible to travel throughout the year. The tables on page 640 from the report of the Director of the National Park Service, by giving the number of visitors to each park and monument, indicate the trend of the tourist traffic for the fiscal year 1929.

The eleventh National Park Conference was held in Yellowstone National Park, Wyoming, Sept. 18-27, 1929. Special attention was devoted to road and trail problems, educational activities, landscape protection, fire control, patented land problems, and matters of public contact. The director of the National Park Service in 1929 was Horace M. Albright who was appointed to succeed Stephen T. Mather, director of the service since 1917, who resigned on account of ill health.

PARRINGTON, VERNON LOUIS. An American professor and author, died suddenly in London, June 17, 1929. He was born Aug. 3, 1871, in Aurora, Ill., was graduated in 1893 from Harvard University, and received a master's degree from the College of Emporia in 1895. He also studied at the British Museum and the Bibliothèque Nationale in 1903-04. He was instructor in English and French at the College of Emporia in 1893-97, going then to the University of Oklahoma, where he was professor of English from 1898 to 1908. He became assistant professor of English at the University of Washington in 1908, and professor after 1912. With *Main Currents in American Thought* (1927), Professor Parrington won the Pulitzer history prize for 1927.

The same year, he wrote *Sinclair Lewis—Our Own Diagnosis*. He contributed to the *Cambridge History of American Literature* (vol. 1) the essay, "The Puritan Divines" (1917). He wrote for various reference books and periodicals, including *The Nation*, *Herald-Tribune Books*, and the *Saturday Review of Literature*. In 1926 he was editor of *The Connecticut Wits*.

PARROT DISEASE. See **PHITTACORIS**.

PARTHENOGENESIS. See **ZOOLOGY**.

PATENTS. See **UNITED STATES** under **PATENTS**.

PAVEMENTS. See **ROADS AND PAVEMENTS**.

PAYNE FUND. See **EDUCATION IN THE UNITED STATES**.

PEACE AND PEACE MOVEMENTS. Of the Congresses organized by the International Peace Bureau in recent years, the Athens Peace Congress, October 6-12, was considered the most successful. There were representatives from most of the west European countries, although Italy was absent. With the exception of Albania, the Balkan countries all were represented. Turkey was present. Four Americans, and nine from Great Britain attended. One of the consequences of the Peace Congress at Warsaw was the attendance of

the Polish delegates at Athens. No small part of the success of the gathering was due to the fact that it was the first Peace Congress to be organized in the Balkans. The Greek organizing committee spared no efforts, without being ostentatious, in the provision of facilities. The several commissions did their work and the full sessions of the Conference were held in the Parliament buildings. There was a special meeting in the University of Athens. The youth of Athenian youth at the foot of the Acropolis heard the message of peace made a memorable scene. The final session of the Conference was held in the open theatre of Delphi. Here, where 2000 years ago the ancients discussed the possibilities of a federation of Greek City States, the Conference issued a resolution commending a United States of Europe to the modern world.

The British Memoranda on Minorities, and the National Council on the Kellogg Pact and the Freedom of the Seas, proved serviceable contributions to the proceedings. The Greek Prime Minister made a short speech at one of the morning sessions. On the informal side of the Conference the contacts of west Europeans and Americans with representative Balkans and the friendly intercourse of Balkan delegates among themselves were of import. The resolution of the Conference to which most practical importance can be attached was the one unanimously adopted by the Balkan delegates in favor of a Balkan Federation and the undertaking to organize an annual Balkan conference with this object in view. This resolution was supported in full conference by short speeches from the Balkan representatives and by a favorable declaration from the representatives of Turkey. It involved the assistance for its fulfillment, not only of the international Peace Bureau, but of the Federation of League of Nations Societies, the Interparliamentary Bureau, the League for Intellectual Cooperation and such other societies as may be interested in the economic and political consolidation of the Balkans.

President Hoover's Armistice Day speech was not an official pronouncement of American foreign policy, but it was the broadest declaration of his own objectives that had yet come from the White House. The distinction was important, because the views of the Senate—which shares the treaty-making power—were clearly at variance with some of the major policies advocated by the President. Mr. Hoover permitted few digressions from his central theme, "preparedness for peace." He declared that "peace is not a static thing," but as dynamic as the conduct of war itself. "The pledge to renounce contained in the peace pact must be supplemented by machinery for the settlement of international disputes. To this end, he asserted, we need to strengthen our own provisions for it. Specifically, he said, we must strengthen our State Department, 'the great arm of our government dedicated to the organization of peace.'" Further, he said, we must "extend our treaties with other countries providing methods for reference of controversies to conference, to inquiry, or to arbitration." We must support the World Court "under proper reservations" in order to insure judicial determination of legal controversies and we must aid in defining the rules of conduct of nations through an authoritative system of international law.

An effort was made to establish at The Johns Hopkins University a School of International Relations in memory of the late Walter Hines Page,

one time Ambassador to Great Britain. The idea, which originated with Owen D. Young, is that such a school would serve in the first place as a clearing house for all the research and inquiry in this field which are being conducted or are likely to be conducted in the United States and that such a school would cooperate with similar institutions abroad, so that there would be available a real comprehensive body of fact that might serve as a corrective to the current supply of prejudices and notions. Fairly large sums were collected toward the initial endowment of \$1,000,000 which the trustees of the university originally set as their goal.

The Executive Committee of the World Conference for International Peace Through Religion met in Frankfurt, Germany, August 19-23, with 61 members present. The chairman of the meeting was Dr. Shailer Mathews, Dean of the Department of Religion, University of Chicago. There were present outstanding men and women from among the Roman Catholic, Protestant, and Eastern Orthodox churches, and from Jews, Confucians, Moslems, Hindus, Buddhists, Bahis, and Shintos. Dr. Tomomatsu was present as the representative of the Japanese Committee, which embraces all the religions of Japan, with Dr. Joshi as the representative of the All-India Committee in which every religion and cult in India had a place. The Conference clarified the purpose and completed the organization begun at Geneva last year.

The most important decision taken was the establishment of four international Commissions as follows: Commission No. 1: What are the influences in the world that make for war? Commission No. 2: The spiritual resources of mankind with which these influences can be met. Commission No. 3: Survey of the efforts made by adherents of the different religions to further inter-racial and international understanding and peace. Commission No. 4: To suggest methods by which these resources may be set in motion, coordinated and directed to bear upon the causes of war.

It was agreed that the Conference should be held in 1931, and that the place, together with the exact date, should be left to the business committee which was elected at this conference and to which was committed the responsibility of carrying out the details in preparation for the conference. The conference probably would be held somewhere in the East or the Near East. The change in the name from Universal Religious Peace Conference to the present title was unanimously agreed upon.

THE CHURCHES AND PEACE. Since 1908 the Federal Council of the Churches of Christ in America, through its Commission on International Justice and Goodwill, had been steadily carrying forward a peace educational programme. On Jan. 4, 1929, the secretary of the commission took to Washington two trunks full of memorials in support of the Peace Pact of Paris, signed by over 180,000 persons. These memorials were presented to President Coolidge, Secretary Kellogg, and Senator Borah, and then those from each State were distributed among the other Senators.

Those who signed the petition declared their belief as follows:

First—That war should be renounced and never again be resorted to by civilized nations as the means for settling disputes, enforcing national claims, or seeking national objectives.

Second—That war should be made a crime by specific provision of international law.

Third—That the settlement of every threatening dispute, whatever its nature, should never be sought, except by peaceful means.

Fourth—That even regarding disputes which the nations involved may not be ready to submit to arbitration or judicial settlement, they should nevertheless pledge themselves not to resort to war.

Fifth—That solemn engagements pledging the good faith of the nations in these vital matters are essential to the development of the spirit of mutual confidence which must precede a general movement for thoroughgoing disarmament.

Practically every one of the 48 States was represented in this nation-wide movement of the churches in support of the multilateral anti-war treaty. New York State, with 27,793 petitioners, headed the list. Pennsylvania was next in order with 19,712. Ohio followed with 15,399, and Illinois with 11,427.

While at the White House, Bishop McDowell (Methodist) transmitted to President Coolidge a copy of the Declaration of Policy of the Federal Council's Commission on International Justice and Goodwill, which had been adopted at the Quadrennial Meeting in Rochester. The Declaration of Policy affirmed that—

The acceptance of the Pact by the nations as an imperative obligation to seek the solution of their controversies by peaceful methods exclusively will depend in large measure on the acceptance of that obligation in actual practice by the United States itself. Believing that any material increase of the United States Navy at this time would tend to nullify the influence of this Pact in creating a spirit of mutual confidence among nations, the Federal Council in this statement of policy urged "that no authorization be given for any such increase."

At the same time, the Federal Council expressed "its support of the President in his request that the time-limitation provisions of the naval construction bill now before the Senate be eliminated."

Other statements in the Federal Council's Declaration of Policy had to do with "Peaceful Settlement of International Disputes," "Security and Disarmament," "Relations with the Orient," "Relations with Latin America" and "Christian International Relations."

Regarding the peaceful settlement of international disputes, the Federal Council said:

The great nations are entering upon an era of intense industrial and economic development and inevitable competition. Conflicting interests will arise at many points and national passions will be aroused. That these may not result in war, as hitherto has often been the case, the nations need to develop with all possible speed the agencies and procedures essential to the peaceful settlement of these disputes on the basis of justice and goodwill. We believe moreover, that international law should be rapidly developed, and made explicit and binding by general treaties as promptly as possible, and that whenever controversies between nations come within the scope of already established law, the United States and all the nations should accept the affirmative jurisdiction of the appropriate tribunals. We believe that these procedures are fundamentally important to the largest success of the Pact.

In the opinion of the Federal Council the official announcement by President Hoover on July 24 that the Briand-Kellogg Peace Pact had become effective as between the 51 nations which had thus far accepted its obligations is an event of major significance in world history. His leadership received the heartiest support from church bodies throughout the country. The Federal Council, through its Commission on International Justice and Goodwill, promptly expressed enthusiastic approval of the President's programme and committed the Council to all possible steps in edu-

caling its constituency concerning the necessity for international agreement to prevent competition in naval building.

A battle royal between militarists and peace advocates seemed likely to take place during the near future. Those who supported the constructive policies for peace and desired to see the spirit and intent of the Pact were being urged to be alert to the psychological battle that will be waged and be prepared to give practical support.

The strategic issues around which the struggle will centre will be

1 American membership in the Permanent Court of International Justice through the acceptance of the Root Formula

2 Ratification by the United States of the Pan-American arbitration Treaty, including its obligatory features

3 Practical measures for really reducing military and naval competition

4 Efforts in Congress to support the Peace Pact by a declaration of United States policy regarding an embargo on exportations of arms to nations resorting to war in violation of their pledges under the Pact

To aid this general situation, the Commission on International Justice and Goodwill prepared material for Armistice Sunday and for study conferences during the winter.

A sensational attack on the Council was made by Captain Dudley W. Knox, head of the Historical Section of the Navy Department, in an article in the *United States Naval Institute Proceedings*. Captain Knox, charged the Federal Council of Churches, with responsibility for having defeated the Big Navy Bill in 1928 and then went on to say that "a considerable part" of its funds came from an endowment "made in 1926 by Sir Henry Lunn, a wealthy Englishman." On the basis of this allegation, the captain tried to show that the whole peace programme of the American churches in general and of the Federal Council in particular was the result of insidious "British propaganda."

Dr C. A. S. MacFarland, General Secretary, flatly denied that the Council had ever received a single dollar from any foreign source whatever. The reply made in behalf of the Federal Council to the article by Captain Knox was in part as follows:

At the same time when President Hoover has just been calling in his Memorial Day address for the fullest acceptance of the Kellogg Pact and the consequent reduction of naval armaments by all nations, Captain Knox bursts into print with an attack upon the Federal Council of Churches for its efforts in behalf of these very objectives.

The first thing to be said concerning Captain Knox's statement, as reported in the *Proceedings*, is that it is absolutely false in its main facts. His intent I have had responsibility for the financial affairs of the Federal Council for over eighteen years and during that time not one dollar has ever come from Sir Henry Lunn or from any fund created by him or from any British source or from any organization with any foreign membership.

Attention should be called to the fact that the chairman of the Federal Council's Commission on International Justice and Goodwill during all this programme for which it is under fire from Captain Knox was the Honourable George Wickersham, to whom President Hoover has lately entrusted a most important governmental mission. The vice chairman of the Federal Council's Commission was the late Right Reverend Charles H. Brent, whose recent death was mourned by the entire nation.

Captain Knox's accusation that British propaganda has subtly affected the Federal Council of Churches is not only groundless but so calculated to stir up suspicion and ill will toward a friendly country as to merit the condemnation of all public spirited citizens. I deeply regret the injury that has been done to the Navy Department itself by this unfortunate episode. I still more deeply regret the serious embarrassment brought upon

President Hoover in being confronted with such an outburst immediately after his Memorial Day address, urging reduction of naval armament, and immediately after the recent statement of the Secretary of State, calling attention to the serious responsibility for world peace resting upon the American people.

It would be well for Captain Knox to study carefully the President's message before he characterizes as unpatriotic all the peace workers and persons who have been working along the President's appeal.

The Roman Catholic Association for International Peace held its third annual meeting April 2d and 3d, at the Catholic University in Washington, D. C. It was attended by leading scholars and interested clergymen and laymen from all parts of the country. Various reports were made and papers read. Miss Elizabeth B. Sweeney, Miss Anna Dill Gamble, Michael Francis Doyle, and Rev. Gregory Feige, respectively, made reports on the work of the Catholic Council for International Relations, London; the Catholic Union for International Peace (Switzerland); the Catholic Circle de Geneva (Switzerland), and the German Catholic Union for Peace (Germany). At the subsequent meetings the more important papers read and discussed were the "Popes and Peace," by Dr. D. L. Maynard Gray; "The Newer Attitude on Peace," by Dr. W. M. T. Gamble, "American Cooperation with the League of Nations in its 9th Year," by Michael Francis Doyle, "The World Economic Conference," by the Rev. Thomas F. Divine, S.J., "Security and Disarmament," by Rev. Joseph F. Thurning, S.J., "The Briand-Kellogg Pact and World Peace," by David L. Walsh, United States Senator from Massachusetts.

Other reports were made by William Franklin Sands. It was arranged that the addresses and reports be printed for distribution, and special attention be given the various colleges and schools to enable them to properly pursue the studies on international relations.

What women of the six great powers could do to strengthen the determination of their respective governments to build international peace-making machinery was the main topic for discussion at the fifth annual Conference on the Cause and Cure of War in Washington from January 14 to 17. Three widely known and representative women from Europe and one from the Orient conferred with fifty representatives from each of ten leading national organizations who for four years in the United States had been studying the causes and cures of war. There was a sharp discussion into the causes for hesitation and delay on the part of governments with respect to disarmament and building support for the Kellogg Pact.

The visitors were Miss Kathleen D. Courtney of England, honorary secretary of the British Women's Peace crusade, Frau Dorothee von Velsen, president of the German League for Equal Citizenship for Women, Madame Marie Louise Puesch of France, vice president of the International Federation of University Women, and Mrs. Tsune Gauntlett of Japan, one of the leaders in organizing the Japanese women's petition for peace. With Miss Ruth Morgan, vice president of the National League of Women Voters, representing the United States, the group participated in a forum on peace.

In announcing the date for the meeting, Mrs. Carrie Chapman Catt, chairman of the National Committee on the Cause and Cure of War, said

It is apparent that there would be no more war if the six great powers with their vast armies, navies, and resources should agree to have peace. For this reason

women from these nations have been invited to consult with American women upon the next steps which must be taken and upon the existing gaps in the international peace program. Together we shall make an effort to discover how the women of these countries can unitedly aid in the building of such international machinery as will prevent war and establish peace. This is the natural outcome of our four preceding conferences which have been conducted with the object of giving definite information on war and peace to our ten cooperating organizations and upon which their 12,000,000 members could build their programs on international relations.

The officers of the national committee in addition to Mrs. Catt were Miss Ruth Morgan, Miss Henrietta Roelofs, Mrs. Edgerton Parsons, and Miss Josephine Schann of New York City and Miss Ben Hooper of Oshkosh, Wis.

The ten organizations which cooperated in carrying on the committee and the conferences were American Association of University Women, Council of Women for Home Missions, Federation of Woman's Boards of Foreign Missions of North America, General Federation of Women's Clubs, National Board of Young Women's Christian Association, National Council of Jewish Women, National Federation of Business and Professional Women's Clubs, National League of Women Voters, National Woman's Christian Temperance Union, National Women's Trade Union League.

A gift of \$55,000 was presented to the Idaho University by Salmon O. Levinson for the establishment of a Borah Outlawry of War Foundation. Mr. Levinson conceived the idea of the Foundation when he saw Senator Borah on the floor of the Senate for the Pact of Paris. Idaho was Senator Borah's home State and the net income of the gift to the university was to be used to maintain a lectureship for the promotion of the cause of war outlawry. The gift was an act of friendship between the two men who have fought for the outlawry cause. For Mr. Levinson was the originator of the plan which forms the basis of the Kellogg-Brand Pact and Senator Borah was among the most vigorous and influential champions of the Pact in the United States Senate.

The World Peace Foundation issued in the United States the French *L'Annuaire de la Société des Nations 1929* or *Yearbook of the League of Nations for 1929* which is not only an encyclopædia of information on the League but a very complete and useful "Who's Who" of statesmen and diplomats of various countries.

The American Peace Society moved its offices to 20 Jackson Place, Washington, D. C. For the first time in its history there was sufficient room for its large and growing library. An effort was to be made to secure adequate headquarters in Washington. At the annual meeting on May 4, William Fortune was reelected president and Arthur D. Call, secretary. During the year the society published *Centennial History*, by Edson L. Whitney, a comprehensive review of its work during the century of its existence. In addition it contains an account of many other activities in the field of International Peace. The Society also published a leaflet entitled *The Contract of the Nations*, setting forth its present policy. The Peace Patriots, 114 E. 31st St., New York,

is an organization designed to show that opposition to war is not incompatible with love of country. Its work consists in obtaining newspaper publicity for this idea, and in arousing sentiment in favor of such measures as the proposed Naval Conference. On Independence Day a broadside

was issued calling attention to the fundamental importance of the idea underlying the organization.

PEACHES. See HORTICULTURE, BOTANY, under *Plant Disease*.

PEAKE, ARTHUR SAMUEL English Christian theologian, died Aug. 19, 1929, in Manchester, England. He was born in Leek, Staffordshire, Nov. 24, 1865, and was educated at St. John's College, Oxford, where he won honors. During 1890-97 he was a fellow of Meiton College, and in 1890-92, a lecturer in Mansfield College, Oxford. From 1895 to 1912, he lectured at Lanchashire Independent College, from 1904 to 1912, at the United Methodist College of Manchester. After 1892 he was a tutor in Hartley Primitive Methodist College of Manchester, and after 1904, Rylands professor of Biblical Exegesis in Victoria University. Mr. PEAKE began to edit the *Holborn Review* in 1919, he also wrote and edited a vast number of books on Biblical subjects. Among the late ones are *A Commentary on the Bible*, edited (1919), the British ed., 5 vols., *The Outline of Christianity* (with Dr. R. G. Parsons, 1926); *Recent Developments in Old Testament Criticism* (1928), *Paul the Apostle—His Personality and Achievement* (1928).

PEARS See HORTICULTURE.

PENANG, pe-nang' One of the Straits Settlements. See STRAITS SETTLEMENTS.

PENDER, SIR JOHN DENISON DENISON. A British electrical engineer and head of submarine cable enterprises, died in London, Mar. 6, 1929. He was born Oct. 10, 1855, the son of Sir John Pender, a pioneer in submarine telegraphy, and in 1869 went to Eton College. He became associated in 1878 with the Eastern Telegraph Company, the first of the British cable group, and for 45 years was connected with this and associated companies. In the merger of cable and wireless companies in July, 1928, he had a leading part. At the time of his death, he was chairman of the Eastern and Associated Cable Companies. After the South African War, he was created Knight Commander of St. Michael and St. George for his cable service. In the World War he again served the British government, both in maintaining the British cable communications and in cutting off those of the enemy. For this he was made in 1920 a Knight of the Grand Cross of the Order of the British Empire.

PENNSYLVANIA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 8,720,017. The estimated population on July 1, 1928, was 9,854,000. The capital is Harrisburg.

AGRICULTURE. The table on page 645 gives the acreage, production, and value of the principal crops in 1928 and 1929.

MINERAL PRODUCTION. The State furnished 19.11 per cent of the mineral products of the Union for 1927, as compared with 19.18 per cent for 1926, and maintained its position as the leader in mineral industry. This reckoning, moreover, did not take into account the State's output of pig iron, in which likewise it held the lead. The total value of the mineral product of the State, with duplications and pig iron eliminated, was \$936,693,474 for 1927, for 1926, \$1,055,766,077. The fall in the total for 1927 was due to a decline in coal mining incident to labor conflicts in the bituminous coal industry. In spite of the end of the contest over the miners' wages, the production of coal declined yet more, both in the anthracite

Crop	Year	Acreage	Prod Bu	Value
Hay	1929	2,886,000	4,298,000	\$56,248,000
	1928	2,989,000	4,658,000	58,174,000
Corn	1929	1,809,000	46,470,000	46,470,000
	1928	1,288,000	50,087,000	46,534,000
Potatoes	1929	284,000	25,740,000	41,184,000
	1928	246,000	31,980,000	20,787,000
Wheat	1929	1,119,000	20,138,000	24,871,000
	1928	1,108,000	17,171,000	22,148,000
Oats	1929	1,014,000	29,918,000	17,050,000
	1928	1,067,000	34,678,000	18,379,000
Apples	1929	5,875,000		9,258,000
	1928	5,460,000		9,729,000
Tobacco	1929	88,700	47,601,000	8,521,000
	1928	87,000	49,580,000	6,941,000
Buckwheat	1929	199,000	3,888,000	7,387,000
	1928	195,000	3,802,000	7,384,000
Rye	1929	124,000	1,984,000	2,103,000
	1928	103,000	1,596,000	1,708,000

* Tons * Pounds

and in the bituminous field in 1928. The anthracite production was 76,734,000 short tons for 1928, as against 80,095,564 for 1927; in value, \$400,374,000 for 1928 and \$420,941,726 for 1927. The case of the bituminous mines was similar; production fell to 131,202,163 short tons for 1928, from 132,964,039 tons for 1927; in value, the production of 1928, \$249,895,000, was below the \$272,714,000 of 1927. The output of coke for 1928 was not far from that for 1927, there were produced in 1928 13,475,349 short tons of by-product coke, valued at \$51,132,406, and 7,179,000 short tons of beehive coke. Their combined value was approximately that of the 11,061,084 short tons of by-product and 5,716,207 of beehive produced in 1927, which were valued at \$67,170,075. See COAL, COKE.

The smelting of pig iron increased, to the quantity of 12,289,455 long tons for 1928, from 11,145,334 tons for 1927, and to the value of \$216,425,084 for 1928, from \$212,179,275 for 1927. In the production of ferro-alloys Pennsylvania furnished about half the output of 1927, supplying 334,032 long tons, of the value of \$32,137,339. Outside of the coal and iron group the foremost mineral industry was that of cement, of which the production fell moderately for 1928, in which year were shipped 41,161,019 barrels, as against 42,909,513 in 1927, the value of shipments was \$62,572,588 for 1928 and \$66,711,069 for 1927. Clay products attained the value of \$50,909,106 for 1927 and \$55,041,270 for 1928. The yield of natural gas, 105,709,500 M cubic feet, for 1927, was little changed from the 107,089,000 M cubic feet of 1926, its value for 1927 was \$49,135,000 and for 1926, \$50,040,000. The production of petroleum, though no longer one of the chief mineral industries, rose to 9,876,000 barrels for 1928, from 9,526,000 barrels for 1927, which in turn marked an increase over 1926, value of petroleum produced was \$32,900,000 (estimated) for 1928 and \$29,150,000 for 1927. The yield of stone, chiefly of the commoner grades, attained a value of \$18,999,592 for 1927 and \$19,157,336 for 1926. This did not include the production of slate, in value \$1,786,355 for 1928 and \$4,769,432 for 1927. The yield of lime was estimated for 1928 at 800,000 short tons or \$6,000,000, for 1927 it was 813,571 tons or \$6,105,241.

FINANCE State expenditures in the year ended May 31, 1928, as reported by the U. S. Department of Commerce, were for maintenance and operation of governmental departments, \$93,583,350 (of which \$26,484,843 was for local education), for conducting public-service enterprises, \$94,647; for interest on debt, \$4,247,403, for im-

provements, \$24,064,819; total, \$121,990,219 (of which \$38,468,779 was for highways, \$20,477,095 being for maintenance and \$17,991,684 for construction). Interdepartmental payments accounted for \$822,924 of the year's total expenditure. Revenues were \$147,010,597. Of these, special property and special taxes, although no general property tax was levied, furnished 40.9 per cent, earnings of departments and compensation paid the State for officers' services, 6.8, sale of licenses, 40.6 (including gasoline taxation of \$15,811,813). The State's funded debt of May 31, 1928, \$93,586,920 outstanding or \$87,995,726 net of sinking funds, included \$93,221,000 of highway debt.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1920, was 11,208.35. There were built, in 1929, 10.26 miles of first and 11.29 of second track.

MANUFACTURES According to the biennial Census of Manufactures published by the United States Department of Commerce in 1929, there were in the State, in 1927, 17,314 establishments, establishments. These employed 1,315,993.319, whose wages for 1927 totaled \$1,315,993,319. Materials and supplies used in manufacture cost \$3,728,061,776. The manufactured products attained the combined value of \$6,715,563,455.

EDUCATION As a result of the work of research committees, one of county and the other of district superintendents, there was established a system of local supervision for the improvement of instruction. The Journal of the National Education Association reported the creation of the Lloyd Miffin Home, an institution for the care of teachers. A Continuing Contract statute was enacted for the academic year 1928-29 the population of school age was estimated at 1,995,100. There were enrolled in that year, in the public schools of the State, 1,897,128 pupils. Of these, 1,513,867 were in the elementary and 383,261 in the high schools. The expenditures of the year 1927-28 for public-school education totaled \$243,572,111. Salaries of teachers averaged \$1413 for that year.

CHARITIES AND CORRECTIONS The State Department of Welfare, the central body dealing with institutional activities and the State's relations to dependents, has as its head a Secretary of Welfare. Its bureau of children is highly developed, administering a mothers'-assistance fund in co-operation with county authorities; the bureau of assistance is charged with dispensing State funds among institutions not owned outright by the State, and supervising almshouses and many other institutions, the bureau of mental health supervises institutions, State and other, for the care of the mentally affected, the bureau of restoration has charge of State penal and reformatory institutions and supervises county prisons. State institutions were, in 1929, nine State mental hospitals with an aggregate capacity of about 11,000 patients; four State schools for mental defectives, capacity about 3800, three sanatoria for the tubercular, capacity about 2000, 10 general State hospitals for the sick and injured, many of them situated in the coal regions, two schools for the deaf, capacity about 150, Pennsylvania Soldiers' and Sailors' Home, Erie, capacity 600, Soldiers' Orphans' Industrial School, at Scotland, Pa., capacity 269, Pennsylvania Training School for Delinquent Children, Morgantown, capacity 514, State Industrial Home for Women (delinquents), Muncy, capacity 124; Pennsylvania Industrial

Reformatory (male delinquents, 15 to 25), Huntingdon, capacity 804; State penitentiaries at Philadelphia, Pittsburgh, and Rockview, capacity 3350, State Colony for Epileptics, Selinsgrove.

LEGISLATION The regular biennial session of the State Legislature convened on January 1 and adjourned on August 18. It passed appropriations in excess of \$200,000,000 for the ensuing two years, compelling Governor Fisher to reject part of the proposed expenditure in order to keep the finances of the State within the approximate \$186,000,000 of existing surplus and estimated revenue. There was created by statute a State Department of Revenue. The Davis-Harris Act was passed, to authorize subdivisions of the State to employ voting machines in elections, on condition that voting-machine referenda be held previously, on the proposition to employ them. A code for the regulation of motor traffic and vehicles was enacted. It required among other things that every owner must submit his car for State inspection within 30 days after notice of appointed time to be fixed by the Governor. By the Mansfield Act 10 industrial farms were to be substituted for the existing system of county work-houses. The State was for this purpose to be divided into 10 districts, Philadelphia and Pittsburgh each forming one and the rest being composed of eight counties apiece.

Two measures prompted by the unpopular acts of the Coal and Iron Police in the course of the late coal strike in western Pennsylvania were passed, of these one, the Musmanno bill, restricting the powers of the companies' private police to the property of their employers, was vetoed by Governor Fisher, the second measure, identical with the first in other restrictions, but not containing the territorial restriction, was signed. The State tax on gasoline was increased to 4 cents, from 3 cents a gallon. In the field of penal law, the Salus Act was passed, providing life sentences for fourth offenders in felony cases. The act resembled in part the Baumes Law of New York, but required that the fourth felony should have been committed within five years after the third and gave trial judges simple permission to impose the life sentence, without rendering this course compulsory, allowing moreover that the defendant might appeal from his sentence to the higher courts.

The Legislature proposed an amendment of the clause requiring otherwise, to have paid State and county taxes within two years, in order to be entitled to vote. A charter prepared by the Metropolitan District Commission for a consolidation of the communities of Allegheny County into a single greater city of Pittsburgh was passed. It was provided that these communities should vote on the question of consolidation at the ensuing primary election. By act the purchasing functions of the government of Philadelphia were concentrated in a Director of Supplies and Purchases. Maternity hospitals in third-class cities were subjected to licensing and to supervision by the Welfare Department. The killing of game with the bow and arrow was rendered lawful in open season.

POLITICAL AND OTHER EVENTS The plan to create a greater Pittsburgh by including the whole of Allegheny County in a single municipality was put to a referendum vote in all the communities of the county on June 25 and was defeated. The county included 122 municipalities,

and its area of some 725 square miles would have made it almost the most extensive city in the world. Pittsburgh itself voted overwhelmingly in favor of the extension, but McKeesport, Duquesne, and Clairton voted against it by clear majorities. A majority of two to one was required under the law to bind a community in favor of the plan. Of 66 boroughs, 34 gave the necessary favorable vote, and 32 did not. Of townships, 15 gave the necessary affirmative vote, and 38 did not. The vote for the whole county was light, and gave a total of 87,807 in favor and 40,973 against. The Metropolitan Commission, at a general election, but the Court of Common Pleas ruled that a new enabling act of the Legislature would be prerequisite to a new referendum. The county commissioners sought a determination of the point by the State Supreme Court, with a view to holding a referendum in November of 1930.

In Philadelphia a proposal that the city should issue bonds to the total of \$55,000,000 for a number of improvements, including the Ridge Avenue and Eighth Street subway connection, replacement of the Market Street Elevated tracks under the Schuylkill River and sewage improvements, was approved by referendum vote on September 17. A Philadelphia Criminal Justice Association was organized in April to promote the suppression of crime in the city. The city Civil Service Commission directed in August that 100 police, discharged in 1928 for various derelictions, be restored to duty. The city government brought action for the purchase by condemnation of underlying properties of the Philadelphia Rapid Transit Company at an estimated valuation of about \$139,000,000.

There were created for Philadelphia a City Planning Commission and a new Zoning Commission. The city negotiated with the United States Shipping Board for the purchase of Hog Island, to be used as the site of an airport. The Pennsylvania Railroad carried out a relocation of trackage in the vicinity of the Broad Street Station, creating a street named the Pennsylvania Boulevard, on which the railroad erected a 22-story building. The Curtis Institute of Music and the Grand Opera Company joined forces for the production of opera on a superior scale.

The life sentence on fourth offenders in felony cases was first imposed in October. Preliminary work was done on a project for a \$30,000,000 power dam on the Susquehanna River at Safe Harbor, to be built by the Pennsylvania Water and Power Company. The construction of a 75-foot commemorative tower and beacon on Bowman's Hill, at the site of Washington's crossing of the Delaware, was undertaken.

OFFICERS Governor, John S. Fisher, Lieutenant-Governor, Arthur H. James, Secretary of the Commonwealth, Robert R. Lewis, Treasurer, Edward Martin, Auditor-General, Charles A. Waters, Attorney-General, Cyrus E. Woods, Superintendent of Public Instruction, John A. H. Keith.

JUDICIARY Supreme Court Chief Justice, Robert von Mischak, Judges, Robert S. Frazer, Emory A. Walling, Alexander Simpson, Jr., John W. Kephart, Sylvester B. Sadler, William I. Schaffer.

PENNSYLVANIA, UNIVERSITY OF A non-sectarian institution of higher education in Philadelphia, primarily for men but with certain

courses open for women; founded in 1740. It is composed of the college of arts and sciences, the Towne Scientific School (engineering and chemistry), the Moore School of Electrical Engineering, the Wharton School of Finance and Commerce, the school of fine arts (architecture, fine arts, music), the school of education, the graduate school, and the professional schools of medicine, graduate medicine, law, dentistry, veterinary medicine, hygiene, and public health. The 1929 autumn enrollment was 15,216, including all schools and departments. Of those enrolled, 8420 were candidates for degrees, 3148 were candidates for certificates, and 3648 were partial students and auditors. The enrollment for the 1929 summer sessions was 2063. The faculty numbered 1500. The productive funds amounted to \$17,268,318, and the income for the year was \$904,113.

Among the various gifts and subscriptions received were the following: \$1,750,000 contributed by the trustees of the university, \$750,000 of this amount to be used for endowing professorships, \$350,000 from Martin Maloney for the establishment of the Martin Maloney Memorial Clinic, a bequest under the will of Mary E. Chesnut of \$141,000 for the John H. Chesnut Dormitory, a bequest of \$100,000 from the estate of Dr. Milton Bixler Hartzell for the establishment of the Milton Bixler Hartzell professorship fund, contribution of \$210,000 from an anonymous donor toward the cancer research fund of the graduate school of medicine, \$800,000 from Eldridge R. Johnson for the Eldridge R. Johnson Foundation for Research in Medical Physics, gift of \$125,000 from Fred M. Kirby for the establishment of the Fred M. Kirby Medical Research Fund, gift of \$75,000 from Daniel J. McCarthy for the establishment of the Daniel J. McCarthy Research Fund, \$51,000 from Sarah A. F. Zimmermann for the establishment of the Charles Harrison Frazier Foundation of Neurological Surgery, gift of \$25,000 from Eldridge R. Johnson for the university museum, and the gift by Cyrus H. K. Curtis of the sesquicentennial organ. New additions to the university's buildings during the year included the Irvine Auditorium, the Martin Maloney Clinic Building, three new dormitories (Chesnut Ward, and Warwick), new wing of the university museum, and nurses' home annex of the university hospital. The library contained 693,421 bound volumes and 75,000 pamphlets. Provost, Josiah H. Pennington, Ph.D., Litt.D., LL.D., LL.D.

PENNSYLVANIA ACADEMY See ART EXHIBITIONS.

PENNSYLVANIA MUSEUM OF FINE ARTS See ART MUSEUMS.

PENNSYLVANIA STATE COLLEGE A nonsectarian State institution for the higher education of men and women at State College, Pa., founded in 1885. On Sept. 29, 1929, the undergraduate enrollment totaled 4186, distributed as follows: Agriculture, 684, chemistry and physics, 413, engineering, 1116, education, 680, liberal arts, 920, mineral industries, 180, special, 57, graduate school, 130. There were 3182 students registered in the 1929 summer session. The faculty numbered 568, including the home economics extension staff. The productive funds of the college amounted to \$517,000 and the income for operation for the year to \$4,443,000. The library contained 116,052 volumes. In 1927 work was started on a four-year building programme

estimated to cost \$4,250,000. The buildings started and completed during 1929 included: Mineral industries, \$450,000, liberal arts, \$175,000; Grange Dormitory for Women, \$250,000, power plant and distributing system, \$750,000, home economics, 170,000, engineering unit, \$350,000, chemistry unit, \$253,000, biological unit, \$180,000, men's dormitory, \$225,000, gymnasium, \$505,000; infirmary, \$114,000, and students' union, 750,000. Additional buildings to the value of \$100,000 were completed in 1928. President, Ralph D. Hotzel, LL.D.

PENOLOGY. See CRIME.

PENSIONS. See OLD-AGE PENSIONS, UNITED STATES, under Pensions.

PERAK, pa'ra'k. The most northern of the Federated Malay States. See FEDERATED MALAY STATES.

PERKIN, WILLIAM HENRY A distinguished English chemist, died Sept. 17, 1929, in Oxford. He was born June 17, 1836, in Sudbury, Middlesex, the son of Sir William Henry Perkin, a chemist and founder of the coal-tar industry, and was educated at the City of London School, the Royal College of Science at South Kensington, and at the universities of Wurzburg and Munich. During 1883-86 he was privatdozent at Munich, where he was under Prof. Adolf Baeeyer and for one year worked in Baeeyer's private research laboratory. In Munich, he began his research on the building up of closed carbon chains, so important to the study of organic chemistry, for which he received special recognition when he was awarded the Longstaff Medal of the Chemical Society (1900) and the Davy Medal of the Royal Society (1904). From 1887 to 1892 he was professor of chemistry at Heriot-Watt College, Edinburgh, and from 1892 to 1912, at Victoria University. In 1912 he was appointed to the Waynflete professorship of chemistry at the University of Oxford, a post which he filled until his death, during which time the study of chemistry developed rapidly there. After 1916, for several years, he directed research for the firm, British Dyes, Limited, and later was appointed a member of the board of directors. He was elected a fellow of the Royal Society in 1890, and in 1926 received the Royal Medal, the highest honor of the Society. In 1904-05, and again during 1908-10, he served on the council of the Royal Society. He was president of the Chemical Society in 1913-15, and he also held membership in a number of foreign societies and academies. With Dr. Kipping, he wrote books on practical chemistry, and on organic and inorganic chemistries, and with Dr. Leach, an introduction to chemistry. He contributed to the *Journal of the Chemical Society* papers dealing with alkaloids, camphor, and natural coloring matters.

PERKIN MEDAL. See CHEMISTRY, INDUSTRIAL.

PERMANENT COURT OF INTERNATIONAL JUSTICE See ARBITRATION, INTERNATIONAL, LEAGUE OF NATIONS, WORLD COURT.

PERSIA A monarchy of southwestern Asia, extending north from the Persian Gulf and the Gulf of Oman to the Caspian Sea. Capital, Teheran, reigning Shah in 1929, Riza Khan Pahlavi.

AREA AND POPULATION. The area has been variously estimated at from 628,000 to 635,135 square miles, the population at from 8,000,000 to 10,000,000, about 3,000,000 of whom are nomads. Turks, Kurds, Leks, and Arabs predominate.

among the nomads. The number of Europeans has been placed at 1200. The population of Teheran is about 240,000. Other important cities with their estimated populations are Tabriz, 200,000, Isfahan, 80,000, Meshed, 70,000, and Keiman, Shiraz, and Kermanshah, 45,000 each. The great mass of the people are Moslems of the Shiite sect.

EDUCATION In 1928 there were approximately 140,000 students in the various coeducational schools in Persia, divided as follows: 50,304 in 575 "official schools," 41,810 in 382 private schools, 6586 in 65 foreign schools, 36,073 in 1826 "Maktab" schools, and 6188 in 300 religious schools. The foreign schools are mostly maintained by missionary bodies. There is a training school for teachers and 100 students are sent abroad annually to study at government expense. About 90 per cent of the population is illiterate.

PRODUCTION Agriculture and stock raising are the chief occupations of the country, with mining and manufacturing largely confined to the production of petroleum and rugs. The chief crops, with the estimated production in pounds for 1928, were cotton, 45,000,000, tobacco, 27,375,000, tea, 120,000, wool, 15,000,000, rice, 590,000,000, wheat, 42,000,000, almonds, 13,000,000, dates, 12,000,000, apricots, 9,000,000, raisins, 9,000,000, prunes, 3,000,000, opium, 2,000,000, and hemp, 2,000,000. The silk industry is being encouraged by the government. Petroleum production is largely controlled by the Anglo-Persian Oil Company, which has a concession covering the whole of the country except the five northern provinces. In 1928 the company's output was 42,080,000 barrels, as against 39,688,000 in 1927 and 35,842,000 in 1926. Other minerals are iron, coal, copper, lead, manganese, and borax. Exports of wool rugs in 1928 were valued at about \$17,000,000, of which half went to the United States.

COMMERCE For the fiscal year ending Mar. 21, 1928, imports amounted to \$79,128,000, or 3 per cent more than in the previous year, while exports totaled \$103,920,000, 4 per cent less than in 1926-27. Of the exports, more than half (\$58,767,000) represented shipments of petroleum and its products. Other exports showed a 3 per cent increase for the year. Besides petroleum, the chief exports in 1927-28 were wool rugs, \$15,098,000, fruits and nuts, \$4,734,000, rice, \$4,608,000, opium, \$4,240,000, and raw cotton, \$4,611,000. Imports were principally textile fabrics, sugar, tea, iron and steel, machinery, bullion and coin, and vehicles and vessels. The United Kingdom, Russia, and India ordinarily supply about three-fourths of Persia's total imports and in 1927-28 their respective shares of the total exports were 29.4, 18.8, and 12.5 per cent. The United States in the same year supplied 3.2 per cent of the imports and purchased 7.6 per cent of the exports. Rugs constituted about nine-tenths of the shipments to America. Manufactures represented 64.7 per cent of the imports and 17 per cent of the exports in 1927-28, the respective proportions of other classes of commodities being as follows: foodstuffs and beverages, 22.5 and 9.6 per cent; raw materials, 8.3 and 7.3 per cent; live animals, 4.2 and 0.3 per cent; precious metals and jewelry, 4.2 and 0.1 per cent.

FINANCE In contrast with the considerable surpluses usually estimated to result from budget operations, the estimates for the fiscal year ending Mar. 31, 1930, placed receipts at 301,124,000 kran and expenditures at 349,453,000 kran (one kran exchanged in 1928 for \$0.0980). To cover

this deficit, a bill to establish a government tobacco monopoly was introduced in January, 1929. The budget for 1928-29 estimated receipts at 275,857,000 kran and expenditures at 276,828,000. In 1926-27, the last year for which figures are available, actual receipts amounted to 241,215,000 kran and actual expenditures to 241,215,000 kran. The budget figures do not include royalties received by the government from the Anglo-Persian Oil Company, which are deposited in London as a treasury reserve fund. For 1927-28 the royalties amounted to £1,488,390 (\$7,243,000), as compared with £1,390,000 in the previous year. The funded debt on Mar. 20, 1928, amounted to £1,638,000 (\$7,971,000), as against £1,668,000 (\$8,117,000), on June 20, 1927. On the same dates the floating debt stood at \$707,000 and \$770,000, respectively.

COMMUNICATIONS In 1928 there were about 230 miles of railway line in operation in Persia, the principal unit of which was the Tabriz-Julfa line. The new Trans-Persian railway line, to extend from Bandar Shahpur on the Persian Gulf to Bandar Shah on the Caspian Sea, via Teheran and Hamadan, was completed on the south from the gulf to Dizful, a distance of 156 miles, at the end of 1929, and on the north from the Caspian Sea to Sari, a distance of about 65 miles. A new highway between Dizful and Khurramabad, forming part of a highway connecting the Persian Gulf with Teheran, was completed in 1928. There is a regular air service between Teheran, Resht on the Caspian Sea, Kasr Shirin on the Iraq frontier, and Bushire on the Persian Gulf.

In 1927-28, 14,478 vessels of 6,925,000 net registered tons entered Persian Gulf ports and 14,043 vessels of 6,801,000 tons cleared. On the Caspian Sea, entrances at Persian ports totaled 2338 vessels of 476,000 tons and clearances, 2244 vessels of 467,000 tons. In anticipation of the completion of the Trans-Persian railway, the terminal port of Bandar Shahpur on the Persian Gulf was being improved. In 1927 there were 8178 miles of telegraph line and 2895 miles of telephone wire.

GOVERNMENT Executive power is vested in the Shah, an absolute ruler down to 1906, when he consented to a constitutional form of government with a parliament or *Majlis*. The actual running of the government is in the hands of a cabinet, Prime Minister, Mehdi Quli Kahn Hedayat, appointed March, 1929. The reigning Shah, Riza Khan Pahlavi, was publicly proclaimed Dec. 16, 1925, and crowned, Apr. 25, 1926.

HISTORY As in Afghanistan and Turkey, the Persian Government's programme of modernization along Western lines continued to meet with resistance from the more conservative elements in the population. Early in 1929 the parliament, or *Majlis*, forbade anyone except religious leaders and theological students to wear turbans and decreed that all Persians must wear clothes of European cut and a new type of head dress called *Pahlavi*. For the first time Jews were admitted to equal status with Persians in business, education, and the army, but they were still prohibited from becoming government officials. Dissatisfaction with these and other innovations were held chiefly responsible for a revolt which broke out in southern Persia in May among the Kashgais and spread to the Bakhtiari. While his troops crushed the revolt, Riza Khan had Prince Firuz, Minister of Finance, the latter's father, Prince Farman Farma, and his brother, the Governor of Shiraz, arrested and imprisoned, allegedly for complicity in the

southern revolt. The disorder in Afghanistan forced the government to patrol the border against Afghan raids and another source of internal difficulty appeared with the return to Persian Kurdistan of the Kurdish chief, Semitko, who was forced to flee to Turkey three years earlier. The government was reported to have postponed the enactment of important legislation pending the settlement of the civil strife in Afghanistan, which stimulated the resistance in Persia to the Shah's modernization programme.

In the province of Khorassan on May 1 and 2 earthquake shocks were reported to have destroyed 88 villages, killed over 300 people, and injured more than 1000. A dispute of some years standing between Iraq and Persia was settled in 1929 by a provisional accord providing for the resumption of full diplomatic relations and for the granting of reciprocal most-favored-nation treatment. See EARTHQUAKES, PETROLEUM, and IRAQ, under *History*.

PERSIAN ARCHEOLOGY. See ARCHEOLOGY.

PERSIAN LITERATURE. See PHILOLOGY, MODERN.

PERSONAL RESEARCH FOUNDATION. See PSYCHOLOGY, under *Social Psychology*.

PERU, pe-rō' A republic on the Pacific coast of South America, bounded on the north by Ecuador and Colombia, on the east by Brazil and Bolivia, and on the south by Bolivia and Chile. Capital, Lima.

AREA AND POPULATION. The area of Peru is about 521,500 square miles, excluding the Province of Tacna (537,042 including Tacna) acquired in 1929 by the boundary settlement with Chile. See below, under *History*. The population in 1927, exclusive of Tacna, was estimated at 6,075,000, as compared with 2,699,000 at the last census in 1876. The above figures do not include an indeterminate number of uncivilized Indians. The capital, Lima, according to the official census of Dec. 17, 1921, had 176,407 inhabitants. The estimated population of the principal cities in 1928 was as follows: Lima, with suburbs, 315,000; Callao, 80,000; Arequipa, 60,000; Cusco, 40,000; Chiclayo, 35,000; Trujillo, 30,000; Ica, Ayacucho, Huancayo, and Chincha, 20,000 each. The annual average number of births for the years 1922 to 1927 was 111,574 and of deaths, 50,734. The government encourages immigration of qualified agriculturists and others. In 1927-28 it opened 3,246,325 acres to settlers.

EDUCATION. Primary instruction is free and compulsory. In 1928 there were 3461 public primary schools with 6012 teachers and 272,490 pupils, and 30 public secondary schools with 583 teachers and 8646 pupils. There were also six normal schools with 60 teachers and 628 pupils, and 12 trade schools with 43 teachers and 551 students. Higher education is provided at the central university in Lima, known as the University of San Marcos, with an enrollment of 1418 in 1928, as well as in a few other universities and colleges and in several technical schools. Under a decree of July 31, 1929, the \$6,000,000 received from Chile in connection with the settlement of the Tacna-Arica dispute was to be used for the capital of a national savings bank, 50 per cent of the profits of which will be devoted to the erection of school buildings.

PRODUCTION, ETC. Fully 80 per cent of Peru's estimated population of 6,000,000 is dependent either directly or indirectly upon agriculture. Of

nearly 5,000,000 acres under cultivation in 1927, approximately 80 per cent was irrigated. Other irrigation projects under construction by the government were expected to add about 400,000 acres to the cultivable area. The most productive part of the country is the coastal zone, a narrow strip of land extending from the Pacific Ocean to the foothills of the Andes, and except where traversed by short rivers descending from the mountains it is typical desert country. The valleys formed by these rivers are the source of more than 90 per cent of all the cotton and sugar (the principal money crops) grown in the country. Other crops are cacao, coffee, rice, wheat, tobacco, corn, olives, grapes, and rubber.

Production of raw cotton in 1928 was 130,641 metric tons, a decrease of 4572 tons from 1927. Sugar production in the 1927-28 season totaled 375,000 metric tons, as compared with a record yield of 376,065 tons in 1926-27. Production of other crops in 1927 was: Wheat, 3,149,000 bushels, rough rice, 2,621,000 bushels, sugar-cane, 3,305,000 metric tons, raw sugar, 375,000 metric tons, ginned cotton, 120,025,000 pounds. Stock raising is an important industry; the livestock in the country in 1927 being estimated at 1,360,000 cattle, 12,700,000 sheep, 600,000 swine, 1,580,000 alpacas, 1,060,000 goats, and 400,000 horses and mules. The wool clip rose to a peak of 5629 metric tons in 1928, or 613 tons more than in 1927, while wool exports were valued at \$4,403,000, as against \$3,043,000 in 1927.

Mining enterprises in Peru are largely controlled by foreign capital. In 1927 the total value of the mineral output was \$94,200,000, as compared with \$84,000,000 in 1926. The value of the chief mineral products in 1927 was as follows: Silver, \$10,300,000; copper, \$13,600,000; petroleum, \$57,600,000. In 1928 the silver output totaled \$12,571,000 and the copper production, \$17,014,000. The petroleum output was 11,667,000 barrels. Other minerals mined are gold, lead, zinc, coal, and vanadium.

COMMERCE. Peru further improved its normal large favorable balance of trade in 1928 when the exports increased by 7 per cent to \$125,400,000, and imports decreased by 3 per cent to \$70,000,000. The figures in 1927 were \$72,378,000 for imports and \$116,608,000 for exports. Increased shipments of oil and oil products, lead concentrates, copper, wool, and hides contributed to the export increase while imports of iron and steel, electrical machinery, and agricultural implements decreased markedly. The chief exports in 1928 were petroleum and derivatives, \$45,256,000; cotton, \$22,879,000; sugar, \$13,544,000; copper bars, with gold and silver, \$21,702,000. Leading imports were foodstuffs, \$14,082,000; cotton manufactures, \$6,574,000; wheat, \$4,675,000; rice \$2,523,000; iron and steel pipes and tubes, \$2,009,000. The United States supplied 41.00 per cent of the total imports in 1928, the United Kingdom 15.76 per cent, and Germany 10.46 per cent. The United States also was Peru's leading customer, taking 28.47 per cent of the total value of the exports, while the United Kingdom followed with 23.99 per cent, Argentina with 10.10 per cent, and Germany with 9.16 per cent. In 1929 both exports to and imports from the United States showed further advances, the larger imports being due largely to the inauguration of large construction projects and the greater exports to increased copper shipments and higher prices secured for this metal.

FINANCE. The budget for 1929 balanced revenues and expenditures at £12,584,000 (\$50,336,000, converted at \$4, the average rate for January, 1929), the largest total in the history of the country. The sources of anticipated revenue were: Direct taxes, £1,358,266, indirect taxes, £7,022,447; monopolies and exploitations, £2,080,201; state-controlled products, £729,991. The 1930 budget approved by Congress on Dec 30, 1929, totaled £14,098,719 (about \$56,000,000), an increase of about £190,000 over the original budget bill.

According to the President's message delivered at the opening session of Congress on Oct 12, 1929, there was a surplus of £136,944 in 1928. Actual revenues and expenditures for 1928 totaled £12,198,108 and £12,061,164, respectively, as compared with budget estimates of £11,113,651. Customs collections and internal taxes showed large increases. Among the financial reforms of 1929 were the creation by Presidential decree on July 31 of a national savings bank with a capital of \$6,000,000, the sum received from Chile in part settlement of the Tacna-Arica dispute; the establishment of a central mortgage bank and an intermediate agricultural credit bank, and the creation of a controller's office to supervise government expenditures. The public debt as of June 30, 1929, was estimated at £22,846,276, of which £18,312,620 represented the external debt and £4,533,656 the internal debt. The annual service of the debt amounted to £1,804,699, a little less than 13 per cent of the national income.

COMMUNICATIONS. The total length of railways in operation in 1927 was 2725 miles, of which 1732 miles were state owned and 993 miles privately owned. In the same year all lines carried 6,073,000 passengers and 2,390,000 metric tons of freight. The gross receipts in 1926 totaled \$12,859,000. There was a considerable expansion of commercial air transportation in 1928, an air-mail and passenger service between Peru and the United States being inaugurated in September and other lines being established along the Peruvian coast and between La Merced and Iquitos. In 1927 there were 12,023 miles of telegraph wire and 39,919 miles of telephone wire. The merchant marine in 1928 consisted of 42 vessels of 100 tons or more, carrying 100 gross tons of mail and 2 traffic. The River and Lake traffic had the capacity of vessels entering Peruvian ports in 1927 totaled 15,974,000 net registered tons.

GOVERNMENT. Executive power is vested in a President elected for five years and eligible for reelection indefinitely under a constitutional change adopted in 1927; and legislative power in the Congress consisting of a Senate with 35 members and a House of Representatives with 110 members. The President acts through a cabinet of seven members, appointed and removed at his pleasure. President in 1929, Augusto B. Leguía, who was reelected August 5, 1929, for the term 1930 to 1935.

HISTORY. With the exception of the settlement of the difficult Tacna-Arica dispute with Chile and the reelection on August 5 of President Augusto B. Leguía for his fourth five-year term, Peru passed a comparatively uneventful year in 1929. For details of the Tacna-Arica settlement, see CHILE and BOLIVIA, under *History*, and *ARBITRATION, INTERNATIONAL*.

Nominated by the two largest political par-

ties in the country, the Democratic Reform party and the Constitutionalist, President Leguía was reelected virtually without opposition. He first became President of Peru in 1908, serving until 1914 and regaining power again in 1915 by a spectacular *coup d'état*, which was later legalized by Congress. He was reelected again in 1924. President Leguía on May 7 appointed a new cabinet, which continued in office when the President entered upon his new term on October 12. Members of the cabinet were: Minister of Interior and President of the Cabinet, Benjamin Huaman de los Heros; Foreign Affairs, Pedro José Rada y Gamio; Justice, L. Matías León; War, General José Luis Salmon; Navy and Marine, Admiral Augusto Loayza; Finance, Manuel G. Macías; Public Works, Alfredo Mendiola. The Ministers of Finance and of Foreign Affairs were members of the cabinet.

Some evidence of the President's long rule was seen in the announcement on July 26 that a senator, a deputy, and four alleged accomplices had been arrested on charges of conspiracy against the government. On June 22 the President issued a decree prohibiting the teaching of doctrines opposed to the state (Roman Catholic) religion in official or private institutions and providing that textbooks used for moral and religious education must be approved by the Ministry of Education. The falling off in government revenues during 1929 gave the cabinet considerable concern and President Leguía proposed a bill imposing a 10 per cent tax on the salaries of all public officials, which was passed by Congress on November 19.

In its external relations, Peru gained in prestige during the year by the Tacna-Arica settlement and by its election as a member of the Council of the League of Nations on September 9. Bolivia remained unreconciled to the Tacna-Arica Treaty, which had apparently blocked her hope of an outlet to the Pacific, but for the time being was fully occupied with her boundary negotiations with Paraguay. The problem of fixing the boundary between Peru and Ecuador appeared nearer peaceful solution following a visit paid Foreign Minister Rada y Gamio in the Peruvian Capital by the Ecuadorian Minister of Foreign Affairs, Dr. Gonzalo Zaldumbide. The two countries were bound by the protocol of June 21, 1924, to submit the boundary dispute to arbitration by the President of the United States, in case they are unable to arrive at a solution by direct negotiation. An element of complication was introduced into the boundary discussions with Ecuador by the announcement of the discovery of petroleum in the region under dispute.

Part of this region was included in a concession obtained from the Peruvian government in 1923 by Bertram T. Lee, an American citizen. The concession was canceled by presidential decree on Aug. 3, 1929, on the ground that Mr. Lee had not lived up to his contract to construct a railway from Iquitos on the upper Amazon to Paita and Pucallpa on the Pacific Coast. In December, following the intervention of the United States State Department, the Peruvian government agreed to arbitrate the concession dispute in accordance with provisions in the concession contract. The assistance afforded Mr. Lee by the United States government aroused considerable criticism in the press of Argentina and several other Latin-American countries.

Peru celebrated the 108th anniversary of her

independence on July 28, 1929. In connection with the celebration the government conferred on President Hoover and Secretary of State Stimson, of the United States, decorations of the Order of the Sun, See ECUADOR, and ARBITRATION, INTERNATIONAL.

PETROLEUM. According to preliminary figures compiled by the U. S. Bureau of Mines, from companies that operated gathering lines, 1,005,598 barrels of crude petroleum were transported from producing properties in the United States during 1929. The final figure of actual production (oil brought to the surface), which would include revisions to the monthly data, crude oil consumed on the leases, and the net change in producers' stocks, might amount to 1,000,000, 000 barrels. This represented a new record for total production and was 104,500,000 barrels, or 12 per cent above the 1928 output.

According to preliminary data, the world's production of crude petroleum in 1929 amounted to 1,488,604,000 barrels, an increase over 1928 of 12 per cent. Of this total the United States produced 67.6 per cent as compared with 68.0 per cent in 1928 and 71.4 per cent in 1927.

The production of crude petroleum in the United States increased more or less steadily up to August, the peak month. The total output in August amounted to 92,288,000 barrels, or very close to a daily average of 3,000,000 barrels. Production decreased steadily during the last four months of the year, but this came coincident with a steadily decreasing demand and stocks accumulated in all months except November. A factor in the increased output during the summer months was a price increase inaugurated in the Mid-Continent in May. Stocks of all oils increased 67,606,000 barrels in 1929, of which over 18,000,000 barrels was in refined products. November was the only month of the year 1929 to show a decrease in stocks of all oils. This decrease amounted to 3,010,000 barrels, and resulted mainly from a drastic curtailment at Santa Fe Springs and a surprisingly small decrease in gasoline consumption.

Texas, for the second successive year, was the leading producing State, with an output of 298,441,000 barrels. California was comparatively close to the top, with a production of 292,037,000 barrels. Oklahoma dropped from second to third place, although its output of 253,704,000 barrels represented a small increase over 1928. These three States accounted for 84 per cent of the total output as compared with 82 per cent in 1928. The major portion of the new production in Texas came from west Texas, Gray County (Panhandle), the Bruner field in Guadalupe County, and from extensions and deeper wells in the Gulf coast fields.

The most important factors in the increased output of California were the rapid development of the various deep sands at Santa Fe Springs and the new production secured at Elwood. Despite the discovery of a number of new pools in the Greater Seminole area and the extension of some of the older ones, the output of the Greater Seminole area showed comparatively little change in 1929. The major portion of the new production of the State was developed at the Oklahoma City field, which produced nearly 9,000,000 barrels in 1929 as compared with practically nothing in 1928. The output of the Appalachian district was higher, while that of the Central States, with the exception of Michigan, showed a decrease.

Imports of crude petroleum into the United States from foreign countries during 1929 amounted to 78,915,000 barrels, or about 850,000 barrels under the 1928 figure. Over 50,000,000 barrels of these imports came from Venezuela and nearly 13,000,000 barrels, each, from Mexico and Colombia. Exports of crude oil increased from 18,966,000 barrels in 1928 to 26,374,000 barrels in 1929, or 39 per cent.

Stocks of crude petroleum (exclusive of producers' stocks) east of California increased from 368,353,000 barrels on hand January 1 to 381,391,000 barrels on December 31, an increase of about 13,000,000 barrels. This increase was less than the 1928 increase, but in California the situation was quite different with about 36,000,000 barrels added to crude and fuel stocks compared with 2,000,000 barrels accumulated in 1928.

REFINED PRODUCTS. Runs to stills of crude petroleum, both domestic and foreign, in 1929, amounted to 987,708,000 barrels, an increase over 1928 of 8 per cent. All of this increase was recorded in domestic crude runs, in fact, the use of foreign crude at refineries declined by slightly over 2,000,000 barrels in 1929.

The percentage recovery of gasoline continued its upward trend and amounted to 41 per cent in 1929, as compared with 41 per cent in 1928.

SUPPLY AND DEMAND OF ALL OILS IN 1929
[Including coal, coke, and asphalt in thousands of barrels of 42 United States gallons]

	1929	1928 *
New Supply		
Domestic production		
Crude petroleum	1,005,598	901,474
Daily average	2,755	2,461
Natural gasoline	52,271	42,326
Benzol	3,055	2,809
Total production	1,060,924	946,609
Daily average	2,907	2,586
Imports		
Crude petroleum	78,915	79,767
Refined products	29,794	11,790
Total new supply, all oils	1,169,634	1,038,166
Daily average	3,201	2,867
Increase in stocks, all oils	67,606	22,782
Demand		
Total demand	1,102,027	1,015,384
Daily average	3,019	2,774
Exports		
Crude petroleum	26,474	18,966
Refined products	135,483	145,483
Domestic demand	939,770	860,935
Daily average	2,575	2,352
Excess of domestic production over domestic demand	312	234
Stocks (end of month)		
Crude petroleum		
Pipe line, tank farm, and refinery		
East of California	381,391	374,874
California	153,175	115,014
Total crude	534,526	490,768
Natural gasoline at plants	604	607
Refined products	146,039	128,530
Grand Total Stocks, All Oils	682,069	619,925
Day's supply †	226	223
Bunker oil (included above in domestic demand)	52,308	51,226

* 1928 figures are final and include producers' stock except for California.

† From Bureau of Foreign and Domestic Commerce. Reports include shipments to Alaska, Hawaii, and Porto Rico.

‡ Includes fuel oil and producers' stocks (1929 only).

§ Grand total stocks all oils divided by daily average total demand.

This and the increased quantity of crude oil processed was reflected in a 15 per cent gain in output which, for the year, totaled 434,241,000 barrels. The indicated domestic demand for gasoline amounted to 371,852,000 barrels, an increase over 1928 of 13 per cent. Gasoline exports increased 16 per cent, imports more than doubled and amounted to 8,868,000 barrels. Stocks of gasoline accumulated rapidly early in the year, particularly in January, reached a peak of 48,205,000 barrels on March 31, was at its low point of 33,222,000 on September 30, and increased to a total of 43,115,000 barrels on the last of the year, this being over 10,000,000 barrels above the total on the first of the year.

The statistics of both kerosene and lubricants of 1929 were practically unchanged from 1928. The production of gas oil and fuel oil increased, due to the greater crude throughput, but the demand east of California increased sufficiently to result in a decline in stocks of 500,000 barrels. Wax production was unchanged, but demand, both from domestic and foreign sources, decreased and stocks increased materially.

NATURAL GASOLINE. According to the monthly (preliminary) figures, the output of natural gasoline in 1929 was 2,195,400,000 gallons as compared with 1,777,700,000 gallons in 1928, a gain of 23 per cent. The major portion of the increase was recorded in the California fields, particularly at Santa Fe Springs, although the Greater Seminole area recorded a somewhat surprising increase of nearly 100,000,000 gallons. Stocks at the plants were practically unchanged.

PRODUCTION OF CRUDE PETROLEUM IN 1929 BY STATES

[Petroleum transported from producing properties
Thousands of barrels of 42 United States gallons]

Final figures will include petroleum consumed on the leases and produced but not transported from producing properties, which items for 1929 may amount to 2,000,000 barrels.

	1929	1928 *
Arkansas	25,076	32,096
California	292,037	231,811
Colorado	2,398	2,774
Illinois	6,304	6,462
Indiana	977	1,052
Southwestern	912	963
Northeastern	65	89
Kansas	42,875	38,596
Kentucky	7,776	7,959
Louisiana	20,229	21,847
Gulf coast	7,235	7,057
Rest of State	12,994	14,794
Michigan	4,354	594
Montana	3,183	4,015
New Mexico	1,889	943
New York	3,946	2,608
Ohio	6,708	7,015
Central and Eastern	5,224	5,434
Northwestern	1,484	1,581
Oklahoma	253,704	249,857
Osage	14,949	19,667
Seminole *	142,045	111,388
Rest of State	96,710	118,802
Pennsylvania	11,805	9,865
Tennessee	19	46
Texas	298,441	257,320
Gulf coast	48,339	39,538
West Texas	186,982	123,540
Rest of State	113,120	94,242
West Virginia	5,587	5,661
Wyoming	19,190	21,461
Salt Creek	11,860	14,023
Rest of State	7,890	7,438
Total	1,005,598	901,474
Daily average	2,755	2,463

* Final figures. Includes 6000 barrels produced in Alaska and Utah.

* 1929 figure includes St. Louis-Pearson-Maud.

hence the increase in output was absorbed by refineries for blending purposes and by the export trade, which is reported to have grown rapidly in 1929.

CRUDE PETROLEUM PRODUCED IN UNITED STATES IN 1929, BY FIELDS

[Thousands of barrels of 42 United States gallons]

	1929	1928 *
Michigan	33,757	81,059
Illinois and S. W. Indiana	1,549	1,870
Mid-Continent	4,354	594
Gulf coast	7,216	7,425
Rocky Mountain	584,751	553,125
California	55,574	46,501
	26,360	29,199
	292,037	231,811
Total	1,005,598	901,474
Classification by gravity (approx.)		
Light	904,111	805,534
Heavy	101,487	95,940

* Final figures. * Includes Alaska and Utah.

IMPORTS AND EXPORTS OF CRUDE PETROLEUM IN 1929 *

[Thousands of barrels of 42 United States gallons]

	1929	1928 *
Imports	78,915	79,767
From Venezuela	50,637	46,977
From Mexico	12,661	17,584
From Colombia	12,620	11,815
From other countries	2,995	1,768
Exports	26,374	18,966
Domestic oil	22,250	15,471
To Canada	4,117	3,510
To other countries	7	4
Shipments		
Foreign oil		1
California crude oil *	7,851	5,682

* From Bureau of Foreign and Domestic Commerce.

* Final figures.

* Included in total exports of domestic crude.

WELLS DRILLED FOR OIL AND GAS IN THE UNITED STATES IN 1929 *

	1929 *	1928 *
Oil	15,772	12,526
Gas	2,870	2,737
Dry	7,914	7,078
Total	26,556	22,341

* For States east of California, from *Oil and Gas Journal*, for California, from the American Petroleum Institute.

* Final figures.

WORLD'S PRODUCTION OF CRUDE PETROLEUM. The world's production of crude petroleum during 1929 was estimated by E. B. Swanson, Division of Petroleum Economics, U. S. Bureau of Mines, at 1,488,604,000 barrels, an increase over 1928 of 163,870,000 barrels, or 12.4 per cent. Production outside of the United States reached a total of 482,604,000 barrels, or 59,344,000 barrels more than in 1928. United States production was estimated at 1,006,000,000 barrels, an increase of 104,526,000 barrels. The rate of increase in domestic production did not quite equal that of the foreign oil-producing countries, consequently, the ratio of the United States production to the world total dropped from 64 per cent in 1928 to 67.6 per cent in 1929. Venezuela and Russia maintained their respective positions as the second and third largest producing countries, while Persia, with a production of slightly more

than 6,000,000 metric tons, moved into fourth place, with a slight margin over Mexico. Trinidad advanced into tenth place, ahead of Argentina and British India, while among the smaller producing countries, Russian Sakhalin and Canada reached, for the first time, an annual production of more than a million barrels.

The three principal shipping fields in Venezuela, Lagunillas, La Rosa-Ambrosio, and Mene Grande, showed an increase of approximately 32,000,000 barrels over 1928, accounting for virtually all of the increased production of the country. Production in Russia increased by approximately 15,000,000 barrels. Persia and Rumania continued to increase crude-oil production at the rate noted for the two preceding years, while Mexico again showed a decrease. Production of heavy crude in Mexico declined throughout the year, while light-oil production increased primarily as the result of new developments at Tonala, Isthmus of Tehuantepec.

The following table shows the output of the various countries as reported officially to the Bureau of Mines for 1927 and 1928 and the estimated production of these countries for 1929. These estimates were based upon data obtained through the cooperation of consular officers in various countries, various companies engaged in foreign production and official reports.

WORLD CRUDE-OIL PRODUCTION, 1927-1929 *

[Figures in thousands of barrels]

Country	1928 ^b		1928		1927	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
United States ^c	1,006,000	67.6	901,474	68.0	901,129	71.4
Venezuela	137,000	9.2	105,749	8.0	63,134	5.0
Russia	103,000	6.9	84,704	6.4	77,018	6.1
Persia	45,250	3.0	43,461	3.3	39,688	3.2
Mexico	44,689	3.0	50,151	3.8	64,121	5.1
Netherlands East Indies	37,924	2.6	32,118	2.4	27,459	2.2
Rumania	34,930	2.3	30,773	2.3	26,368	2.1
Colombia	20,385	1.4	19,897	1.5	15,014	1.2
Peru	13,404	1.0	12,006	.9	10,127	.8
Trinidad	8,610	.6	7,684	.6	5,380	.4
British Borneo (Sarawak)	8,800	.6	6,070	.7	8,630	.7
Poland	8,470	.6	8,741	.7	8,032	.6
Japan (including Taiwan)	5,277	.4	5,223	.4	4,943	.4
Ecuador	4,953	.3	5,493	.4	5,343	.4
Sakhalin, Russian	2,010	.1	1,944	.1	1,789	.1
Canada	1,866	.1	1,842	.1	1,267	.1
Greece	1,361	.1	1,084	.1	577	.0
Iraq	1,133	.1	677	.0	440	.0
Germany	798	.0	713	.0	477	.0
France	711	.0	630	.0	378	.0
Czechoslovakia	516	.0	512	.0	663	.0
Italy	91	.0	94	.0	112	.0
Other countries	44	.0	46	.0	47	.0
	30	.0	34	.0	23	.0
Totals	1,488,604	100.0	1,324,734	100.0	1,262,582	100.0

* Compiled by E. B. Swanson, Acting Chief Economist, Division of Petroleum Economics.

^b 1929 figures subject to slight revision. Figures for previous years are final.

^c Production for year ended September 30, 1928. Calendar year 1928 production estimated at 87,800,000 barrels.

See UNITED STATES, under *Oil Cases*, also GEOLOGY, and CHEMISTRY, INDUSTRIAL for other studies and developments in petroleum occurrence and technology.

PETROLOGY. See GEOLOGY

PETZOLDT, pět'sólt, JOSEPH. A German Positivist philosopher, died Aug. 4, 1929. He was born in Altenburg and educated at the universities of Jena, Munich, Geneva, Leipzig, and Göttingen. After teaching in the Berlin Gymnasiums, he became in 1904 privatdozent in the Berlin Charlottenburg School of Technology. His works include *Mazma*, *Almaz*, and *Oekonomia* (1891),

Einführung in die Philosophie der reinen Erfahrung (1900-04); *Das Weltproblem* (1906).

PEZET, pā-thāt', FEDERICO ALFONSO. A Peruvian diplomat, died in San Remo, Italy, Dec. 17, 1929. He was born in London in 1859, and was educated in England and at the Military Academy in Lima, Peru. In the Peruvian-Chilean War he was wounded and taken prisoner. He was Spanish editor of the *Panama Star and Herald* during 1884-86. Entering the diplomatic service of Peru in 1880, he went first to Panama as consul, and later to Liverpool, London, and New York. From 1904 to 1909, he was chargé d'affaires and consul-general in Panama in 1909 and Minister-Plempotentiary to Panama, and during 1909-12 special Envoy-Extraordinary to Central America and Panama. He was Minister to the United States in 1912, and in 1919 returned as the first Ambassador from Peru to the United States, serving until 1923. He contributed to American and European periodicals, and his books include *Peru: Its Commerce and Resources* (1893), *The Question of the Pacific* (1901), *What the Panama Canal Means to Peru* (1911).

PEHELPS-STOKES FUND. See EDUCATION IN THE UNITED STATES.

PHILADELPHIA. See PENNSYLVANIA.

PHILADELPHIA SYMPHONY ORCHESTRA. See MUSIC.

PHILHARMONIC SOCIETIES. See MUSIC.

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ing to the census of 1918, 10,314,310. An estimate of the population in 1928 placed it at 11,921,600, or a density of 104.2 per square mile. The population of Manila was 285,306 in 1918, estimated at 336,500 in 1926. Other cities, with the population in 1918, were Cebu, 65,502, Legaspi, 52,756; Iloilo, 49,114. From 1923 to 1927 the average annual birth rate per 1000 inhabitants was 32.8 and the death rate 18.1. From 1924 to 1928 an average of 11,008 immigrants entered yearly, as against 998 emigrants, the excess of immigrants being 10,019 annually.

At the census of 1918 the race distribution was as follows: Brown, 9,386,826; yellow, 50,826; white, 12,399; Negro, 7623; half-breed, 34,063.

EDUCATION The total enrollment in the public schools in 1928 was 1,111,509, and in private schools 84,813, out of a total estimated population of school age of 3,135,044. In the University of the Philippines there were 5138 students with collegiate standing and 1940 students in the subcollegiate grade. In September, 1928, there were 5946 primary schools with 17,190 teachers and 1276 intermediate schools with 6749 teachers, as compared with 5998 primary schools with 17,411 teachers and 1243 intermediate schools with 6429 teachers in September, 1927.

PRODUCTION Agriculture is the basic industry, there being . . . of land under cultivation in 1927 in addition to 13,100,000 acres of grass and open land and some 46,500,000 acres of forest. It was estimated in 1928 that there were 34,580,000 acres of idle land suitable for cultivation. The chief crops, with the area planted and the production in 1928, are as follows: rough rice, 4,481,000 acres and 106,332,000 bushels; corn, 1,284,000 acres and 15,639,000 bushels; manila hemp, 1,188,000 acres and 393,285,000 pounds; tobacco, 190,000 acres and 101,389,000 pounds; coconuts, 1,273,000 acres and 1,906,804,000 coconuts; coffee, 3000 acres and 2,720,000 pounds; cacao, 4000 acres and 2,586,000 pounds; sugar 586,000 acres and 1,477,100,000 pounds. Other products are rubber, tea, pineapples, citrus fruits, quinine, and camphor.

In 1929 all agricultural crops except copra reached new high levels of production although prices were somewhat lower. Sugar production was the largest on record, the centrifugal output being estimated at 700,000 metric tons and the production of muscovado at 74,000 tons. Production of abaca, or manila hemp, reached 1,590,000 bales, or 203,000 more than in 1928; copra production amounted to about 483,500 metric tons, 90,000 less than in 1928; coconut-oil production was estimated at 186,000 tons, and tobacco production amounted to 45,000 tons. Livestock in the country in 1927 included 1,220,000 cattle, 1,950,000 carabaos, 10,300,000 swine, 410,000 sheep, 1,415,000 goats, and 325,000 horses and mules.

Lumbering was active in 1929, the total cut reaching 754,000,000 board feet, or 23 per cent more than in 1928. New investments in the industry were estimated at 3,000,000 pesos (1 peso equals \$0.50), and 18 new sawmills started operation during the year. Although some coal, gold, iron ore, and other mineral deposits exist in the islands, gold is the only mineral mined on a commercial scale. The gold output in 1928 totaled 107,000 troy ounces. The chief manufactured products, with the output in 1928, are cigarettes, 5,110,000,000; cigars, 332,000,000; copra,

1,168,000,000 pounds; coconut oil, 321,000,000 pounds, split rattan, 7,075,000,000 pounds.

COMMERCE. Despite low prices received for exports, the balance of trade in 1929 was favorable by \$17,276,568. Imports totaled \$147,150,275, or \$12,493,377 more than in 1928, while exports amounted to \$164,446,843, an increase of \$9,392,297 over 1928. The United States increased its share of Philippine imports, supplying 63.4 per cent of the total, as against 62 per cent in 1928, while Japan furnished 7.9 per cent, China, 4.8 per cent, Great Britain, 3.5 per cent, and Germany, 3.1 per cent. The United States likewise purchased 76 per cent of Philippine exports in 1929, as against 75 per cent in 1928. Other customers were Japan, which took 4.4 per cent of the exports, Great Britain, 4.1 per cent, Spain, 3.5 per cent, Germany, 2.1 per cent, and China, 1.9 per cent. Exports of sugar in 1929 totaled about 694,000 metric tons valued at 108,000,000 pesos, of manila hemp, 1,722,000 bales estimated at 57,960,000 pesos, of coconut products, 95,000,000 pesos, of tobacco, about 20,000 metric tons, of lumber, 100,000,000 board feet valued at 7,000,000 pesos, of which about 46,000,000 board feet went to the United States.

Textile products, automobiles and parts, machinery, iron and steel, electrical apparatus, fertilizer, foodstuffs, and chemicals were leading imports. Due to heavy building and the construction of port projects at Cebu and Iloilo and of three irrigation projects, the iron and steel imports were unusually large, being valued at 24,500,000 pesos. In general, business was satisfactory during 1929, although conditions were spotty and profits in the principal lines were smaller than in 1928. The prosperous conditions of 1928 continued until the middle of July, when falling export prices led to a depression which lasted the remainder of the year.

FINANCE Actual revenues in the calendar year 1928 totaled 85,214,508 pesos, as compared with the budget estimate of 79,161,060 pesos and with actual receipts of 77,728,114 pesos in 1927. Actual expenditures, amounting to 79,626,806 pesos, also exceeded the budget estimate of 74,972,495 pesos and the actual expenditures in 1927 of 74,346,267 pesos. The total budget surplus for 1928 amounted to 41,179,267 pesos, as compared with 35,591,506 pesos in 1927. Other items to be deducted reduced the net unappropriated cash surplus to 13,179,267 pesos. Figures for 1928 showed an increase of 27 per cent in income-tax collections, of 5 per cent in internal revenue collections. The net bonded indebtedness at the end of 1928 was 175,237,000 pesos, for which there were accumulated sinking funds of more than 43,000,000 pesos (1 peso equals \$0.50).

COMMUNICATIONS. Manila is the chief port of the islands and handles the bulk of the shipping engaged in foreign trade. In 1928 a total of 1146 vessels of 4,325,243 net registered tons entered Philippine ports, of which 3,587,806 tons entered at Manila. In the same year 1134 vessels of 4,282,443 net registered tons cleared the ports of the islands. In addition 1792 vessels of 89,780 net registered tons were engaged in the coastwise trade. Extensive port developments were under way at Cebu and Iloilo in 1929.

In 1927 there were 791 miles of railway line in the Philippines, which carried 9,908,000 passengers and 1,893,000 tons of freight, earning gross receipts of \$6,428,000. The railroads on the is-

land of Luzon are operated by the Manila Railroad company, in which the government has a substantial investment. In 1928 this company had a net income of 3,041,000 pesos, or nearly 38 per cent more than the average net income for the five years ending Dec 31, 1927. In 1927 there were 17,541 miles of telegraph wire and 38,340 miles of telephone wire.

GOVERNMENT Executive power is in the hands of a governor-general appointed by the President of the United States, by and with the advice and consent of the Senate, and in six departmental secretaries, all of whom are Filipinos, with the exception of the vice governor (appointed in the same manner as the governor-general), who acts as secretary of public instruction. Legislative power is in a senate of 24 members and a house of representatives of 93 members, all of whom are elected by popular vote, with the exception of nine representatives and two senators appointed by the President to represent certain provinces. The President, composed of the governor-general as president, the presidents of both branches of the Legislature, and the departmental secretaries, constitutes the link between the administrative and legislative departments. Governor-general in 1927, Dwight Filley Davis, who succeeded Henry L. Stimson in March, 1929.

HISTORY Of great importance in the history of the Philippines during 1929 was the marked trend of sentiment in the United States Congress toward granting the islands independence in the near future. Economic factors were primarily responsible for this change of heart on the part of many American legislators, although the usual sentiment in favor of granting immediate independence on moral and political grounds appeared strengthened.

The question of Philippine independence came before Congress in connection with the Hawley tariff debate, and particularly the proposal to increase the effective duty on sugar from 176 cents to 240 cents a pound. This measure, which was sponsored by the beet-sugar industry in the United States, was subsequently defeated, but not before the debate on the question had brought before both the Senate and the House the whole question of American policy in the Philippines. One of the arguments advanced against the proposed increase in the duty on sugar was that no matter what the height of the duty might be, beet-sugar cultivation in the United States would be handicapped by the competition of the Philippines, Porto Rico, Hawaii, and other insular territories, whose cane sugar entered the United States free of duty. Late in 1928 a resolution to limit sugar importations from the Philippines to 500,000 tons annually was introduced into the House, but was rejected by the Ways and Means Committee, after Henry L. Stimson and others had opposed the measure.

Blocked by strong Congressional sentiment against imposing a duty on Philippine products as long as the islands were a possession of the United States, the American beet-sugar, vegetable-oil, and other affected interests threw their support to the movement for Philippine independence, which would, of course, result in the application of the protective tariff to the products of the islands. On the other hand, disinterested advocates of Philippine independence feared that an increased sugar duty would lead American capital to invest heavily in the Philippine sugar

industry as long as the product was admitted free to the American market and that an additional obstacle to ultimate independence would be set up. These developments explain the introduction in the Senate by Senator King of Utah and Senator Broussard of Louisiana on October 9 and 10, respectively, of amendments to the Hawley tariff measure providing for immediate independence for the Philippines. Both senators represented sugar-producing States. The Broussard resolution, which proposed that the United States call an international conference to guarantee the independence of the islands and included a declaration that "the Government of the United States proposes to grant independence to the Philippines in the immediate future," was voted down by a vote of 63 to 19. The Senate also rejected Senator Broussard's proposal that a duty be imposed upon Philippine products brought into the United States. Senator King's proposed amendment was likewise defeated by a considerable majority. The vote, however, was not considered a test vote on the question of independence, as many senators objected to linking the question with the tariff bill. It was believed, however, that majority sentiment in the Senate was at the time adverse to immediate independence.

The agitation for independence continued to gain momentum during the remainder of the year. Several incidents in the House indicated the trend of sentiment in favor of freeing the islands. On December 13, Camilo Osias, one of the two resident commissioners of the Philippines in the United States, was enthusiastically applauded when he made an impassioned appeal for complete independence. In December a new independence mission sailed from the Philippines for the United States. It was composed of Senate President Quezon, Speaker Roxas, Senator Sumulong, and Representative Pedro Gil, the last two being minority leaders. At the same time American and foreign business men in the islands evinced growing alarm at the prospect that the islands would be separated from the United States in the near future.

The growth of anti-Filipino sentiment in California, which resulted late in the year in a number of attacks upon Filipinos, appeared likely to further the independence movement in both the United States and the Philippines. It was pointed out that the bad feeling engendered by the influx of large numbers of Filipinos into the California labor market might be avoided by the application of quota restrictions to immigrants from the islands, such as might logically be enforced once the Philippines were declared independent.

In March, 1929, Governor-General Stimson became Secretary of State in President Hoover's cabinet and Dwight F. Davis, former Secretary of War, was appointed to succeed him in Manila. Governor-General Davis continued Mr. Stimson's conciliatory course with the Philippine legislature. See United States, under *History*. Consult *The Philippine Islands*, by W. Cameron Forbes, former governor-general (Boston, 1928).

PHILLIMORE, WALTER GEORGE FRANK, FIRST BARON OF ANGLISH international and ecclesiastical jurist, died Mar 13, 1929, in London. He was born in London, Nov. 21, 1845, and was educated at Westminster and at Christ Church and All Souls College, Oxford. He was called

to the bar by the Middle Temple (1868) and rose very rapidly in his profession, handling at first chiefly ecclesiastical cases. In 1883 a patent of precedence was conferred on Lord Phillimore, a distinction given to few. He was appointed in 1897 a judge of the Queen's Bench Division of the High Court of Justice, where he served until 1913, when he was appointed Lord Justice of Appeal. In 1916 he retired from the bench, but soon after became a member of the judicial committee of the Privy Council, where his exposition of the Hindu and Mohammedan laws was treated with respect throughout India. After the World War, Lord Phillimore was appointed chairman of the committee for the distribution of the Naval Prize Bounty. He advocated the principle of international arbitration and was chairman of the committee appointed in 1917 to produce the draft statutes of a League of Nations. During 1905-08 he was president of the International Law Association. He was raised to the peerage in 1918, with the title Baron Phillimore of Shipplake, and in 1928 was created Knight of the Grand Cross of the British Empire.

PHILLIPS UNIVERSITY. A coeducational institution of higher learning at University Station, Enid, Okla., founded in 1907. The enrollment for 1928-29 in all departments was 872. The faculty numbered 39. The productive endowment amounted to \$548,830. The library contained 18,120 volumes, exclusive of public documents. President, Isaac Newton McCash, D.D., LL.D.

PHILOLOGY, CLASSICAL. The best way to gain a fair conception of the more important contributions to classical philology is to examine lists of articles and books, or abstracts of them, or both, given in certain periodicals—*American Historical Review*, *The American Journal of Philology*, *Antiquity*, *The Classical Journal*, *The Classical Quarterly*, *The Classical Review*, *The Classical Weekly*, *Historical Outlook*, *History*, *Athenæum* (published at Pavia, Italy), *Bulletin Bibliographique et Pédagogique du Musée Belge* (a companion to *Le Musée Belge*, *Revue de Philologie Classique*), *Philologische Wochenschrift*, *Monom.* and *Revue de Philologie*. The reviews, too, in these periodicals are very helpful. Especially valuable is *Bibliotheca Philologica Classica*, *Beiblatt zum Jahresbericht über die Fortschritte der Klassischen Altertumswissenschaft*, whose aim is to cover all publications, both articles and books (except such as are definitely pedagogical in character), in the whole field of classical philology. No attempt is made, however, to indicate the relative importance of items listed. A very valuable feature of this work is the "Namenverzeichnis," which gives in alphabetical order the names of the scholars whose articles or books are named in the body of the work, with references back to the numbered items which describe articles or books.

The Year's Work in Classical Studies, published in England, lists material that appears between July 1 and June 30, under such captions as "Greek Literature," "Latin Literature," "Greek History," "Roman History," "Greek and Roman Religion," "Ancient Philosophy," "Greek Archaeology and Excavation," "Italian Archaeology and Excavation," "Papyri," and "Roman Britain."

The Association Guillaume Budé, in Paris, published, under the editorship of J. Marouveau, *L'Année Philologique, Bibliographie Critique et*

Analytique De L'Antiquité Gréco-Latine, Première Année, 1927. This gives the "Bibliographie des Années 1924-1926." The material is grouped into 11 divisions or chapters, in each division the arrangement is alphabetical. There is an "Index des Noms D'Auteurs," pp 353-370. This volume continues a work which the Association had previously published—*Des Années de Bibliographie Classique: Bibliographie Critique et Analytique de l'Antiquité Gréco-Latine pour la Période 1914-1924. Première Partie, Auteurs et Textes* (1927), and *Deuxième Partie, Matériaux et Disciplines* (1928). (See YEAR BOOK for 1927 and for 1928). This bibliography is of the first importance to classical scholars.

To *The Loeb Classical Library* (see YEAR BOOK, 1911-1928) additions were made, on the Greek side, of versions of Athenæus, *Deipnosophistas* (the third of seven volumes, covering Books vi-vii), C. B. Gulick, *Isocrates* (the second of three volumes), G. Norlin, *Philo* (the first two of 10 volumes), F. H. Colson and G. H. Whitaker, *Strabo, Geography* (the sixth of eight volumes), H. L. Jones, *Theophrastus, The Characters*, J. M. Edmonds, and Herodes, *Cecilius* and the Greek Choliambic Poets (except Callimachus and Babrius), A. D. Knox (in one volume). On the Latin side, there was added a translation of Cicero, *Letters to his Friends* (the third and last volume), W. G. Williams (this volume includes Cicero's letters to his brother Quintus). On *The Loeb Classical Library*, see *The Classical Weekly*, vol. xii, pp 145-146, 153-155, 161-168.

The great Lexicon Plautinum, by G. Lodge, was advanced by the publication of vol. II, part 1, pp 385-480. This part contains the articles "Prodigus" to "Quidem." Fourteen hundred pages of this monumental work have appeared, it is gratifying to know that the manuscript of the remaining 384 pages is ready. This work is the most extensive undertaking that any American classical scholar has thus far, single-handed, essayed and accomplished.

In *The American Journal of Philology*, I, appeared "Horace and the Poetry of Austin Dobson," H. C. Lapscomb, "The Text Tradition of Petronius—Preliminary Paper," E. T. Sage, "Lucretius's *Crua Rustica*," L. R. Shero, "Plural Verbs with Neuter Plural Subjects in Homer," J. A. Scott, "St. Augustine's 'City of God': Its Plan and Development," R. J. DeFerrari and M. J. Keeler, "Aristotle, *Rhetoric* 3.16, 1417^b 16-20," I. Cooper, *ΞΘΑΜΑΛΙ ΘΑΚΙΙ*, F. P. Johnson (a discussion of Homer, *Odyssey* 9.21-27, especially 9.25. Mr. Johnson interprets the Greek adjective which forms part of the title of his paper as meaning "low." He also argues vigorously against Dorpfeld's theory that the Homeric Ithaca is to be identified with the island of Leucas), "The Structure of Vergil's *Georgics*," D. L. Drew, "Papyrus Fragments of Extant Greek Literature," C. W. Keyes, "Notes on the *Agonota* of Tacitus," H. C. Nutting, "Notes on Hofmann's *Latinsche Syntax und Stilistik*," E. B. Leese (a long list of additions and corrections of the fifth edition of a very important work on grammar, prepared by J. H. Schmalz), "Literary Instruction in the Theopneida," E. L. Highbaugh, and "Oriental Elements in Petronius," M. Hadas.

From *Classical Philology*, xxiv, may be mentioned "Iachares and Demetrius Poliorcetes," W. S. Ferguson, "The Comedy of Errors," H. W.

Prescott (an argument that "the theory of error <is> a determining element in the structure of comedy"), "On the Ambiguity of Catullus XLV 8-9 (=17-18)," J. B. Stearns, "The Ithaca Problem Again," A. Shewan (the author attacks, vigorously, views concerning the identification of Homer's Ithaca propounded by Professor A. D. Fraser, in *Classical Philology*, vol. xxiv, and *The Classical Weekly*, vol. xxii), "The Singrenus Edition of Petronius of 1523," E. T. Sage, "The Repair of Roads in Spain Under the Roman Empire," C. E. Van Sickle, "The Text Tradition and Authorship of the *Lex Sisona*," B. L. Ullman, "Octavian's Propaganda and Antony's *De Sua Ebricitate*," K. Scott, "Taboo and its Survival in Roman Life," E. E. Burris, "The Origin and Meaning of Latin at," H. F. Rebert, "An Interpretation of Catullus XXXVI," H. Comfort, "Greek and Roman Law in the *Trinummus* of Plautus," W. M. Green, "The Chronology of the Years 435-431 B.C.," H. M. Hubbell (the paper deals with Greek history in the years named), "The Athenian Calendar and the Argive Alliance," T. Geerlings, "Rabbinic Parallels to *Scriptores Historiae Augustae*," M. Hadass, "The Chron of Sophocles," L. D. Peterkin, "The Quotations from Homer, Polybios 1 Proem 4-12," G. M. Bolling, "Ithacan Origins," A. Shewan (an argument that Ithaca is of "great importance for the prehistory of Western Greece", the author regards ancient Ithaca as a stopping place for a maritime people—the Minoans—trading between Crete and the Far West by way of Italy and Sicily), "Notes on the Constitutional Inscription from Cyrene," J. A. O. Larsen, "The Logic and Language of the *Hippias Major*," G. M. A. Grube, "Some Notes on the *Agriicola* of Tacitus," Mignonette Spulman, "On Apuleius' *Metamorphoses* 1 14-17," B. E. Perry.

In *The Classical Journal*, xliii, appeared "Some Glimpses of Roman Britain," Katharine Allen, "Persius," A. R. Bellinger, "Martial Looks at His World," J. W. Spelling, Jr., "Cicero's Debut as a Prosecutor," F. H. Cowles, "On Inland Transportation and Communication in Antiquity," W. L. Westermann, "The Terentian Comedies of a Tenth-Century Nun," Cornelia C. Coulter (the nun is Hrotsvitha), "The Character of Hannibal," H. V. Canter, "The Roman and his Religion," E. E. Burris, "Teachers of the Classics and Education in the United States—The Past, The Future," C. Knapp, "Vergil's Descriptive Art," Louisa V. Walker, "Some Aspects of Ancient Scientific Thought," A. H. Weston, "Ancient Reading," G. L. Hendrickson (a restatement of a point often made by scholars, that the ancient Greeks and Romans read with their ears, not with their eyes, that is, that works were usually read to them by secretaries or amanuenses, and that, even when they read themselves, they read aloud).

The Classical Weekly, xlii, xliii, contained the following articles: "Popular Superstitions in Petronius and Italian Superstitions of To-day," A. Rini, "The Misuse of Sacred Things at Rome," E. E. Burris, "Light from Arabia on Classical Things," C. J. Kraemer, Jr. (a presentation of the light thrown on classical things by passages in C. M. D. . . . , *Travels in Arabia Deserta*), "Life of Tibullus as Reflected in his Elegies," E. E. Burris, "On Direct and Indirect Discourse," E. Adelaide Hahn, "The Loeb Classical Library," C. Knapp,

"Vergil, Aeneid 7 8-9," Mary E. Campbell, "Melanchthon A German Humanist," A. P. Wagener; "Humor in Homer and in Vergil," J. W. Hewitt, "Catullus 4—Was Catullus's Phasellus a Racing-Yacht," G. D. Kellogg, "Samuel Butler and Homer Once More," A. Shewan, "Clouds, Rainbows, Weather Galls, Comets, and Earthquakes as Weather Prophets in Greek and Roman Writers," E. S. McCartney, "The Classical Element in Smollett, Roderick Random," C. Knapp, "Tendencies in the History of Ancient Religion," E. Rieu, "The Blonde Aeneas Vergil, Aeneid 1 592," M. B. Ogle, "Private and Public Benefactions in Athenian Litigation," W. P. Clark, "Horrea Romana Roman Storehouses," D. B. Kaufman, "Horace in Present Day Quotation," C. J. Kraemer, Jr.

In *Transactions and Proceedings of the American Philological Association*, lix, which contains the papers read before the association at its meeting of December, 1928, the following articles appeared: "Voxes Flexus, Modulatio, and Plasma in Latin Phonology," M. H. Liddell, "A Discussion of Some Passages in the Prologue to the *Georgics* (<of Vergil>), Gertude Hirst, "The Felicity of *Infelix* in Vergil's *Aeneid*," H. F. Rebert, "Hymns and Sequences of the Saturn Use, an Approach to the Study of Medieval Hymnology," Ruth E. Messenger, "Alexander at the Caspian Gates," A. R. Anderson, "Phalerum and the Phaleric Wall," J. Day, "The Discovery of the Wonder Child," M. B. Ogle, "The Names of the Jews of Ancient Rome," H. J. Leon, "A Deed of Sale at Olynthus," D. M. Robinson, "The Homeric Gloss A Study in Word-Sense," M. Parry.

From the *Philological Quarterly*, viii, we may mention "Elision in the Latin Dactylic Hexameter," R. B. Steele, "Zeugma in Vergil's *Aeneid* and in English," E. S. McCartney, "The Homeric Repetitions Again," A. Shewan, "Excursus in Greek and Roman Histories," H. V. Canter, "Roman Allusions in Rabbinic Literature," M. Hadass.

In England the more accessible repositories of the results of classical study are *The Year's Work in Classical Studies* (see the second paragraph of this article), *The Classical Quarterly*, and *The Classical Review*. The articles in *The Classical Review* are very numerous, and are in consequence very short. From *The Classical Quarterly*, xliii, we mention the following: "Nugae Epigraphicae," M. N. Tod (a discussion of several Greek inscriptions), "Notes on Demetrius, *De Elocutione*," J. D. Denniston, "The Hymn to Hermes," T. L. Agar, "Some Eubian Phrases in the *Aeneid*," C. M. Bouia, "Ictus and Accent," E. A. Sonnenschein, "Demetrius, *De Elocutione*," J. F. Lockwood, "The *Argonautica* of Valerius Flaccus," R. Syme, "Plato and Allegorical Interpretation," J. Tate, "Notes on *Prometheus Vinculus* (<of Aeschylus>)," G. Thomson.

Mention has been made in various issues of the YEAR BOOK of the special attention that for some years past has been paid in the United States to the study of Medieval Latin, medieval life, etc. The Medieval Academy of America has published three important works (besides four volumes of its quarterly journal entitled *Speculum*). These works are L. Cooper, *A Concordance of Boethius*, P. F. Jones, *A Concordance of the Historia Hieronymica of Bede*, and a magnificent work, E. K. Rand, *A Survey of the Manuscripts of Tours* (vol. 1 contains the text, vol. 2, splendid plates).

lish language over the world. It is an immense and implacable effort for intellectual colonization that threatens us." To which François Poncet, Under-Secretary for Beaux Arts, replied that his government was determined "to defend the independence of French thought." And the third bit of evidence is supplied by Spain, whose dictionaries have been the most conservative and reactionary of all. An Associated Press dispatch from Madrid, dated December 29, stated that "a campaign is under way to have the Academy of the Spanish Language incorporate in its dictionary a large number of American words, as well as new terms of the sciences and arts, to enable the Castilian language to serve modern necessities."

Such was the condition in the world of speech at the end of 1929. What the outcome of the struggle for leadership will be no one could foresee, but there was no doubt that English had won a great tactical victory. Whether it could consolidate its forces so as to dominate the field was another question. However, one was enabled to predict, in view of the conditions that obtained on all sides, that all minor dialects and dialects would tend quickly to die. Hence, scholars should avail themselves of every opportunity of studying them, for, with the rapid progress of events, there is no telling when many will be classed as dead.

(GENERAL) Among the general works of interest to the student of philology were the following: L. A. Waddell, *The Makers of Civilization in Race and History* (London), a comprehensive account of the early history of civilization; T. S. Foster, *The Travels and Settlements of Early Man* (N. Y.), a study of the origins of human progress; G. Renard, *Life and Work in Prehistoric Times* (N. Y.), a new volume in the History of Civilization Series, translated from the French; E. Bevan, *Myths and Seers* (Cambridge, Mass.), an investigation into ancient religion; G. Kohler, *A History of Costume* (N. Y.), a new edition by Emma von Scharf, and translated by A. K. Dallas, of an authoritative work tracing the history of costume from Egypt, Ethiopia, Syria, Phoenicia, Greece, etc. down to modern times; E. F. Schollett, *The Whirlpool of Taste* (N. Y.), a new volume in the Hogarth Lectures, sketching the history of literary taste; K. Clark, *The Gothic Revival* (N. Y.), a study in the history of taste in general; A. Selwyn-Brown, *The Physician Throughout the Ages* (N. Y.), a second volume in the history of medicine; and C. J. S. Thompson, *The Mystery and Art of the Apothecary* (Phila.), tracing the history of the use of drugs from Babylonia, Assyria, and Egypt down through the centuries.

Passing now to Africa and the Near East, a very important inventory of recent extraordinary discoveries was V. G. Childe's, *The Most Ancient East* (N. Y.), in which especially the predynastic phase of Egyptian culture known as the Badarian, which was discovered in 1924, is depicted with rare skill, such as it was lived prior to 3000 B.C. Other works dealing with Egypt include J. Baikie, *A History of Egypt* (2 vols., N. Y.), covering the earliest times to the end of the eighteenth dynasty; H. H. Nelson and U. Roessler, *Medinet Habu, 1923-28* (Chicago), an account of the excavations and architectural surveys of the temple of Amenhotep III in Egypt; J. Capart, *Documents pour servir à l'étude de l'art égyptien* (N. Y.), containing a series of

illustrations; G. R. Tabouis, *The Private Life of Tutankhamen* (N. Y.), an account of life, religion, and politics at the court of the Egyptian King; and P. G. P. Theban, *The Transit of Egypt* (N. Y.), a survey of the country's history, from the beginnings to the present day, with special attention to modern times. C. von Hoffman, *Jungle Gods* (N. Y.), edited by E. Lohrke, provides an interesting investigation into the complicated and secret system of tabus, magic formulas, symbols, rites, etc., of the African native, whether of jungle or plain.

Among numerous other works on Central, South, and West Africa may be noted Dorothée Fairbridge, *The Pilgrim's Way in South Africa* (Oxford), a descriptive account; A. London, *A Very Naked People* (N. Y.), a translation from the French of the author's account of his travels through French Sudan and the Congo; Rev. A. T. Bryant, *Olden Times in Zululand and Natal* (N. Y.), containing the interesting political history of the Eastern-Nguni clans; S. N. N. N. *The Green Wall of Mystery* (West), relating the author's adventures in the hinterland of West Africa; and *Eastern Africa Today* (London), a detailed descriptive account edited by F. S. Joelsson.

Islam was likewise coming into its own as the following titles indicate: H. Lammens, *Islam Beliefs and Institutions* (N. Y.), translated from the French by Sir E. D. Ross; F. W. Hasluck, *Christianity and Islam Under the Sultans* (2 vols., N. Y.), a history dealing with the interactions between Christianity and Islam in Asia Minor and the European provinces of the former Turkish Empire; Sir T. W. Arnold and Prof. A. G. H. H. *The Islamic Book* (N. Y.), a study of its art and history from the seventh to the eighteenth centuries; Abu Bakr Ibn Tulun, *The History of Hamy Ibn Luqman* (N. Y.), a revised edition of this medieval philosophical romance, translated from the Arabic by S. Ockley; and S. M. Zwemer, *Across the World of Islam* (N. Y.), being studies in aspects of the Mohammedan faith Turkey and its history and literature are studied in F. Downey, *The Grande Turke Suliman The Magnificent, Sultan of the Ottomans* (N. Y.), a biography of the great leader of the sixteenth century; and *The Wives of Women* (N. Y.), a collection of tales translated from the Turkish by J. A. Decourdemanche.

Turning now to the Far East, first may be noted R. J. Casey, *Four Faces of Siva* (Indianapolis), in which is presented all the available archeological information regarding the ancient Khmers, that mysterious vanished race that built the majestic temples, walls, and cities of Angkor in French Indo-China. Works of interest relating to Japan and China include the following: E. A. Lombard, *An Outline History of Japanese Drama* (Boston); *The Year Book of Japanese Art*, by the Committee of Japan on Intellectual Cooperation; K. Yamata, *The Shoji* (N. Y.), being sketches in Japanese life; *The Pillow Book of Sei Shonagon* (Boston), an account of the court life of old Japan translated from the Japanese by A. Waley; E. V. Gatenby, *The Cloud Men of Yamato* (N. Y.), an outline of mysticism in Japanese literature; H. and Alice Foght, *Unfathomed Japan* (N. Y.), a sketch of the country, its people and their customs; *Imagery in Jade* (N. Y.), translations from classical and modern Chinese poetry made by A. Christy; *China's Mother of Gardens* (Boston); E. T. Williams, *China Yesterday and*

Today (N. Y.), the fourth revised edition of this authoritative work; H. B. Morse, *The Chronicles of the East India Company Trading to China, 1635-1834* (Cambridge, Mass.), a Harvard University publication, containing much valuable data; A. F. Legendre, *Modern Chinese Civilization* (N. Y.), a valuable study translated from the French; K. S. Latourette, *A History of Christian Missions in China* (N. Y.), a comprehensive history from earliest times to 1926; *Tu Fu The Autobiography of a Chinese Poet* (Boston), arranged from his poems and translated by Florence Ayscough, including a historical year record, biographical index, etc.; and *Tu Fu Wanderer and Minstrel Under Moons of Cathay* (Portland, Me.), containing translations of poems by Edna W. Underwood and Chi Hwang Chu.

With regard to mysterious Tibet an event of importance was the opening in New York of the Roerich Museum Building which contains objects and paintings brought from that country. N. Roerich's *Atlas Himalaya* (N. Y.) consists mainly of a travel diary of journeys through India, Tibet, Chinese Turkestan, and Siberia. *Tibet's Great Yogi Milarepa* (Oxford), edited by W. Y. Evans-Wentz, is described as a biography from the Tibetan, being the Jetsun-Kahum or Biographical History of Jetsun-Milarepa, according to the last Lama Kazi Dawa-Sandup's English rendering. Two other works of interest are Sir C. Bell, *The People of Tibet* (N. Y.), a new volume by the author of *Tibet Past and Present*, and D. MacDonald, *The Land of the Lama* (Phila.), an account of the manners and customs of the people of Tibet.

Intriguing India again called forth a number of impressive volumes of which the most characteristic are S. V. Venkateswara, *Indian Culture Through the Ages* (N. Y.), of which the first volume treats of education and the propagation of culture; S. V. Karandikar, *Hindu Saogamy* (Bombay), a systematic study of Hindu marriage outside the Gotra; A. W. Ryder, *The Bhagavad-Gita* (Chicago), a good metrical translation into English; Mrs. Rhys Davids, *Stories of the Buddha* (N. Y.), a collection of stories from the Jataka; J. B. Pratt, *History of Buddhism* (N. Y.), in which the author studies Buddhism in India, Ceylon, Burma, Siam, Korea, China, and Japan, but omits that of Tibet, Nepal, and Mongolia because of its confusion with non-Buddhist elements in those countries; *Histopadesa* (N. Y.), a translation of the most celebrated Sanskrit collection of fables and stories, made by F. Johnson; *The Lights of Canopus* (N. Y.), containing 36 reproductions in color from the paintings in a manuscript of Indian fables, belonging to the greatest period of Mughal art, with a preface by L. Binyon and descriptions of the fables and their illustrations by J. V. S. Halkinson; D. G. Mukerji, *Devotional Passages from the Hindu Bible* (N. Y.), being a series of selections from the Upanishads; J. E. Abbott, *Dasopant Dyagambar* (Summit, N. J.), being a translation of the *Dasopant Charitra Romanisc Tales from the Punjab* (vol. 1, Oxford), collected and edited by Rev. C. Swynnerton in a new edition; W. J. Hatch, *The Land Pirates of India* (Phila.), a history of the Kuraver caste in South India, the origin of whose perverted ethics is lost in myth; *The Madras States Directory, 1928* (Cochin), a reference work devoted to the five Madras States of Cochin, Travancore, Pudukkottai, Sandur, and Banganapalle; P. C. Ray,

Life and Times of C. R. Das (N. Y.), a biography of the distinguished lawyer who later became a devoted disciple of Gandhi; D. W. King, *Living East* (N. Y.), an account of travels in India and Afghanistan; Mildred W. Pinkham, *A Bungalow in India* (N. Y.), stories of life in India; Mrs. A. Parker, *Children of the Light in India* (N. Y.), brief biographies of some Indian Christians; E. Wood, *An Englishman Defends Mother India* (Madras), J. T. Sunderland, *India in Bondage* (N. Y.), recommended by Gandhi and Tagore as the most important book on India; G. S. Dutt, *A Woman of India* (London), the life of Saroj Nalini, founder of the Women's Institute Movement in India; Rabindranath Tagore, *Letters to a Friend* (N. Y.), edited, with two introductory essays, by C. F. Andrews, and J. Krishnamurti, *Life in Freedom* (N. Y.), consisting of nine short addresses.

The India Society of America, Inc., directed by H. G. Govil, inaugurated, on Dec. 7, 1929, its first dinner for an India centre with a dinner at 11 A. M. The speakers were H. A. Jules-Bois, Dr. A. K. Coomaraswamy, Upton Clowe, Theodore Dreiser, Willy Pogany, Dr. J. T. Sunderland, and the presiding officer, J. L. Gerg. The International School of Vedic and Allied Research began in October, 1929, the publication of the *Journal*, the leading article of which is entitled "India and the West," by C. R. Lanman, distinguished Professor of Sanskrit at Harvard.

Persian history and literature are studied in R. W. Rogers, *A History of Ancient Persia* (N. Y.), a very scholarly work covering the period from the earliest times to the death of Alexander the Great; E. G. Browne, *A Literary History of Persia* (4 vols., Cambridge, Eng.), a new edition of this standard work extending from the earliest times to 1924; R. Levy, *A Baghdad Chronicle* (ib.), a social history of Bagdad under the Abbasid Caliphate; *Stories From Nads's Buxtan and Gulistan* (N. Y.), a collection of Persian tales translated and revised by R. Levy; and N. M. Penzei, *Sir John Chardin's Travels in Persia* (London), a reprint of a book first published in 1720 and now included among the classics of travel and exploration. A Mahdesian continues his excellent work on Armenia through the columns of his well-known review, *New Armenia*, published in New York. Another indication that that city is fast becoming the centre of world cultures may be seen in the activity of this group of cultural enthusiasts with whom the writer of these lines has had the pleasure of cooperating.

Before devoting our attention to the different languages of Europe, it seems advisable to list here some general works of interest to philology and allied researches. Thus, R. Byron's *The Byzantine Achievement: An Historical Perspective A.D. 530-1453* (N. Y.) contains a study of how the Byzantine civilization was formed and of its value to both ancient and modern times. *Life in the Middle Ages* (Cambridge, Eng.) consists of the second and third volumes of this new four-volume edition of a work made up of selections, translated and annotated by G. G. Coulton, from characteristic mediæval authors. Other works of a similar general character are E. M. Hulme, *The Middle Ages* (N. Y.), a textbook, S. Sitwell, *The Gothick North* (Boston), a study of mediæval life, art, and thought; C. Foligno, *Latin Thought During the Middle Ages* (Oxford), a historical study translated from the Italian; G. C. Sellery and A. C. Krey, *The Founding of*

Western Civilization (N. Y.), an interpretation of mediæval life and thought with regard to its influence on the modern world; E. K. Rand, *A Survey of the Manuscripts of Tours* (2 vols., Cambridge, Mass.), of which the first volume contains the text and the second, plates reproducing specimen pages from the manuscripts, Otto, Bishop of Freising, *The Two Cities* (N. Y.), a chronicle of universal history down to 1146 A. D., translated, with an introduction and notes, by C. C. Mierow, *Itinerarium Versus et Ludi* (N. Y.), the text of these mediæval Latin poems reedited, with a critical introduction, by J. B. Fuller, A. Dickson, *Valentine and Orson* (N. Y.), a study in late mediæval romance, Lynn Thorndike, *Science and Thought in the Fifteenth Century* (N. Y.), studies in the history of medicine and surgery, natural and mathematical science, philosophy and politics, J. W. Thompson, editor, *The Civilization of the Renaissance* (Chicago), a symposium composed of J. W. Thompson's "Exploration and Discovery During the Renaissance," F. Schevill's "The Society of the Italian Renaissance," G. Sarton's "Science in the Renaissance," and G. Rowley's "The Art of the Renaissance," R. B. Mowat, *A History of European Diplomacy, 1451-1789* (N. Y.), a study on how wars have been made, concluded, or prevented by diplomacy; and M. Brion, *Attala: The Scourge of God* (N. Y.), a biography translated from the French.

The International Institute of Intellectual Co-operation of the League of Nations constituted during the year an International Committee of Experts in Linguistic Bibliography, the purpose of which is to coordinate the reviews of linguistic bibliography, general and special, from its origin up to the present day. The chairman of the committee was A. Meillet, the celebrated philologist of the University of Paris, and its membership included M. Bartoli, editor of the *Archivio glottologico italiano*, J. Haust, *Atlas linguistique de la Belgique*, J. Jud, *Atlas linguistique de la Suisse*, S. Puccinini, *Dacoromania*, Salverda de Grave, *Neophilologus*, A. Terracher, *Revue de linguistique romane*, M. Grammont, *Revue des langues romanes*, R. Menéndez Pidal, *Revista de Filología española*, J. Leite de Vasconcellos, *Revista lusitana*, M. Roques, *Romania*; J. L. Gerig, *Romanic Review*, and A. Hilka, *Zeitschrift für Romanische Philologie*. Authors were also requested to submit brief summaries of all books, articles, etc., they had published.

In an address delivered before the Special Libraries Association of Boston on December 17, 1928, Prof. J. Geddes, Jr., of Boston University, made an interesting and valuable review of English, French, Italian, Spanish, Portuguese, German, and Esperanto dictionaries during the past century or more. Professor Geddes advocates above all a uniform system of key symbols for English dictionaries, pointing out that readers fail to read any special key alphabet because they are confused by the more than 600 such systems already in use among lexicographers. The alphabet of the International Phonetic Association he finds to be better adapted to the sounds of French than those of English, owing to the diphthongal character of our English vowels. This uniform phonetic alphabet which the conference of phoneticians failed to agree upon in Copenhagen in 1925 was, as Professor Geddes intimated, the primary problem of the future. The recent attempt (Feb. 2, 1929) in the same direction made by Prof. H. H. Bender,

of Princeton University, with the coöperation of nearly 100 scholars, resulted in the simplification of some forty different languages in Europe, Asia, and the Philippine Islands.

ENGLISH. In a paper read before the Modern Language Association of America on Dec. 30, 1929, Prof. M. A. Hanley, of the University of Wisconsin, stated that the average American knows about 60,000 words, or four times as many as the world's greatest employer of words, Shakespeare, but the difference is that the great poet knew his words intimately, whereas the average American "merely recognizes them as distant acquaintances. He may not be able to spell them or even use them in a sentence, but they convey meaning to him." This is indeed "a great many more words than the average person is generally given credit for," but, as Professor Hanley adds, such a knowledge is not especially significant, for "it is a mistaken notion to assume that the number of words that a man uses is a gauge to his intelligence." Sir William Craigie of the University of Chicago, who is compiling a Dictionary of American English, declared at the same meeting that since the early sixteenth century 400,000 words have been added to the American vocabulary.

The unusual popularity of Chaucer was an enigma of which it was difficult to find a satisfactory explanation. Scholarly interest in the poet, which has continued unabated for many years, cannot possibly have exerted any profound influence on the public, but, however that may be, "wise-cracking" New York soon was to welcome to its midst at least three new editions of *The Canterbury Tales*. First, that of the Modern Library, consisting of the text of W. W. Skeat with an introduction by Louis Untermeyer, next, that of Covici-Friede in a two-volume folio edition containing in parallel columns, both the original text and a translation into modern English verse by William Van Wyck, and, finally, a modern English version prepared for Longmans, Green & Co. by F. E. Hill, to be published early in 1930. In addition, there was E. F. Shannon, *Chaucer and the Roman Poets* (Cambridge, Mass.), which discusses the English poet's indebtedness to Ovid and other poets of classical antiquity.

Works of a general character include L. Spence, *The Mysteries of Britain* (Phila.), a description of the secret traditions of ancient Britain, John Elliott, and Marg. M. Elliott, *Life and Work of the People of England* (2 vols., N. Y.), which contains a pictorial record, from contemporary sources, of the fourteenth and seventeenth centuries, O. Marti, *Economic Causes of the Reformation* (N. Y.), recounting the struggle for the overthrow of the economic sway of the English clergy beginning in the twelfth century; E. Legouis and L. Cazamian, *History of English Literature* (N. Y.), a revised edition in one volume, S. Halkett and J. Laing, *Dictionary of Anonymous and Pseudonymous English Literature* (Edinburgh), of which the present volume (v. Q-S) had been revised and enlarged by D. J. Kennedy, W. A. Smith, and A. F. Johnson, H. Wolfe, *Notes on English Verse Satire* (N. Y.), containing the history of satire in English verse from Chaucer to the present day, *English Literature Series* (N. Y.), a six-volume anthology of English literature, edited by J. D. McCullum, of which the volumes published deal with "The Beginnings to 1500" (vol. 1) selected by the editor, "The Renaissance" (vol. 11), by R. W.

Bolwell, and "The Eighteenth Century" (vol. iv), by J P Blackensderfer; *Poetry of the English Renaissance, 1509-1660* (N Y.), an anthology edited by J W Hebel and H H Hudson; *Loving Mad Tom* (London), a collection of bedlamite verses of the sixteenth and seventeenth centuries edited by J Landay, and A H. Thorndike, *English Comedy* (N Y.), a history

Studies of the language and literature of special periods include G P Krapp and A G Kennedy, *The Anglo-Saxon Reader* (N Y.), containing also a grammar and glossary, L C Wimberley, *Folklore in the English and Scottish Ballads* (Chicago), Charlotte Dacre, *Zofloyan, The Moor* (London), a reprint of a historical romance of the fifteenth century, first published in 1806, Edmund Spenser, *The Faerie Queene* (N Y.), the text of the second book, edited with notes and comments, by G R Potter and J. Clime, G B Harrison, *England in Shakespeare's Day* (N Y.), as revealed by the poet's contemporaries, E I Phipps, *Shakespeare's Haunts Near Stratford* (Oxford), a historical and descriptive account, *Shakespeare and His Fellow Dramatists* (2 vols, N Y.), a selection of Elizabethan plays, edited by E H C Oliphant, Sir D B Barton, *Shakespeare and the Law* (Boston), the poet's knowledge of law and the legal profession as revealed by his plays, G F Brady, *Short Studies in Shakespeare* (N Y.), a presentation of certain problems of literary or psychological interest in the poet's works, A Thaler, *Shakespeare's Soliloquies* (Cambridge, Mass.), discussing not only the poet's eloquence of the "unsaid," but also the "unhappy happy ending" of some of his plays, his indebtedness to Milton and other contemporaries, E Nungeveit, *A Dictionary of Actors* (New Haven, Conn.), containing biographical notes of actors and other persons associated with the public presentation of plays in England before 1642, and *British Plays from the Restoration to 1820* (Boston), with introductions and bibliographies by the editor, M J Mowes

A few special studies and monographs may now be noted. Otelia Cromwell, *Thomas Heywood* (New Haven, Conn.), a study in the Elizabethan drama of everyday life, Celeste Turner, *Anthony Munday* (Berkeley, Calif.), a biographical and critical study of an Elizabethan man of letters, *The Poems of Sir Walter Raleigh* (Boston), collected and edited by Agnes M C Latham, E Muir, *John Knox* (N Y.), a biography of the Calvinist leader; F S Boas, *Morlowe and His Circle* (Oxford), a biographical survey, Kathleen E Hantwell, *Laetantius and Milton* (Cambridge, Mass.), a study of the influence of a Christian author upon Milton, A Ponsonby, *Samuel Pepys* (N Y.), a biography, *The Pepys Ballads* (2 vols, Cambridge, Mass.), edited by H E Rollins, to be completed in six volumes, *Further Correspondence of Samuel Pepys* (N Y.), edited by J R Tanner from family papers in the possession of J Pepys Cockerell, and A S Borgman, *Thomas Shadwell: His Life and Comedies* (N Y.), a biographical and critical study

The great eighteenth-century lexicographer, Samuel Johnson, and his biographer, James Boswell, were the subjects of universal discussion by both philologists and laymen. In fact, the *Private Papers of James Boswell from Malahide Castle* (N Y.), which was being edited from the Isham collection by G Scott and of which six volumes appeared during the year,

were pronounced as one of the most outstanding of literary discoveries of the age. When completed the collection will comprise 16 or 18 volumes in a limited edition. Other works devoted to this most interesting pair of scholars include C Hellis, *Dr Johnson* (N Y.), a biography, H Salpeter, *Dr Johnson and Mr Boswell* (N Y.), F A Pottle, *The Literary Career of James Boswell, Esq* (Oxford), a collection of bibliographical materials, and A S Collins, *Authorship in the Days of Johnson* (N Y.), a study of the relations between author, patron, publisher, and public from 1726 to 1780.

London is the subject of the following interesting studies: C Pendrill, *Wanderings in Medieval London* (N Y.), illustrated from old prints, H Pince, *Half Hours in Old London* (N Y.), being historical and descriptive sketches, W H Irving, *John Gay's London* (Cambridge, Mass.), a study illustrated from the poetry of the time, C J S Thompson, *The Quacks of Old London* (Phila.), G Smith and F Bengel, *The Oldest London Bookshop* (London), established in 1728 in Bond Street, and A St J Adcock, *Famous Houses and Literary Shrines of London* (N Y.), a new and revised edition.

Of interest to bibliographers are G F Barwick, *The Reading Room of the British Museum* (London), the story of its development and activities, M A Shaaber, *Some Forerunners of the Acropaper in England, 1476-1622* (Phila.), a study in the . . . journalism, and W C Abbott, *A History of Oliver Cromwell* (Cambridge, Mass.), representing the first attempt to bring together in complete form material relating to the Great Protector.

In the *New England Quarterly* (Oct 1928), S F Batchelder reveals the debt owed by American speech to the sea. Such expressions as "first-rate" and "second-rate," derived from "the five rates of sizes of ships of war," "blubbers," "carry on," "skylark," "on deck"—the latter now used in baseball—and a host of others are shown to be of marine origin. In a like manner, it may be added, the automobile, aviation, moving pictures—viz, "parking," "close-up," etc.—have introduced a vocabulary into current speech that would be incomprehensible to a person of the "gay nineties" could he be revived.

G L Apperson, *English Proverbs and Proverbial Phrases* (N Y.) is a historical dictionary extending from the twelfth century to our own time. Other works are *What Does Your Name Mean* (Boston), a brief list of 2000 American family names and their meaning, edited by L T DeCelles, *Pitman's Technical Dictionary of Engineering and Industrial Science* (vol 1, N Y.), compiled in seven languages by E Slater, G Roberts, *The Heart of Words* (N Y.), a manual of religious terms for writers of sermons, A Pope, *An Introduction to the Language of Drawing and Painting* (vol 1, Cambridge, Mass.), containing painter's terms, *Report of the Committee on Terminology* (Boston), issued by the Federal Council on Art Education, H G Brady, *Transportation Glossary* (N Y.) . . . terms and phrases in air, highways, ocean transportation, and in port traffic, H W and F G Fowler, *The Concise Oxford Dictionary of Current English* (N Y.), a revised and enlarged edition, M A. Pink, *Dictionary of Current Idioms* (N Y.), a manual of grammar, idioms and usage, H R Croeland, *The Psychological Methods of Word-Association and Reac-*

tion-Time as Tests of Deception (Eugene, Oregon), an account of some experiments.

GERMAN The inauguration of the Deutsches Haus at Columbia University indicated a revival of interest in things German. The Federation of German-American Societies began a campaign for a national centre of German culture to be created at Washington, D. C. H. G. Wendt, "American Bibliography of Germanic Language and Literature" appeared in *The Germanic Review* (N. Y., 1929, pp. 92-102). Other works are H. S. King, *Echoes of the American Revolution in German Literature* (Berkeley, Calif.), A. Goldschmidt, *German Illumination* (2 vols., N. Y.), dealing with the Carolingian and Ottoman miniatures, F. C. Herbert and L. Hirsch, *A New German-English Dictionary for General Use* (N. Y.), including colloquial vocabularies of both languages and a study of German pronunciation, B. Q. Morgan, *German Frequency Word Book* (N. Y.), and E. F. Hauch, *German Idiom Last* (N. Y.).

In Scandinavian may be mentioned *Denmark's Best Stories* (N. Y.), edited by Hanna A. Larsen for the American Scandinavian Foundation, and *Studies and Records* (vol. iv, Northfield, Minn.), studies in the history of Norwegian immigration to America, issued by the Norwegian-American Historical Association.

CELTIC Courses in Celtic given by Prof. J. Dunn, of the Catholic University, figured for the first time in the summer session of the Linguistic Institute at Yale University in July. The School of Irish Studies of Fordham University issued an announcement entitled *Irish Culture* (N. Y.), edited by J. C., E. J. K. and J. E. T. Works deserving mention include H. C. Lawlor, *Ulster Its Archaeology and Antiquities* (Belfast), beginning with the arrival of man in Ireland, A. De Blacam, *Gaelic Literature Surveyed* (N. Y.), a historical study, M. O. Fitzgerald, *The Mystery of the Haunted Wing and Other Stories* (Boston), a collection of five stories from Irish folklore, P. O'Donnell, *Adwigoole*, a tale of Ireland, A. E. Malone, *The Irish Drama* (N. Y.), from 1896 to the present, T. Macaulay, *Donn Byrne Bard of Armagh* (N. Y.), a biographical and critical study, C. F. Howell, *An Irish Ramble* (N. Y.), containing interesting legends and fairy tales, and Rev. J. H. Cotter, *Tipperrary* (N. Y.), the history of an Irish town.

The American Iona Society received from the city of Inverness for its headquarters a donation of a building and 24 acres of land. Contributions to the study of Scottish Gaelic include N. MacNeill, *The Literature of the Highlanders* (Stirling), a study of the race, language, literature, poetry, and music edited, with a new chapter, by J. M. Campbell, J. M. McPherson, *Primitive Beliefs in the Northeast of Scotland* (N. Y.), a survey of the local folklore during the past three centuries, and R. Scott, *Scotland Through American Eyes* (Pittsburgh), a study of various phases of Scotch life.

A worthy contribution to the study of early Welsh is A. Grinstead, *The Historia Regum Britanniae of Geoffrey of Monmouth* (N. Y.), containing the first Latin texts taken direct from the earliest manuscripts, with a literal translation of the Welsh manuscript No. LXI of Jesus College, Oxford, by the late Canon R. E. Jones.

SLAVIC A few of the more important titles of works dealing with this field include M. E. Durham, *Some Tribal Origins, Laws and Customs*

of the Balkans (N. Y.), a study of survivals of primitive life in the Balkan states, Benito Mussolini, *John Huss* (N. Y.), a biography of the Czech religious reformer, translated from the Italian, C. A. Manning, *An Anthology of Czechoslovak Poetry* (N. Y.), containing selections from the best translations in English, E. Dostal and J. Sima, *Baroque Architecture of Prague* (N. Y.), with a preface by L. Einstein, J. Kozisek, *A Forest Story* (N. Y.), an animal story translated from the Czechoslovak, *Poems by Jan Kochanowski* (Berkeley, Calif.), selections from the work of a sixteenth-century Polish poet in translation, with an introduction, G. Vernadsky, *A History of Russia* (New Haven, Conn.), from the earliest times to the present, J. Kunitz, *Russian Literature and the Jew* (N. Y.), a sociological study, *Russian Schools and Universities in the World War* (New Haven, Conn.), A. Pushkin, *The Captain's Daughter* (N. Y.), translated from the Russian, and Julia D. Adams, *Vainu A Boy of New Finland* (N. Y.), Finnish-Russian folklore and history told for young readers.

ROMANCE The most complete and detailed bibliography of "Romance Linguistics in 1927" published in any language is that of Pauline Taylor, which appeared in the *Romance Review* (N. Y., 1929, pp. 85-102, 189-201, 285-297). P. R. Roland-Marcel's "The Bibliothèque Nationale of France," which appeared in the same *Review* (pp. 111-121), sketches the history of the world's greatest library from the fifteenth century to the present day. P. Van Tieghem's "Influences et Simultanités en Histoire Littéraire" (*Romance Review*, 20, 1929, pp. 137-140) continues the discussion of the methods of literary research in which several European and American scholars have taken part. Finally, mention should be made of H. D. Learned's "The Cause of the Breaking of Vulgar Latin Open E and O," which likewise appeared in the *Romance Review* (pp. 331-9).

Among the publications issued by the Modern Foreign Language Study are M. A. Buchanan and E. D. MacLhee, *An Annotated Bibliography of Modern Language Methodology* (Toronto), C. A. Wheeler, *Enrollment in the Foreign Languages in Secondary Schools and Colleges in the United States* (N. Y.), and A. Coleman, *The Teaching of Modern Languages in the United States* (N. Y.). Mention may also be made of G. O. Russell, *The Novel Its Physiological Mechanism as Shown by X-Ray* (Columbus, Ohio); H. Baulig, *Exercices Cartographiques* (Strasbourg), L. Perrot, *La Titulaire Impériale d'Hadrén* (Paris), and *Volkskunst und Kultur der Romanen* (Hamburg), a new periodical published by the University of Hamburg, also is to be noted.

FRENCH H. Brémond, *A Literary History of Religious Thought in France* (N. Y.) deals, in the first volume, with devout humanism. H. F. Muller's *The Chronology of Vulgar Latin* (Heidelberg) attempts to prove that the development of Vulgar Latin into Old French took place very rapidly in the ninth century, thereby upsetting all previous theories which held that the process was a long and slow one. This revolutionary theory will no doubt be subjected by scholars to most careful scrutiny. The "Essai de Sociologie Linguistique," contributed by L. Jordon, of the University of Munich, to the *Romance Review* (pp. 305-325) establishes the

methodology of the new science of semantics or semasiology, i.e., the history of meanings of words.

Contributions to the study of Old French include W. Foerster and Marg Rosler, *Sankt Allezus, Altfranzösische Legendendichtung des 11. Jahrhunderts* (Halle), K. Grass, *Adamspiel, Das Anglonormannisches Mysterium des 11. Jahrhunderts* (3d ed., Halle), E. Brugger, *The Illuminated Tree in Two Arthurian Romances* (N. Y.), which incidentally explains the origin of the Christmas tree, *Tristan in Brittany* (N. Y.), a translation, with an introduction by G. Saintsbury, of a twelfth-century romance written by Thomas, the Anglo-Norman, E. M. Grimes, *The Lays of Desre, Graelent and Melion* (N. Y.), an edition of the texts with an introduction, *Sir Lancelot of the Lake* (N. Y.), a translation of a French prose romance of the thirteenth century, Helen E. Manning, *La Vie de Saint-Thibaut* (N. Y.), an edition of a French poem of the thirteenth century; Andrew Lang, *Aucassin et Nicolette* (N. Y.), a reprint of a translation which originally appeared in 1887, E. Walberg, *Deux Versions Inédites de la Légende de l'Anté-Christ* (Lund), editions of poems of the thirteenth century, and K. Bercevic, *The Crusades* (N. Y.), a colorful, but unsympathetic account of the great movements that dominated Europe from the end of the eleventh to the middle of the thirteenth century.

The later Middle Ages are represented by Eileen Power, *The Goodman of Paris* (N. Y.), a first translation into English of a treatise on moral and domestic economy written about 1393, A. France, *Joan of Arc* (2 vols., N. Y.), a new edition in English of a celebrated work, H. Belloc, *Joan of Arc* (Boston), a brief biography, C. P. H. Nason, *Jeanne d'Arc* (Boston), a lecture; P. Champion, *Louis XI* (N. Y.), an authoritative and very interesting biography of the great French King of the fifteenth century, D. B. Wyndham Lewis, *King Spider. A Life of Louis XI of France* (N. Y.), and O. Cartellieri, *The Court of Burgundy* (N. Y.), a history of the Dukes and the cultural life of their court.

Studies in the French Renaissance include J. L. Geig, *Antoine Arther and the Renaissance at Nîmes* (N. Y.), D. Muiarasu, *La Poésie Néolatine et la Renaissance des Lettres Antiques en France (1500-1549)* (Paris), a study of Neo-Latin poetry, *The Compendium Universitatis Parisiensis of Robert Goulet* (Phila.), an annotated translation of this interesting account of the University of Paris; *The Last Will and Testament of the Late Nicolas Jenson* (Chicago), a first translation into English of the will of this fifteenth-century printer by Justice Pierce Butler of the Supreme Court, S. Putnam, *François Rabelais* (N. Y.) and A. J. Nock and C. R. Wilson, *François Rabelais The Man and His Work* (N. Y.), and critical studies, A. France, *Rabelais* (N. Y.), lectures of the great author given in South America in 1900, translated by Ernest Boyd, *All The Extant Works of François Rabelais* (3 vols., N. Y.), a translation with critical text, variant readings, variorum notes and drawings attributed to Rabelais, by Samuel Putnam, H. Bordeaux, *Saint Francis de Sales* (N. Y.), a biography translated from the French, Frances H. Titchener, *L'École Auvergnate, Étude sur la Renaissance méridionale dans le Cantal* (Paris), *The Diary of Montaigne's Journey to Italy in 1580 and 1581* (N. Y.), a

new translation by E. J. Trechmann; *The Essays of Michael Lord of Montaigne* (N. Y.), a new edition of the Florent translation with an introduction by D. MacCarthy; C. H. Hartmann, *The Magnificent Montmorency* (N. Y.), a biography of Henri, Duc de Montmorency, 1595-1632, and H. Lavedan, *The Heroic Life of St Vincent de Paul* (N. Y.), a shepherd boy in the time of Henri.

V. Tornius, *Salons* (N. Y.), translated by Agnes Platt and Lulian Wonderley, provides pictures of society through five centuries A. Tilley, *The Decline of the Age of Louis XIV, or French Literature, 1687-1715* (N. Y.) is an excellent survey of the literature and thoughts of France during the period of transition.

Finally, a few useful studies and texts should be mentioned. H. Fie, *La Grammaire des Fautes* (Paris), E. Mackel, *Die Kulturströmungen der Letzten Drei Jahrhunderte im Spiegel der Französischen Kunst* (Leipzig), Marg E. Hudson, *The Juxtaposition of Accents at the Rime in French Versification* (Phila.), M. H. Larmoyer, *French Homonyms and Synonyms* (N. Y.), F. D. Cheydeur, *French Idiom List* (N. Y.), and Hugo's *Pocket Dictionary* (Phila.), containing both French-English and English-French sections. See also FRENCH LITERATURE.

ITALIAN Studies dealing with the medieval and Renaissance periods of Italian literature include Helen F. Dunbar, *Symbolism in Medieval Thought and its Consummation in the Divine Comedy* (New Haven, Conn.), a historical and critical study, K. Vossler, *Medieval Culture* (N. Y.), an introduction to Dante and his times, translated by W. C. Lawton, E. Janni, *La Piccoletta Barchetta* (Milan), an introduction to Dante, F. Schevill, *The First Century of Italian Humanism* (N. Y.), Alice Cutayne, *Saint Catherine of Siena* (N. Y.), a biography, E. H. Wilkins, *Modern Discussions of Petrarch's Prose Letters* (Chicago), *The Decameron of Giovanni Boccaccio* (N. Y.), a new edition of the translation by J. M. Rigg, together with the essay on Boccaccio by J. A. Symonds, G. Myrick, *The Filostrato of Giovanni Boccaccio* (Phila.), the first complete English edition of Boccaccio's own love story, based on an Old French version of the story of Troy, G. Lipparini, *Giovanni Boccaccio* (Florence), D. Loth, *Loenzo The Magnificent* (N. Y.), a biography of the great Florentine, Katharine Gibson, *The Goldsmith of Florence* (N. Y.), a book about great craftsmen of the Middle Ages, P. Villari, *Life and Times of Niccolò Machiavelli* (N. Y.), a new edition; O. Ferrara, *The Private Correspondence of N. Machiavelli* (Baltimore), lectures by the Ambassador of Cuba, P. Tosca, *Florentine Painting of the Trecento* (N. Y.); Y. Yashiro, *Sandro Botticelli and the Florentine Renaissance* (N. Y.), a revised popular edition of a work first published in 1925 by the Medici Society, C. Ricci, *North Italian Painting of the Cinquecento* (N. Y.), A. De Rinaldis, *Neapolitan Painting of the Seicento* (N. Y.), S. G. Wiener, *Venetian Houses and Details* (N. Y.), Rose S. Nichols, *Italian Pleasure Gardens* (N. Y.), an important work; W. E. Greenwood, *The Villa Madama Rome*, a monograph on a famous villa of the Italian Renaissance, and Klabund, *The Incredible Borgias* (N. Y.), translated from the German.

Works by the two great philosophers of Italy are B. Croce, *The History of Italy, 1870-1915* (Oxford); and G. Gentile, *Studia Vichiani*

(Florence), discussing the influence of Vico, the eighteenth-century philosopher.

The Italian Historical Society of America added several titles to its rapidly growing series of valuable publications (N Y.) The Permanent Italian Book Exhibition, Inc. a non-commercial organization, held branch exhibitions in Paterson, N J., Cleveland, Philadelphia, and San Francisco.

PORTUGUESE AND PROVENÇAL. *Biblos*, official organ of the University of Coimbra, added several valuable publications to its series of *beshefte*. J. Dunn's *Grammars of the Portuguese Language* (Washington, D C.) is one of the best yet to appear.

The leading contributions in Provençal are J. Audin and R. Lavaud, *Nouvelle Anthologie des Troubadours* (Paris), and F. Mistral, *Gedukht* (Halle), edited by K. Voretzsch.

SPANISH. Contributions to bibliography include Clara L. Penney, *Last of Works Printed Before 1601 in the Library of the Hispanic Society of America* (N Y.), *Spain and Spanish America in the Libraries of the University of California* (vol. 1, Berkeley), an extensive . . . and A. D. Savage, *Manuscripts in the . . . of the Hispanic Society of America* (N Y.), a study of three manuscripts of the thirteenth to fifteenth centuries.

Other works of interest are E. A. Peers, *Ramon Lull* (N Y.), a biography of the Mallorcan martyr, G. T. Northup, *El Cuento de Tristan de Leonis* (Chicago), *Clavijo's Embassy to Tamerlane, 1403-06* (N Y.), translated from the Spanish by G. Le Strange, Eliz. D. Trapier, *Catalogue of Paintings (16th-18th Centuries)* (N Y.), in the collection of the Hispanic Society, *Fourteenth Century Painting in the Kingdom of Aragon Beyond the Sea* (N Y.), another publication of the Hispanic Society, Helen M. Fox, *Patio Gardens* (N Y.), a descriptive account, C. M. Villiers-Stuart, *Spanish Gardens, Their History, Types and Features* (N Y.), and *Spanish Idiom List* (N Y.), compiled by the Macmillan Company.

On Spanish America we have B. Moses, *Spain Overseas* (N Y.), published by the Hispanic Society, A. H. Verrill, *Great Conquerors of South and Central America* (N Y.), M. Brion, *Bartolome de las Casas* (N Y.), a translation from the French of a biography of the sixteenth century priest known as the "Father of the Indians", and *Some Spanish American Poets* (N Y.), translated by Alice Stone Blackwell.

On Catalan we have A. Par, *Catalan e l'ellfa* (Barcelona). See also SPANISH-AMERICAN LITERATURE, SPANISH LITERATURE.

PHONETICS. A useful manual for teachers is *First Principles of Speech Training* (N Y.), by Eliz. Avery, Jane O. Dooley, and Vera A. Sickels. *The S P E Tract No. XXVII* (Oxford) contains recommendations for pronouncing doubtful words. O. Jespersen, *An International Language* (N Y.) reveals plans and specifications for a new artificial language.

PHILOSOPHY. For a number of years, Professors Whitehead and Dewey have occupied the centre of the stage in American philosophy, and it would be hard to overestimate the influence they have exerted, not only, of course, upon disciples, but, in a gradual and insidious way, upon philosophers in general. Recently an attempt has been made to discover a basic similarity in the doctrines of these two leaders, but a closer in-

spection of their works discloses, what indeed their widely different backgrounds and interests would have foretold, that their disagreements are far more significant than any chance and doubtful coincidence. In the year under consideration they fortunately resolved the matter themselves by publishing, each of them, a fairly definite statement of their positions.

Professor Dewey's book *The Quest for Certainty* (the Gifford Lectures, 1929) is an account of man's search for truth and peace in the face of the conflicts and the ceaseless change of his environment. Surrounded by mysteries, powerless to control the instrumentalities which alone could accomplish their desires, our ancestors had recourse to supernatural powers, whom they coerced or supplicated, as the case might be, as the only means of escaping from doubt and peril and so of attaining the certainty they craved. But having invented this other world as a refuge from the cruelty of actualities, men became slaves to their own imaginings and powerless by virtue of prejudice and inveterate habit. This primitive solution proved abortive and was abandoned.

A more sophisticated refuge from these same evils is the philosophical flight to the rational and the ideal, but it is equally futile. "The sense of incompetency and the sloth born of desire for irresponsibility have combined to create an overwhelming longing for the ideal and rational as an antecedent possession of actuality, and consequently something upon which we can fall back for emotional support in times of trouble." The philosophy of the past, Professor Dewey seems to say, not only did nothing to solve the urgent problems of humanity, but actually hindered progress by withdrawing men from actualities to the barren comfort of the rational and the ideal, to a world of Platonic Ideas or a water-tight system of dialectic. And it is philosophy which has prevented an agreement since the seventeenth century between science and religion. Professor Dewey is particularly bitter against the Idealists, who are chiefly concerned, he thinks, to identify the real and the ideal, while explaining that in a sense, they are different. Philosophy has always pretended to universal knowledge, which, however, is forever impossible since the business of knowledge is merely the "transformation of disturbed and unsettled situations into others more controlled and more . . ." And this, it would seem, is the . . . of philosophy. "The business of thought is not to conform to, or reproduce the characters already possessed by objects but to judge them as potentialities of what they become through an indicated action." The philosopher must give up his fabulous claim to understand or dictate the nature of reality or the good, and following experimental science with a humble heart, become the intermediary to the lay public, and the physician of his times. For only through control of the means to happiness can the old peril and doubt be banished. It is obvious that this restriction of philosophy condemns the "great tradition" and the most important movements alive today.

In star-clear opposition to this philosophical skepticism is the rationalistic mood which prevails in Professor Whitehead's book, *Process and Reality*. While Professor Dewey is content with the time-honored, if not classical, arguments, that knowledge, since it is an evolutionary product, is not capable of metaphysics and in history has shown its incapacity, the English philos-

opher goes much deeper into history, science, and the nature of man, adducing the profound necessity of a synthesis and analysis of the whole spread of nature. This ultimate inquiry is presupposed in science, it is demanded in religion and practical life. Philosophy has given permanence and progressive adequacy to religion. By its meditation, it has prevented historical tragedies due to concrete and accidental divergences of cult. Through the centuries, it has hobbled with science, with a general accrual of mutual benefit, for neither the one nor the other could persist in narrow empiricism. In the beginning, Greek mathematics raised up philosophy to the dignity of broad abstractions, from which it greatly profited. Later, however, the same influence was pernicious for "the primary method of mathematics is deduction, the primary method of philosophy—descriptive generalization."

Professor Whitehead's conception of the proper method of philosophy is in fact very close to that of Professor Husserl. Both writers maintain that philosophy is a search for ultimate necessities in immediate experience, that deduction is relatively unimportant, that insight and subsequent description is the procedure, and that the discovery of contradictions is shallow and by no means a final disproof of any system. Such agreements, of which there are many others besides, are particularly gratifying since there has been no influence on either side.

Professor Whitehead admits, of course, that the great systems have failed in many cases to attain definitive truth, yet each of them, he insists, has analyzed the abstract, has defined alternatives, thus advancing knowledge immeasurably. "A new idea introduces a new alternative, and we are not less indebted to a thinker when we adopt the alternative which he discarded. Philosophy never reverts to its old position after the shock of a great philosopher." The first chapter of *Process and Reality* contains the finest defense of speculative philosophy which has appeared in a long time.

"One aim of philosophy," says Professor Whitehead, "is to challenge the half-truths constituting the scientific first principles. The systematization of knowledge cannot be conducted in water-tight compartments. All general truths condition each other, and the limits of their application cannot be adequately defined apart from their correlation by yet wider generalities." To attain this breadth of generality made necessary by the multiple and provincial character of the special sciences, Professor Whitehead finds it expedient to give up the principle of excluded middle, just as Hegel sacrificed (in a sense) the law of contradiction, and he finds it necessary to invent a new language adequate to the elusive abstractions, the broad unspoken necessities embedded in the structure of immediate experience. Needless to say, this new language has frightened and confused his readers. Yet he has invented or rather, continually invented, a medium of great power and beauty, uniquely adequate to his majestic abstractions and overriding discernments, and often the mathematician in the course of his higher definiteness becomes a poet.

Professor Whitehead has not only defined the philosophical method but, and this is somewhat unusual in modern writers, carried it out in great detail and breadth. By the time he reaches the last chapter, he has "taken up the truth" of various sciences, and of many systems, such as that

of Aristotle, Spinoza and Bergson, into a philosophical structure, which, however, by virtue of a presiding unity, is free from any taint of eclecticism.

In Professor Lewis's book, *Mind and the World Order*, we find Professor Whitehead's insistence that "truth, like knowledge in general, is about experience, and not about something strangely beyond the ken of man—" yet in his doctrine that "a true philosophical interpretation must follow the clues of the practical reasons for our predication," his rejection of rationalism (in the usual sense), his espousal of empiricism and the "pragmatic *a priors*," Professor Lewis approaches much closer to the views of Professor Dewey. In considering other modern philosophies, such as New Realism, Critical Realism, and the Sense data system of Broad, he finds that the most basic distinction has not been made. The important question is not whether the presented penny is subjective or objective, this distinction being irrelevant to givenness as such. The awareness of the size or color of the penny is not *sensating* but *interpreting*. It is interpretation of givenness through a concept selected by the mind *a priori*, and givenness is without character until so interpreted. The great dichotomy of the universe separates the given, the characterless, the ineffable, from the concept, the character. Here we seem to be close to Plato, Aristotle, and Kant. It is an illusion. The concept is not an archetype in heaven but a psychological or behavior pattern in the mind, which, Professor Lewis assures in a long subtle argument, need not have an *identical* element in two minds in order for these two minds to communicate. He attempts very skillfully to answer the objections to Nominalism and is, of course, far from Plato's idealism. Professor Lewis is, also, despite occasional appearances to the contrary, quite at variance with Kant. The *a priori* he holds is not coercive, quite the contrary in fact. In this realm, as opposed to that of the given, we are free. The *a priori* cannot determine reality, as Kant thought, but only select and interpret. Indeed, the writer is almost ready to agree with Professor Dewey "that to suppose that we must appeal to a synthetic activity of an independent thought to give the quality meaning in and for knowledge is like supposing that by thinking in our heads we can convert a pile of bricks into a building." No, the *a priori* cannot even assure the orderliness of experience. "Did the sage of Königsburg never have dreams?", inquires Professor Lewis.

For the rest, his logical and epistemological arguments and decisions are, many of them, bold and subtle, as for example his conclusion that all propositions are universal and all logical systems circular. The book is one of great importance.

J. S. Haldane's book, *The Sciences and Philosophy* (Gifford Lectures, University of Glasgow 1927-1928), like *Process and Reality*, also undertakes a defense of metaphysics. It is evident, he thinks that "not only the sciences taken together, but also the individual sciences, present to us problems which, as mere sciences, they are unable to solve. The task of philosophy is to grasp these problems firmly, and endeavor to reach some solution of them. This is what philosophy has always been striving to do, and what, on the practical side, religions have likewise been striving after." The special sciences lead necessarily to

philosophy and religion, and the implications of natural process in biology, psychology, etc., are toward teleology, immortality. Some time ago, Professor Eddington adduced somewhat similar conclusions from entropy, "randomness," and the new parade of relativity. Now an eminent physiologist makes his transit toward the stars and the higher generalities. For it appears to him that the more knowledge accumulates, the more the self-sufficiency of mechanical science collapses.

To refute the claims of mechanism, he accumulates data old and new, particularly from the field of physiology and biology. To ask nature to reveal the mechanisms of life—the mechanisms of respiration, secretion, circulation, vision, growth, or heredity, is to commit the fallacy of many questions. There are no such mechanisms. The organic factor of "cooperation" constitutes, in short, a chasm over which mechanism, with propriety, can never pass. This opposition to mechanism does not, however, render him any more favorable to vitalism. "Vital force" explains too much and too little. It is a mysterious spook which appears when it is called for but also when it is not wanted. Neither mechanism nor vitalism then, but a frank recognition that biology and psychology are independent sciences with laws which cannot be reduced to the physical and the chemical. In developing his metaphysics on the basis of physical science, Professor Haldane, luts upon many important and unexpected notions, among which his advocacy of Kant's subjectivity of space and time and the consequent peculiar theory of self are among the most interesting.

Another original and illuminating book published this year, *Poetry and Mathematics*, by Scott Buchanan, purports to find an important structural similarity, in the face of the flaunting disparity, between the language of mathematics and poetry. It is first shown that proportions are the historically prior, and perhaps the most inherent form of mathematics, then that poetry is largely made up of metaphors, allegories, and other figures of speech, and finally that these figures of speech, when amplified and articulated, take the form of proportions. The argument develops ingenious variations on this principle theme. Professor Buchanan's preoccupation with structure, illustrates a new interest which has been developing in philosophy ever since the publication of Mr. Wittgenstein's book, *Tractatus Logico-Philosophicus*.

Among the other important philosophical publications of the year was an entertaining volume on Plato by F. J. E. Woodbridge, also two Fest-schriften made their appearance celebrating the seventieth birthday of two of the greatest philosophers of the day—Edmund Husserl and John Dewey. The work honoring Professor Husserl, which constitutes a volume in the *Jahrbuch für Philosophie und Phänomenologische Forschung*, is a very important series of studies in various problems of phenomenology and illustrates, in an illuminating way, the wide and various applications of that method. Though some of the contributions are devoted to the analysis of concepts in formal or "apophantic" logic, others, such as Edith Stein's, Husserl's *Phänomenologie und die Philosophie des Thomas von Aquino* and Hedwig Conrad-Martius's *Farben*, and Fritz Kaufmann's *Die Bedeutung der künstlerische Stimmung*, go far beyond, investigating courageously, realms, much too complex, it would seem, for formal analysis.

The *Essays in Honor of John Dewey* volume contains articles on a variety of subjects, among which Professor Parkhurst's *Cult of Chronology*, and Dr. Hooke's paper on a similar subject, and Professor McKeon's masterly analysis of the purpose and nature of medieval science, are perhaps the most significant.

Professor McKeon also has gratified many readers by a set of translations, *Selections from Medieval Philosophers from Augustine to Albert the Great*, in which he has scrupulously avoided the "gems," and gone, in fact, directly to the heart of the great philosophic problems of the Middle Ages, some of which have never been rendered in English before. Another new translation of great importance is that of Hegel's *Science of Logic*. W. H. Johnston and L. G. Struthers have rendered the whole logic into English for the first time.

The twenty-ninth annual meeting of the American Philosophical Association was held at Columbia University Dec. 30-31, 1929. The first session was devoted to the philosophy of John Dewey, the speakers being F. J. E. Woodbridge, W. E. Hocking, and C. I. Lewis. The other sessions were devoted to logic, theory of science, and theory of essences. Morris R. Cohen gave the presidential address on "Technique in Philosophy."

BIBLIOGRAPHY. In 1929 a number of important books in the field of philosophy appeared, the more notable of which are as follows: Montgomerly Belgian, *Our Present Philosophy of Life*; Henry Evelyn Bliss, *The Organization of Knowledge and the System of the Sciences*; Franz Brentano, *Ueber die Zukunft der Philosophie und Vom Dasein Gottes*; Scott Buchanan, *Poetry and Mathematics*; Ernst Cassirer, *Die Philosophie der Symbolischen Formen*, vol. III; John Dewey, *Characters and Events and The Quest for Certainty*; *Essays in Honor of John Dewey*; Daniel Essertier, *Philosophes et Savants Français du XVI^e Siècle*, vol. IV; Federico Enriquez, *Historic Development of Logic*; Etienne Gilson, *The Philosophy of St. Thomas Aquinas*; H. Green (trans.), *From the Physical to the Social Sciences*; Jacques Rueff, J. S. Haldane, *The Sciences and Philosophy*; Nicholas Hartmann, *Die Philosophie des Deutschen Idealismus*; H. Teil, Hegel, Edmund Husserl, *Logik*; *Jahrbuch für Philosophie und Phänomenologische Forschung*, *Festschrift Edmund Husserl zum 70. Geburtstag*; W. H. Johnson and L. G. Struthers, *Hegel's Science of Logic* (trans.); Cassius Jackson Keyser, *The Pastures of Wonder, The Realm of Mathematics and the Realm of Science*; John Laird, *The Idea of Value*; C. I. Lewis, *Mind and the World Order*; William McDougall, *Modern Materialism and Emergent Evolution*; Richard McKeon, *Medieval Philosophers from Augustine to Albert the Great* (trans.); D. W. Prall, *Aesthetic Judgment*; Leon Roth, *Spinoza*; T. V. Smith, *The Philosophical Way of Life*; W. Giff Stapledon, *A Modern Theory of Ethics*; Paul Tillich (ed.), *Protestantism As Kritik and Gestaltung*; Clement C. J. Webb, *Pascal's Philosophy of Religion*; A. N. Whitehead, *The aims of Education and Other Essays*, *The Function of Reason*, and *Process and Reality*.

PHONETICS. See PHONOLOGY, MODERN.

PHOSPHATE ROCK. The most important source of phosphate rock is northern Africa where Algeria, Egypt, Morocco, and Tunis, with large deposits and low production costs, produce about 50 per cent of the world's supply.

This affects the American industry which in 1928 contributed to the world's total supply about 33 per cent, or a decline from 42 per cent in 1923. Florida is responsible for about 82 per cent of the total phosphate rock mined in the United States and Tennessee for about 17 per cent, the remaining 1 per cent being the output of western States. In 1928 the American production totaled 3,501,406 long tons valued at \$12,443,179 which was the largest since 1920 when 4,103,982 tons valued at \$25,079,572 were mined. Of this output from 25 to 29 per cent is exported, the exports for 1928 amounting to 898,764 long tons valued at \$4,453,101 and those for 1929 to 1,142,746 tons valued at \$5,386,919. In 1928 the imports for consumption were the greatest in 10 years, amounting to 45,812 long tons valued at \$431,238. The imports in 1929 were slightly less, though during the year phosphate from Africa was sold on the Atlantic seaboard at less than the Florida product. See FERTILIZERS.

PHOTOGRAPHY. The principal development of practical interest in photography was the marked increase in the use of sound motion pictures for entertainment purposes. Further research on photographic methods of recording sound resulted in a pronounced improvement in the quality of the sound reproduction. Practically every producer was making sound pictures in one form or another and there was little reason to believe that such pictures would ever be supplanted in favor of the "silent" picture (*Trans Soc M. P. Eng.* 13, 1929, p. 66). More realism was added to sound pictures by an extensive use of color; several complete feature "talkies" in color were exhibited. Only two-color subtractive processes were used commercially, however, but they do not give exact natural-color reproduction.

Besides their utilization in the theatre, sound pictures found application in conjunction with medicine, law, and education. To foster some of this work, an international institute was formed under authority of the League of Nations. The first issue of a monthly publication of that institute, *International Review of Educational Cinematography*, appeared in July, 1929.

Photographic records also were made of the speed of the world's fastest seaplanes, sections of the Antarctic were photographed and mapped, as well as difficultly accessible regions of archaeological and mineral interest, and excellent pictures were obtained from high altitudes and over great expanses of country.

APPLICATIONS OF PHOTOGRAPHY. Referring to the progress made in all branches of the graphic arts, W. Gamble in his "Editorial Review" for 1930 (*Penrose's Annual*, 32, 1930, p. 1) stated that, "In no direction is this progress more marked than in the processes of reproduction which bring the camera directly into the service of the printing press." Although the modern tendency in newspaper and magazine publication is for more speed, a high standard for half-tone work has always been upheld. This applied particularly to the quality of telegraphically and radio-transmitted pictures, although televised illustrations were still in the experimental stage.

Further improvements were noted in photo-composing machines but none had been placed on a production basis. A promising development was the so-called "talking typesetter" which joins up the photo-composing machine with sound recording apparatus (*National Lithographer*, 36,

Aug 1929, p. 33). A shortened method of making half-tone plates directly in the camera was worked out which consists in using a special screen in front of a chromium-faced metal plate bearing a silver emulsion coating. This plate is treated by the Pantone process (mercury amalgam-chromium planograph) and becomes the actual printing plate, thus avoiding a great many of the usual operations connected with the normal half-tone process.

Two new three-color cameras were marketed for the preparation of evenly exposed negatives for color photogravure. Few cameras of the many developed during the last half-century have been entirely satisfactory for such work.

In the comparatively short period of two years, the sound motion picture had displaced the silent picture, for during 1929 less than 10 per cent of the feature pictures produced were exclusively of the latter type. Nearly one-third of the theatres of the United States were equipped to handle sound films by the end of 1929. Production programmes were much slower in getting under way in Europe where the first showing of sound films was being made in August. Although the quality of sound reproduction had been improved consistently, it still was poorer than the best radio reception (*J. Soc Mot Pict. Eng.* 14, 1930, p. 220). One result of this new form of entertainment was the elimination of the symphony orchestra from the theatre programme.

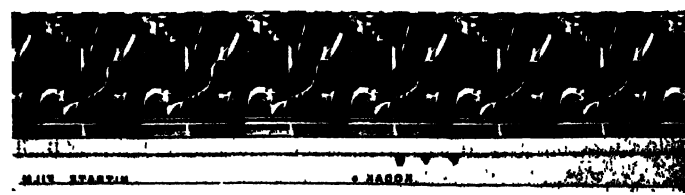
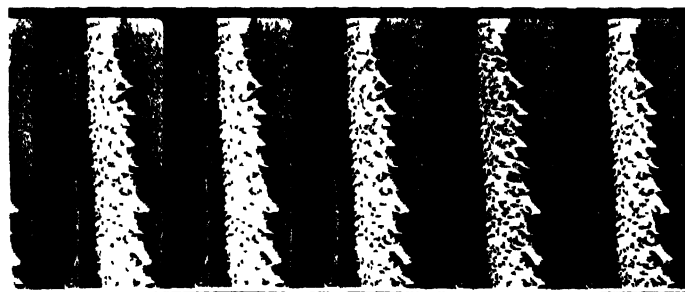
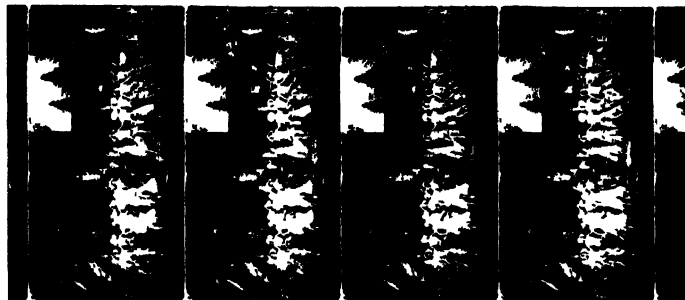
Extensive research programmes on studio and theatre acoustics were under way. Novel methods of silencing cameras and arc lights were worked out and accurate sound synchronism of picture and sound was obtained with a recording station nearly a thousand miles from the scene of action.

A marked increase in interest on the part of certain producers was noted early in the year in the use of motion pictures in natural color. By the end of the year, several complete features had been produced and many others were under way. Three processes were being used and others were under consideration (*Exhib Herald-World*, 96, July 6, 1929, p. 70, *ibid.*, 98, Jan 4, 1930, p. 26).

Much attention was being given to the subject of enlarged projected pictures on film wider than 35 mm., which had been the standard since the early days of the industry. Three widths of film were being experimented with although only one, of 70-mm. width, had actually been placed on the market (*Exhib Herald-World*, 96, Sept. 1, Sept. 28, 1929, p. 19). The advantages claimed for the wider films were (1) more realistic projection of news events, scenes, and musical comedies, since a screen filling the entire proscenium arch could be used, (2) a better proportioned picture, for the sound record along one side of the 35-mm. film had reduced the picture area to nearly square proportions; (3) a wider and longer sound record area. Other methods of securing wider pictures were suggested, one of which would use 35-mm. film, and record the picture lengthwise instead of across the film. Wider film had several obvious limitations and its promoters were proceeding cautiously.

Research on methods of securing stereoscopic motion pictures as well as televised pictures was being continued but no commercially practicable processes made their appearance.

Several comprehensive libraries of motion-picture "textbooks" were in preparation, one



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firm having completed more than 60 films covering subjects in geography, health, civics, and general science. Courses related to motion-picture technology were initiated successfully by the University of Southern California in conjunction with the Academy of Motion Picture Arts and Sciences, and other universities had plans under consideration. Fitting ceremonies were held in Palo Alto by Stanford University commemorating the fiftieth anniversary of Muybridge's unique experiment of motion analysis of the race horse, one of the forerunners of the invention of the motion picture.

Sound films were finding adaptation to educational, civil, industrial, and medical purposes. Several sound motion pictures were shown as well as a larger number of silent pictures at the fall convention of the American College of Surgeons held in Chicago, one of the former group showing a new obstetrical technique of a well-known surgeon (*Echsb. Herald-World*, 97, Oct 26, 1929, p. 26). A criminal's confession recorded in a sound picture was accepted as evidence by a Philadelphia court (*Echsb. Herald-World*, 97, Dec 7, 1929, p. 32). Sound films were made in the laboratories of several of the world's leading scientists, particularly Sir Ernest Rutherford, Sir William Bragg, and Dr. Irving Langmuir. Portable equipment for projection of sound pictures on 35-mm. film was beginning to be available.

A few of the many uses of the motion picture for general recording included measurement of the velocity of water currents, study of the movement of electric discharges, rate of corrosion of rifle barrels and narrow-bore tubes, duration and brightness of flash powders, and examination of gaseous explosions.

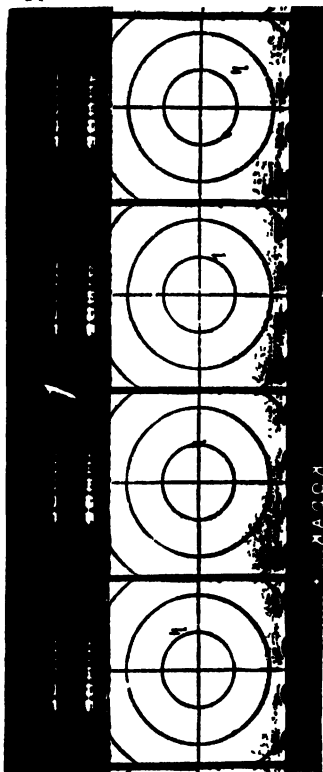
Several amateur films made during the year won commendatory recognition from professional circles as well as meritorious awards in the amateur field. The enthusiasm of the cine-amateur continued unabated as shown by the additional cameras, projectors, and accessories that were added to the market, a general increase in the number of cinema societies, an extension of film libraries until over two score were in existence, and the introduction of several types of phonographic turntable devices synchronized with the projector which made home sound "movies" possible (*Movie Makers*, 4, 1929, p. 785).

The Kodachrome process of amateur color cinematography announced in 1928, found considerable favor during 1929 as additional equipment was made available for its use and the number of processing stations was increased in various parts of the world where the film could be developed. Another amateur process called *Vista-color* was also available. This is an additive process that uses a rotating multicolor sector wheel before the camera lens and the projector lens (*Movie Makers*, 3, 1928, p. 771).

Several very pleasing color prints were exhibited at the Buffalo meeting of the Professional Photographers of America by White of Detroit, who, as well as Allison of New York, was producing some of the finest color photographs in America.

A serious disaster in a Cleveland Hospital Clinic in May, 1929, caused by noxious gases given off by burning X-ray films stimulated the roentgenologist to use films coated on cellulose acetate (slow-burning stock) in preference to the more rapidly combustible cellulose nitrate and to ob-

serve greater precautions in the storage of existing films ("The Disaster at the Cleveland Hospital Clinic," *Proceedings of a Board of the Chemical Warfare Service*, U. S. Government Printing Office, Washington, D. C., 1929). Further attempts with limited success were described to make X-ray motion pictures by photographing a fluorescent screen, using specially sensitive film and a camera with a large sector opening and a lens aperture $f/1.4$ (*Phot Ind.*, 27, 1929, p. 627).



Reproduced Courtesy of Royal Air Force

RECORD TAKEN IN TIMING WORLD'S AIRPLANE SPEED FLIGHT, CAESOT, ENGLAND, SEPTEMBER, 1929

Note plane passing upper boundary of inner circle

Aerial photography found extensive use in 1929. New cameras and equipment were made available as well as more highly sensitive panchromatic film. The highest altitude photograph (39,150 feet, calculated photographically) and the longest distance photograph (227 miles) were made by Captain Stevens, U. S. A. Air Service (*Photo Era*, 63, 1929, p. 333). Both of these photographs were made possible by the use of panchromatic film sensitized to infra-red radiation.

Successful flashlight photographs also were made at night over the U. S. Capitol by Captain

Stevens. The negatives were developed by a rapid process in the plane, dropped to the ground, and a short time later dispatched by telephoto to eight distant cities (*Photo Era*, 82, 1929, p. 272).

Of particular interest was the employment of motion-picture cameras for timing the speed of the seaplanes in the Schneider Cup races at Calshot, England in September, when the record was attained at 355.8 miles per hour (average) on a straight course (See page 669). Many valuable photographs of the Antarctic plateaus and mountains were made by the photographic section of Rear Admiral Byrd's expedition during the year, culminating in the successful polar flight on November 28 and 29. Colonel Lindbergh demonstrated the value of the camera and the airplane as an effective method, for locating new archeological sites in difficultly accessible sections of Central America.

PHYSICAL MEASUREMENTS The Proceedings of the Seventh International Congress of Photography (London, 1928) were published during 1929 thus making available details of the many papers presented at this convention. Among the papers which excited considerable interest was the report of the committee on the standard unit of intensity as was indicated by a number of controversial papers which appeared subsequently on this subject. Eder, for example, proposed the use of filtered magnesium light or a pure carbon arc as a satisfactory practical standard for sensitometer work (*Z. physikal. Chem.* 111, 1929, p. 321). Increasing interest was evidenced in methods of sensitometric measurement, particularly by motion-picture laboratories studying sound-on-film problems. The construction of a standardized set of curves was described for rapid determination of various constants of photographic materials (*JOSA and RSI*, 17, 1928, p. 463).

Improvements in photometer and microphotometer design were noted, one commercial instrument having a measurement range of 0.1 to 500 lux extended by wedges to 5000 and 50,000 lux (*Kinotechnik*, 11, 1929, p. 161). Photoelectric cells were incorporated in certain photometers for automatic measurement of light transmission, one device for measuring the exposure time and grade of paper for printing negatives utilized a selenium cell for measurement of densities (*Projection Eng.* 1, December, 1929, p. 24). A color analyzer which plots a continuous spectrophotometric curve was described which possesses certain advantages over the usual colorimeter (*JOSA and RSI*, 18, 1929, p. 96).

Other physical measuring devices in the design of which improvements were made were actinometers for calculating light intensity, density meters for determining light transmission, apparatus for testing shutter speeds of camera shutters, and an instrument for calculating depth of focus. Useful data on binocular and monocular vision were collected which have an important bearing on the brightness sensitivity of the human eye as related to problems of tone reproduction (*JOSA and RSI*, 18, 1929, p. 29).

MANUFACTURE OF SENSITIZED MATERIALS Of outstanding interest in the field of manufacture was the increasing use of panchromatic film, particularly in connection with motion-picture, natural-color, aerial, and commercial photography. The quality and speed of panchromatic emulsions were improved by several manufac-

turers. A portrait panchromatic film was made available for the portrait photographer. For making sound-on-film records, two new negative materials were supplied, one for variable density recording and the other for variable area recording.

A positive motion-picture film was placed on the market for sound-on-film prints in a variety of tinted supports, the dyes for which had been chosen so that they transmitted light capable of exciting uniformly the photoelectric cell. Fluctuations in sound volume level noted when passing from one tint to another on older tinted films were thus avoided (*Trans. Soc. M. P. Eng.*, 13, 1929, p. 199). A serious fire in one of the film processing laboratories demonstrated the importance of duplicating valuable negatives and further improvements in methods of making duplicate negatives were under investigation.

The patent literature contained many references to improvements in acetate film-base manufacture indicating the extensive study that was being given this important subject. Films coated on acetate support were available for X-ray, motion picture, amateur cine, and to a limited degree, for commercial photography. About the usual number of patents appeared disclosing various methods for prevention of film troubles such as static electricity markings, halation, fog, abrasion, etc.

A positive film on a white translucent support was announced for portraiture work giving results resembling a photograph on ivory or a rich carbon print (*Studio Light*, 21, July 1929, p. 1). Encouraging efforts were noted on the part of manufacturers in conjunction with national and governmental organizations to standardize on sizes of films, plates, and papers.

A tri-pack color-roll film was placed on the English market. A considerable expansion program was in progress in Soviet Russia relative to the manufacture of photographic sensitized material and equipment (*Soviet Photo Almanac*, 1928, pp. 63 and 85).

NEW APPARATUS Wider aperture lenses were fitted to many of the less expensive cameras making possible amateur photography under adverse conditions. An aerial camera was made for and tested by the U. S. A. Air Corps at Wright Field, Dayton, Ohio. This camera is entirely automatically operated, electrically heated, and was designed to photograph wide-spread ground areas from high altitudes (*Science Supplement*, 70, Sept. 13, 1929, p. xiv). A new German aerial camera for map-survey work was also described, capable of photographing an area of 225 miles at one exposure.

Automatic developing machines were used in many of the larger plants developing amateur roll film. Other automatic machinery to be found in many plants were printers, glossy print dryers, and straighteners. Developing machines for handling standard motion-picture film came into greater use in the majority of film-finishing laboratories, especially for handling sound-on-film prints.

New lenses were made available for many types of cameras particularly for professional and amateur motion-picture use. In the latter class one English firm marketed a super-speed lens claimed to have an aperture of $f/0.99$ for use on three makes of 16 mm. cameras (*Brit. J. Phot.*, 76, 1929, p. 704). A new studio lens called the *Multi-Focal* lens, of effective aperture of $f/3.3$,

was designed by a Buffalo photographer, H. D. Beach. Although of unusual optical design, this lens was claimed to possess a greater depth of focus at full aperture, more speed, and better delineation than other comparable anastigmat lenses of the same aperture (*Bull. Phot.*, 44, 1929, p. 740).

The mechanical movements of professional motion-picture cameras of standard make were re-designed to make them more silent-running for use in connection with sound-on-film pictures. Sound-proof housings also were introduced by cameramen for reducing the noise of their cameras, particularly for combined sound and color motion pictures. Synchronized phonographic sound-reproducing equipment was made available for the ciné amateur and a few libraries were started for circulating sound records and pictures.

THE PHOTOGRAPHIC PROCESS. The time and temperature method of negative development in tanks advocated by manufacturers for several years came into more general use with portrait and commercial photographers in 1929. This was encouraged probably as a result of the extensive employment of the highly sensitive panchromatic films and plates requiring safe lights for dark-room use to be a dark green rather than red, in order to avoid fogging the sensitive materials. A yellow-green safe light was introduced for use in printing rooms for persons who found difficulty in judging print quality by the more common orange safe light.

Types of fog on negatives were classified by several investigators and its prevention by the use of desensitizers and by potassium bromide and iodide was discussed (*Trans. Soc. M. P. Eng.*, 12, 1928, p. 1096, *Brit. J. Phot.*, 75, 1928, pp. 689 and 706). The action of various developers on exposed individual silver grains were studied photomicrographically, rapid development giving rise to a spongy deposit, whereas slow development gives compact crystalline silver (*Phot. Ind.*, 27, 1929, p. 482). Further comprehensive investigations were made on a fine-grain-negative developer for motion-picture film (*Amer. Cinemat.*, 10, July 1929, p. 17 et seq.). A series of papers were published dealing with (1) the general chemistry of developers and development, considering rational formulas, (2) metol-quinol and metoquinone developers, and (3) effect of dilution " " " " properties of developers (*A. S. P. J.*, p. 227 et seq.).

The results of a long investigation on the chemistry of fixing baths were recorded by Crabtree and Hartt who presented criteria for comparing various baths and gave data for compounding solutions having specific properties (*Trans. Soc. M. P. Eng.*, 13, 1928, p. 364). A symposium on the subject was held by the Royal Photographic Society and brought forth many useful comments (*Phot. J.*, 53, 1929, pp. 310-17).

A new method of producing brown tones on paper consisted in bleaching in a ferricyanide solution, bathing in zinc chloride, and toning in ammonia (*Mitteilungen*, 1, April 1929, p. 3). A number of valuable suggestions were recorded on the use of dye solutions in the coloring of prints (*Brit. J. Phot.*, 76, 1929, p. 105). The efficacy of a large number of methods of sulphide toning were discussed in a series of articles by Wiegleb (*Brit. J. Phot.*, 76, 1929, p. 363 et seq.). Selenium toning methods were also reviewed (*Phot. Ind.*, 26, 1928, pp. 1190 and 1218).

Two new pigment processes found some appli-

cation by pictorialists, namely the Fresson direct-carbon process (*Amer. Ann. Phot.*, 43, 1929, p. 179) and bromoil lithography (*Amat. Phot.*, 67, 1929, pp. 127 and 150).

PHOTOGRAPHIC THEORY. The fundamental unit of photographic emulsions is the silver halide grain and much of the theoretical research conducted in recent years was related to this unit. Further work has been in progress to determine the chemical identity of the sensitivity nuclei whose presence in silver bromide emulsions enhance their sensitivity (*New International Year Book*, 1928, p. 602). Although it seems clear that these nuclei may consist of any one of several substances, the greatest sensitizing action appears to be given by silver sulphide. Additional attempts were made to detect free silver in photographic emulsions, but the exact determination of its amount was still doubtful chiefly because of the great difficulties attending analytical determination (*Phot. J.*, 53, 1929, p. 471).

Evidence to date strongly supported the idea that the latent (invisible) photographic image consists to a large extent at least, of finely divided silver. Rawling has shown that emulsion sensitiveness cannot depend entirely, however, on the quantity of silver-sulphide nuclei present since changes in alkalinity during digestion influence their sensitiveness. Such changes were characteristic of the gelatin used and independent of the silver halide grain (*Phot. J.*, 53, 1929, p. 83). The effects were confirmed by Sheppard and Wightman with fresh and old plates bathed to adjust the acidity of the gelatin previous to exposure (*Phot. J.*, 53, 1929, pp. 22 and 134).

The close relation between the photo-conductance of silver halide and the mechanism of latent image formation was established more firmly by additional work of Toy and of Sheppard and their collaborators. Photo-currents were shown to start in very thin layers of silver bromide almost instantaneously after illumination of the specimen (*Nature*, 123, 1929, p. 679). It was suggested that the mechanism of latent image formation is probably connected with the liberation of an electron from halide ions of the silver halide crystal with the formation of free silver and bromine (*Zest. Wiss. Phot.*, 27, 1929, p. 85, also *J. Phys. Chem.*, 33, 1929, pp. 331 and 1403).

BIBLIOGRAPHY. General reviews of photographic progress are published annually by the Society of Chemical Industry (British), the *British Journal of Photography*, and the American Photographic Publishing Company (Boston, Mass.). A progress report of the motion-picture industry is published semi-annually in the *Journal of the Society of Motion Picture Engineers* (New York). The more notable photographic books published during 1929 include: H. B. Franklin, *Sound Motion Pictures* (Garden City, L. I.), F. H. Richardson, *Handbook of Projection*, vol. III, (New York), R. Michling, *Sound Projection* (New York), J. R. Cameron, *Motion Pictures with Sound* (Manhattan Beach, N. Y.), Owen Wheeler, *Amateur Cinematography* (New York), O. P. Herrnkind, *Die Schmalfilm Kinetographie* (Leipzig), M. N. Gleason, *Scenario Writing* (Boston, Mass.), B. D. Wood and F. N. Freeman, *Motion Pictures in the Classroom* (New York), A. C. McKinley, *Applied Aerial Photography* (New York), E. T. Lerner, *Practical*

* Emulsion not dried during manufacture by heating or by treatment with ammonia to enhance their speed and uniformity.

Television (New York), L. Lobel and M. Dubois, *Manuel de Sensometrie* (Paris), W. Noddack and E. Lehmann, *Photochemie und Photographische Chemie* (Berlin), J. M. Eder, *Ausführliches Handbuch der Photographie*, vol. iv, part 1 (Halle), E. D. Young, *The Art of the Photographer* (Philadelphia, Pa.), J. M. Eder and E. Kuchinka, *Jahrbuch für Photographie, Kinetographie und Reproduktionsverfahren für die Jahre 1921-1927*, vol. xxx, parts, 1, 2, and 3, (Halle), *Handbuch der Wissenschaftliche und Angewandten Photographie*, edited by A. Hay, 9 vols (Vienna) Volumes issued during 1929, vol. iii on *Photochemie und Photographische Chemikalienkunde*, by A. Cohen, G. Jung, and J. Daimel, also vol. viii on *Farbenphotographie*, by L. Grebe, A. Hubl, and E. J. Wall, K. Jacobsohn, *Das Arbeiten mit farbenempfindlichen Platten und Filmen* (Berlin), E. J. Wall, *Photographic Emulsions* (Boston, Mass.), O. Papesch, *Reisung von Bromsilber-gelatin mit Ammoniak und Ammonium-karbonat* (Halle), L. David, *Photographisches Praktikum* (Halle), W. Urban, *Theoretisch-Praktischer Leitfaden der Phototechnik* (Stuttgart) See MOVING PICTURES

PHOTOPLAYS See MOVING PICTURES, PHOTOGRAPHY

PHYSICAL ANTHROPOLOGY. See ANTHROPOLOGY

PHYSICAL CHEMISTRY. See CHEMISTRY

PHYSICS. Linking gravitation with electricity and magnetism by unified equations is an outstanding event in physics during 1929. Einstein again speaks and the world listens. His three brief papers (in 1905, 1916, and 1929) have set classic physics to experimentation, discussion, and agitation. He now unifies the conceptions of gravitation and electricity by referring both to a common basis.

The year, however, found relativity still a stubborn battle field. The challenge of precise measurement assails Einstein's basic assumption—zero ether drift and two of his three crucial predictions. Michelson's acceptance of relativity and his supporting results on ether drift seemed to quiet opposition, but not for long. Confronted by Miller's new observations, made with meticulous care, relativity is again challenged, for Miller's results cannot be ignored—confirming, as they do, his previous findings that a measurable, though small, drift exists.

Again, Meggers, Kiess, and Burns, in spectroscopy, find the predicted red-shift of solar wave lengths not according to Einstein's prediction—in some parts of the spectrum being too small and elsewhere too large. The known accuracy of wave-length measurements, especially by these masters, is a challenge which must be met by experimental data of equal accuracy.

Again, a searching analysis of sources of error in the eclipse observations on starlight deflection in the sun's powerful gravitational field surprised relativists who had thought this prediction of Einstein finally verified. It appears, however, that factors were ignored and direct plate measurements all too few. Poor now claims that eclipse observations cannot test relativity, since they involve no postulate of relativity, that not even gravitational retardation can be so tested, that no effective checks or controls were used for temperature effects, that there was no systematic study of all the data, and that stellar displacements freed from assumptions, fail to agree in direction, size, or rate (degrees from the sun),

and that finally, if real, they may be explained by temperature effects in the air.

This sweeping indictment is discussed quantitatively and offers a third challenge to relativity—two of the three basic predictions all being questioned and strong evidence being offered for the measurable ether drift. Clearly, relativity still remains to be proven with adequate rigor. Meantime, the theory stimulates physicists everywhere. Methods of measurement are being scrutinized and improved and the principles of physics, such as conservation of mass, energy, and momentum, are being reexamined and recast to meet the exigencies of relativity theory.

The sensational sale of Einstein's brief paper is an index of the world-wide interest in a theory so momentous in its application and so fraught with sensational implications. It is but fair to say that these implications, developed chiefly by his adherents, must be reexamined, and perhaps their fantastic extremes may be tempered when it is realized that twisted space-time is a mathematical concept alone, graphic rather than pictorial, and that twisted space-time has no more objective tangible existence than Euclidian space-time. The purpose is to describe the world, and Einstein's latest work completes what is perhaps the most comprehensive generalization ever formulated in physics.

The merging of the mathematical attacks on atomic structure continues. We read of radiation compared to a gas, and find statistical systems yielding solutions where earlier methods were inadequate. Comparative studies of the methods lead to their improvement by testing their predictive value with experimental observations.

Johnston announces a new theory of atomic structure and the periodic system on purely classical lines based on four factors only—gravitation, positive electrostatic charge, negative electrostatic charge, and magnetism. He treats the atom and its electrons as a system of synchronous motions or motor generators and finds that the periodic system follows naturally in its minutest details from several basic simple principles. Johnston reports Maxwell's equations as adequate for the computations.

Davis and Barnes found that in parallel beams of alpha and beta rays the capture of an electron by an alpha particle occurs when the electron speed equals that in a circular quantized orbit of singly ionized helium. A significant fact? The graph of percentage captures vs. electron energies consists of sharp peaks, one of which is zero relative velocity of alpha particle to electron, while the others correspond to capture in quantum numbers from one to eleven.

Dempster finds that protons (hydrogen canal rays) give patterns indicating that they behave as waves. The lines are velocity spectra of the protons. Wave mechanics cannot as yet distinguish between the hydrogen ion and the hydrogen atom.

The French Academy of Sciences installed the largest electromagnet in the world, weighing 120 tons and using 2500 kilowatts. This was to be used for studying the structure of crystals and molecules. It was hoped to orient asymmetrical molecules and thus determine their shape. It was also planned to study the movements of electrons and protons between the magnet poles.

Two chemical elements were isolated for the first time during 1929. Both are in the same group family (Va) of the periodic system. The first

(atomic number 91) is protoactinium, the rarest metal known. Grosse has isolated it and finds the average radioactive life of its atoms is twenty times longer than that of radium, while the maximum energy of the beta and gamma rays are nearly twice that of radium. Its gamma wave lengths are proportionately shorter.

The second element (atomic number 41) was isolated and exhibited as being all of the existing supply of the metal columbium. It is ductile, easily worked cold, of silvery appearance, may be rolled, drawn, hammered, spot-welded, and shaped with ordinary tools, and its value is half that of gold.

Witmer suggests that the ratio of masses of a proton and an electron may be a fundamental quantity of integral value. It is 43^2 within limits of error, and $43=1+2^2+2^2+3+3+4$, which sequence doubled gives the number of electrons in the successive periods (shells) of the periodic system of the atoms.

Controllable voltages by 1929 had exceeded 5,000,000 volts and Tuve exhibited a new vacuum tube capable of using 100,000 volts for his experimental attack upon atomic nuclei and gamma-ray scattering.

Richardson was awarded the Nobel Prize (1928) in physics for researches on the emission of electricity from incandescent materials and upon the laws defining the rate of emission of electrons. De Broglie, the Nobel Prize winner in physics in 1929, was to be credited with the wave conception which has added so much to the new quantum theory of the wave atom.

The work of Bose, Raman, Ramsdas, and others shows India as a contributor to fundamental physics. A new item again emphasizes this. Ray and Chaudhuri on the theory that free electrons cause electrical and thermal conductivity, sought and found a relation between ionization potential and electrical (or thermal) conductivity per atom. An analysis showed that for metals of the same crystal structure, with few exceptions, the product of the electrical conductivity and the ionization potential varies inversely as the atomic number.

The physical properties of hydrogen have been studied anew in light of Bonhoeffer's and Hartek's discovery that one-fourth of molecular hydrogen is of a modified form, convertible at liquid hydrogen temperatures into the parahydrogen form. Drawing the hydrogen through a special charcoal at liquid hydrogen temperatures, the former demonstrated the nearly complete separation of the two kinds of molecular hydrogen in which the two atoms, each spinning like a disk, may either spin alike or in opposite directions. The two forms differ notably in their specific heat.

Hevesy gives details of his method of quantitative chemical analysis by X-rays. He was led by necessity to devise some means of measuring the purity of his hafnium extractions. Briefly, he mixes the substance to be determined with a suitable reference substance, then compares the intensities of selected reference lines by their X-ray spectra.

Meissner reports superconductivity in a compound. Copper when heated in sulphur vapor becomes copper sulphide, retaining its original form. Its specific resistance taken as unity at 0° Centigrade, falls to 3 in liquid air (86° Absolute) and to .02 in boiling hydrogen (20°), .004 at boiling helium (4°) and at 166° the resistance becomes immeasurably small. Such

low value has hitherto been encountered only in very pure metals.

In another notable symposium of the Faraday Society—"molecular spectra"—eminent physicists discussed the fundamental subject of band spectra as related to atomic nuclei, isotopes, molecular formation and dissociation, Raman effect, structure of excited states, the solid state, and a unified notation for molecular spectra designed to harmonize with the latest notation for atomic spectra.

Refined measurements of the oxygen band spectra revealed the existence of oxygen isotopes 17 and 18, showing that such spectra are more sensitive than that of the positive ray spectrograph. Since oxygen is 16 as the basis of the entire system of atomic weights, 16 is presumably the average weight of the oxygen atoms and may need no change, but the isotopes cannot be integral since they differ both from the oxygen 16 and from the average of the oxygen isotopes. It may be necessary to raise the question, for discussion at least, whether oxygen is the ideal basis. Already a return to hydrogen has been suggested. Incidentally, the new isotopes form about 1 part in 1200 of ordinary oxygen.

During 1929 articles on the Raman effect gave much new data. The crucial test, however, involves precise wave-length measurements of the modified radiation and careful correlation of such measurements with the long-wave characteristic radiation with which the modified wave lengths are specifically associated. Recent very precise measurements, however, raise a serious doubt as to the adequacy of the assumed cause of the Raman effect and call for further precise experimental research to resolve the doubt.

Heyl has completed 16 sets of observations of the gravitational constant, and computation of 11 sets of these gives a value in cgs units of 6.668×10^{-8} . Birge gives the density of the earth as 5.522. Gravimetric research shows that rock under the sea is heavier than that on the continents.

The study of the interior of the earth by seismic records continues to increase in volume and precision. The New Zealand earthquake of June 17 was recorded in Europe as a single wave instead of two, which suggests a liquid centre absorbing the deeper waves. Daly estimates the temperature as 90,000°C and the pressure at 25,000 tons per square inch. Jagger was enlisting the cooperation of amateurs in the study of earthquakes and attention is being given to the design of a simple and cheap form of seismograph. Local seisms, one a day, world-scale records once a week, and earth tremors every few seconds, with tilting movements, form a subject of interest, the data on which would add materially to our knowledge of the earth and its movements. The helium-lead ratio was applied to dating geologic strata. The production of helium and lead from uranium was hailed by one authority as making possible the year by year climatic history of the earth comparable in success to the tree-ring measurements of Douglass.

Epstein's study of cooling rates of the moon's surface shows that it cools at the same rate as pumice, but differs in rate from granite, black lava, quartz sand, or sandstone. Wright's polarization observations yielded the same conclusion.

Brown's measurements of the changing length of the day show that in 1928 the earth was 32 seconds ahead of its average rotational motion.

for the past three centuries. A rhythmic lengthening and shortening with a cycle of about 300 years appears, with the maximum change found to be a part in 30,000,000 or a second a year. A tenth of this is readily measurable.

Egedal in a study of air tides correlates these with the heights of the bases of the aurora. The two maxima of the frequency curve at latitude 72° shows that the air mass above 100 km at ebb tide equals the air mass above 106 km at flood tide. Observations of the lowest limits of meteors show good agreement with aurora results.

Experimental lightning, now possible with high voltages and high insulation, promises light on the behavior of natural lightning. For example, in a laboratory experiment lightning strikes and leaves an airplane at its tips. Peter's new klydonograph photographs lightning, revealing fine structures, size, intensity, and arrangement which are under study with the hope of understanding and later controlling its destructive effects.

Physical instruments and devices continue to multiply in sensitivity, range, precision, and ingenuity. Baron Shiba has perfected a research motion-picture camera which takes 60,000 pictures a second for research work on air streams, mechanical flights, and other high-speed phenomena. New instrumental resources range from Abbott's radiometer, in which a part of a fly's wing functions as a vane, to the plans for the new 200-inch giant telescope with its quartz reflector with four times the light gathering power of the largest now in use.

A new French sounding balloon automatically broadcasts by radio its measures of temperature and pressure throughout its flight. For high-altitude work the 9-foot Goddard rocket has brought back autographic records of atmospheric conditions. His plans contemplate recording temperature and radiation of "even the regions beyond" the atmosphere. Other daring experimenters such as Opel, Perl, and Oberth are trying out rocket and jet-type propulsion, while research in aerodynamics, materials, and motors finds its dramatic climax in Orlebar's speed of 6 miles a minute, seven times faster than attainable 16 years ago.

The Villier 3000-hp racing car is equipped with a visual indicator which receives signals from a radio beacon set at both ends of the course.

Devices developed include the new twelve-course radio-beacon and visual indicator, which open the way for air travel in any desired direction. Another is the unique automatic radio landing beacon system by means of which the pilot, even in a fog, need only watch the visual indicator and guide his plane so that two vibrating reeds retain equal amplitude. The local signal is so designed that the resulting motion is an easy, smooth curve, flattening out horizontally as it reaches the ground level. Radio frequency can now be maintained constant to within a part in a million over moderate periods or to an average of a part in ten million over an interval of 24 hours.

Three unique devices are a flame of powdered aluminum burning in oxygen and able to cut through any known solid; a high-efficiency white light consisting simply of a gas-filled tube (glass) without wire filament, and a 3-beam shadowless light for surgery with filters to give daylight quality.

Abbott estimates the solar energy reaching the earth as equal to that released in burning 507,000,000,000 tons of coal per day and states that man actually burns the equivalent of 5,000,000 tons per day. Goddard has developed a fused quartz mirror device for utilizing solar energy—a clear quartz boiler in which water and mercury are sprayed to form an opaque absorbent for the solar energy. The mercury vapor and steam are utilized in a turbine device directly.

Several significant advances in biophysics will serve as typical of the many active researches in this most important field. Crile, reporting new experimental results to sustain his bipolar theory of living processes, finds a potential difference of a fiftieth volt developed in fruit (apples) and by a special technique he is able to devitalize and revitalize an amoeba by control of the polarity and potential difference between the nucleus and cytoplasm.

Huxley's analysis of the size of living things shows that man is midway between a star and an atom, and humanity half-way between the universe and the electron.

Since Mueller found that irradiation by X-rays causes mutations at 150 times the rate occurring in nature, Goodspeed has extended the experiment to plants, and Babcock and Collins have used radio-active rays. The conviction is growing that X-rays, gamma rays, and cosmic rays sharply affect organic evolution and it is now suggested that the variations in these rays will furnish data of great value to students of evolution.

Fishbein reported that in some cases "control of the metabolic rate of the egg permits the development of male or female as the experimenter may desire." In the mold research of the Carnegie Institution, Sev X showed larger sugar content than Y. One plant used for comparison showed that the female produces larger sugar content, hence, potentially larger rate of metabolism. Optics again achieves a notable service in the ultra-violet microphotography of living cells, magnifying 6000 diameters with a resolving power of 1/150,000 inch. Fluorite or quartz lenses accurately computed are used and mechanical focusing is provided since visual focusing is impossible with ultra-violet light.

The rise of the Bell Laboratories had added research facilities in physics unequaled in the domain of speech and sight transmission. The group has just perfected 15,000-mile radio-wave transmission from New York to Australia, first reported in the words "We are becoming a world of neighbors." Twenty-one countries are now linked to America by transoceanic circuits. Radio-wave communication is homologous to air-rail transportation. See TELEPHONY.

The recent achievement of color television by Ives is a climax of research. The artificial larynx is a triumph of applied acoustics. It produces a "voiced tone" of variable pitch, the quality of which may be modified by muscular adjustment of the usual vocal resonance cavities.

In automatic telephony one new device "tests its own circuits before the call is advanced" to other apparatus and in case of defect automatically substitutes new equipment. During this year also was demonstrated the new device which translates a dialed number into mechanical speech.

That mechanization in human life does not eliminate its idealism is clear from the words of a leader in telephony—Carty says. "I believe that

the art which was founded by Bell will provide the means for transmitting throughout the earth a great voice proclaiming the dawn of a new era in which will be realized that grandest of all our earthly aspirations—the brotherhood of man.”

See MICROBIOLOGY.

BIBLIOGRAPHY. A wealth of new books on physics appeared in 1929 Ames's work, *Mechanics*, is an introduction to mathematical physics by a master of exposition. The atom continues to be a centre of interest as shown by Cugnin's *Structure de l'Atome, tourbillon d'éther et pensees scientifiques independantes*, Sommerfeld's *Atombau und Spektrallinien* (in its 1929 edition, including wave mechanics), Weller's *Transmutation des Elements*; Flint's *Wave Mechanics*, Houg's *Electromic Physics*, Bricout's *Ondes et electrons*, Condon and Morse's *Quantum Mechanics*. Radiation is represented by Pacotte's *Les Methodes Nouvelles en analyse quantique*, Wagner's *Experimental Optics*; Vogelmann's *Chart of Nature's Vibrations* (showing 170 octaves) Materials and their properties are the subject of Newman and Searle's *The General Properties of Matter*, Hutschek's *Viscositat der Flussigkeiten*, Rawlins and Taylor's *Infra-red Analysis of Molecular Structure*, Peddie's *Molecular Magnetism*, and Lawrence's *Soap Films, A Study of Molecular Individuality* In the latter, Lawrence, an assistant of Dewar, reports a soap film preserved unbroken for three years in the cellar of the Royal Institution

On general physics, we find Leigh Page's *Introduction to Theoretical Physics*, Dull's *Modern Physics*, Mason and Weaver's *The Electromagnetic Field*, and in the classic series of German Handbooks, Wien and Harn's *Handbuch der Experimentalphysik*. Timoshenko's *Vibration Theory and Engineering Practice* deals with this important subject as affecting the balancing of high-speed machinery, whirling shafts, torsional oscillations in engine arrangements, vibrations of rotating turbine wheels, vibrographs, dynamic balancing machines, and critical speeds

Notable are the new studies in contemporary physics in the *Physical Review Supplement*, issued quarterly. The first two issues cover general physical constants, corpuscular properties of light, statistical theories of matter, radiation, and electricity, quantum mechanics, recombination and photo-ionization, spectroscopy of soft X-rays These superb reviews were most welcome to the physicist who aims to keep abreast of the deluge of new data in physics.

In *The Universe Around Us*, Jeans described the progress of scientific interest from the earth to the sun, from the sun to the stars, and of the astounding effects of the quantum and relativity theories in giving us new views of the universe of atoms and stars The volume abounds in passages of eloquence all too rare in scientific writing, but as stimulating to the imagination as the new cosmogony itself is disturbing to the classic view

PHYSIOLOGICAL CHEMISTRY. See CHEMISTRY

PIATIGORSKY, GREGOR See Music, under Artists

PICTET, pek'te', RAUL PIERRE A SWISS physicist and chemist, died July 27, 1929. He was born at Geneva in 1842, where from 1879 to 1880, he was professor of industrial physics at the University of Geneva He first attracted notice by employing sulphurous acid in freezing machines and by the liquefaction of oxygen,

(1877) He also made a number of experiments with acetylene, chloroform, and the purification of alcohol He published *Memoire sur la liquefaction de l'oxygene, la liquefaction et la solidification de l'hydrogene et sur les theories des changements des corps* (1878), *Synthese de la chaleur* (1870), *Nouvelles machines frigorifiques basees sur l'emploi de phenomenes physicochimiques* (1895), *Etude critique du materialisme et du spiritualisme par la physique experimentale* (1896), *L'Acetylene* (1890), *Le carbone* (1890), *Zur mechanischen Theorie der Explosivstoffe* (1902); *Die Theorie der Apparate zur Herstellung fliessiger Luft mit Entspannung* (1903).

PIERS, See BUILDING

PIGS. See LIVESTOCK

PINE BLISTER RUST. See FORESTRY

PINK BOLLWORM. See ENTOMOLOGY, ECONOMIC, COTTON.

PIPE-LINE CONSTRUCTION. See AQUEDUCTS

PIRQUET, per'ka', CLEMENS BARON VON AN Austrian pediatricist, died by his own hand, Feb 28, 1929 He was born in Hirschstetten, near Vienna, May 12, 1874, and was graduated in medicine from the University of Graz in 1900 In 1908-10 he was professor of pediatrics at The Johns Hopkins University in Baltimore, Md, in 1910-11 at Breslau, and, after 1911, at Vienna He discovered the diagnostic value of tuberculin as a cutaneous reaction in 1907. During the World War, he devised a new notation for nutrition to improve upon the calorie The new unit, the *nem*, represented a cubic centimeter of mother's milk An addendum in 1920 to *System der Ernährung* (1917) set forth this discovery During 1919-23 he was general commissioner of the American Relief Administration for Austria's Children His writings include *Die Serumkrankheit* (1905), with B Schick, *Allergie* (1910), *Das Bild der Masern auf der aussere Haut* (1913), the article "Masern," in Nothnagel's *Specielle Pathologie und Therapie* (1911) In 1922 he published in English *An Outline of the Pirquet System of Nutrition*

PITTSBURGH, GREATER See PENNSYLVANIA, under Political and Other Events

PITTSBURGH, UNIVERSITY OF. A non-sectarian institution of higher education for men and women in Pittsburgh, Pa, founded in 1757 The total autumn enrollment for 1929 was 10,945, distributed as follows College, 10, engineering, 446, mines, 97, business administration, 677, education, 1090, graduate, 1065, medicine, 200; law, 312, pharmacy, 360, dentistry, 333, retail training, 23, downtown division, 2690, Johnstown centre, 775, Erie centre, 593, Umontown centre, 314 The extension division had an enrollment of 1428 and the 1929 summer session, of 3231 There were 990 faculty members, including 204 new appointments The productive endowment amounted to \$1,838,289 and the income from endowment to \$76,589, the income from the Pennsylvania State Legislature was \$585,200. The following bequests were received \$600,000 for the Heinz Memorial Chapel from the children of H. J. Heinz and the H. J. Heinz Company, \$400,000 additional for the Falk Clinic from Maurice and Leon Falk, and \$250,000 from the Buhl Foundation for business research to cover a period of eight years. The library contained more than 130,000 volumes (Chancellor, John G. Bowman, LL.D.)

PLANETARIUMS. See ASTRONOMY.

PLANETS. See **ASTRONOMY.**

PLANT DISEASES. See **BOTANY**, under

Pathology.

PLANT FOOD. See **FERTILIZERS**

PLANT PHYSIOLOGY. See **BOTANY**

PLANT QUARANTINE. See **ENTOMOLOGY**,
ECONOMIC

PLATE-GLASS INSURANCE. See **INSURANCE**

PLATINUM. During the year the production of platinum was at a rate in excess of the absorbing capacity of the market and as a result the price of refined platinum declined from an average of \$70 in January to \$63.24 in December with an average for the year of \$67.655. Crude platinum ruled at about 10 cents less during the year Russia continued as the largest source of platinum and was stated to be the lowest-cost producer. Platinum from Russia was marketed by the Soviet independent of other producers and dealers. In the fiscal year ending September, 1928, Russia exported 2454 19 kilograms of platinum valued at 9,820,000 rubles or 78,926 86 troy ounces valued at \$5,053,372, or an average value of \$64.03 an ounce. This was a considerable decline from 1927 when the exports from Russia amounted to 163,103.93 ounces valued at \$13,072,407, or an average of \$83.83 an ounce. The next important producer was Colombia which in 1928 exported approximately 54,000 ounces as against 45,830 ounces in 1927. The South American Gold & Platinum Co., operating three dredges in the Condoto River Valley, had an estimated production for 1929 of 23,500 ounces of platinum as compared with 20,393 ounces in 1928.

In the United States, mine returns for 1928 indicated a production of 150 troy ounces of crude platinum in Alaska, 357 ounces in California, and 21 ounces in Oregon, or a total of 528 ounces in the United States as against 20 ounces from Alaska, 127 ounces from California, and 6 ounces from Oregon in 1927. In 1928 platinum refiners in the United States reported the purchase of 365 ounces of domestic platinum and 57,962 ounces of foreign crude platinum of which amount 1086 ounces came from Australia, 14 ounces from Canada, 53,744 ounces from Colombia, and 3118 ounces from South Africa. In addition to the refining of crude platinum, secondary metal to the amount of 47,157 ounces was recovered in 1928.

In connection with platinum the various platinum metals are considered in the statistics of production and were in 1928 as follows: New platinum, 51,427 ounces, palladium, 5148 ounces, iridium, 1658 ounces, osmium, 458 ounces, others, 348 ounces, making a total of 59,039 ounces. Secondary platinum metals recovered in 1928 were as follows: New platinum, 47,157 ounces, palladium, 4166 ounces, iridium, 2090 ounces; others, 2428 ounces, making a total of 55,831 ounces.

The imports of platinum into the United States in the form of grains, nuggets, sponge, or scrap during 1929 amounted to 74,063 troy ounces valued at \$4,466,149, as compared with 78,399 ounces valued at \$5,294,668 in 1928. Platinum ingots, bars, and sheets or plates, amounting to 40,694 ounces valued at \$2,640,097, were imported in 1929, as compared with 20,362 ounces valued at \$2,348,840 in 1928. There also were sent to the United States in 1929, 564 ounces of ores of platinum metals (platinum content)

valued at \$43,152, as compared with 686 ounces valued at \$49,094 in 1928.

PLATYHELMINTHES. See **ZOOLOGY.**

PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA. An association organized in 1906 by Theodore Roosevelt, Jacob A. Riis, Luther H. Gulick, and others for the purpose of binding together in a national movement the efforts growing up in various parts of the country to provide safe and adequate areas where children might play under experienced leadership. A staff of field workers is maintained to assist cities in organizing year-round recreation programmes for children, adults, and the community as a whole, to strengthen existing programmes, and to help secure State legislation for facilitating the development of municipal recreation. There are also an employment service for recreation workers and a correspondence and consultation bureau which answers letters of inquiry and holds personal conferences on local work.

The community drama service of the association supplies practical suggestions and literature to amateur dramatic groups and prepares programmes for holiday and special-day celebrations. The community music service promotes this form of recreation and provides an exchange for community music information. The national physical education service is active in sponsoring physical education legislation. The association maintains a bureau which gives assistance to Negro groups in securing recreation opportunities and, in cooperation with the U. S. Department of Agriculture, has assigned three full-time workers to help in the training of rural leaders for recreation.

A national training school was established in 1926 to provide graduate courses in professional recreation training. The association publishes *Playground and Recreation*, a monthly magazine, maintains a weekly bulletin service, and publishes pamphlets and books pertaining to recreation. The sixteenth annual recreation congress of the association was held in Louisville, Ky., in October, 1929. The officers for the year were President, Joseph Lee, treasurer, Gustavus T. Kirby, secretary, Howard S. Braucher. Headquarters are at 315 Fourth Avenue, New York City.

PLESSEN, GEN. HANS GEORG HERMANN VON. A Prussian general, died in Potsdam, Jan. 23, 1929. Born in Spandau, Nov. 26, 1841, he entered the army, serving in the Seven Weeks' War, 1866, and in the Franco-German War, 1870-71. After being aide-de-camp to Wilhelm I, 1879-88. General von Plessen was commissioned chief adjutant in the army of Wilhelm II in 1893, becoming general of the Infantry in 1899. Appointed chief of the Military Household of the Emperor, 1892, he served through the World War until the Kaiser's abdication in 1918, being also commissioned chief field marshal in 1908. After the establishment of the Republic, General von Plessen retired to Potsdam, still loyal to the Hohenzollern family.

PNEUMONIA. Dr. U. Friedmann of Berlin points out in the *Klinische Wochenschrift* for August 27, that in extensive epidemics of pneumonia every conceivable variety of the disease is represented and that this speaks for the unity of the disease. The clinical or pathological form of the malady is of much less importance than the resistance of the patient, and this in turn depends largely on the relative virulence of the causal organism. A contagious element may or

may not be present and contagious forms are seen especially in the dark races, the whites being relatively immune—a result, the author believes, of immunization in childhood. The very young white child before this immunity can develop is remarkably susceptible to the disease, although it is apt to run a mild or latent course and in this way tends toward the development considerable immunity.

Many different microorganisms may cause the same clinical and pathological manifestations, and these are believed to be much less the product of the disease than of the effort of the body to defend itself from the infection. The pneumococcus is the predominant form and about two-thirds of all cases respond in some degree to specific serum treatment. Quinine and derivatives seem also to have specific powers. Surgical complications of pneumonia, notably empyema, respond poorly to surgical intervention.

PREVENTION OF PNEUMONIA BY FORCED EXPIRATION. Henderson and Haggard contributed an article on this subject to the *Journal of the American Medical Association* for February 9. Thus far the resource had been used only after surgical operations and poisoning by carbon monoxide. Whether it would avail after exposure, chill, etc. and in the presence of bronchial colds, influenza, etc., was not surmised. The authors believed that the presence of collapse of small portions of the lung tissue from obstructed bronchi may prove to be the decisive factor, for forced breathing may overcome this condition and thus open up the occluded lung tissue. Analogous as a resource is the utilization of carbonic acid gas which is equivalent to forced expiration in its effects. Since the authors believe that atelectasis, or collapse of areas of lung tissue, is a factor in all true pneumonia, it follows that this preventive resource should have a wide range of usefulness. Since many patients threatened with pneumonia may be physically unable to practice forced expiration, the routine use of carbonic acid gas inhalation is evidently for the time being the most available method to secure the desired result. This method should probably be combined as a preventive with the use of diathermy over the base of the lungs.

USE OF IMMUNE HORSE SERUM IN TYPE I PNEUMOCOCCUS PNEUMONIA. Dr. Rufus Cole in the *Journal of the American Medical Association* for September 7 gives the results of treatment carried out in the Rockefeller Institute Hospital, New York, since 1913. Since the form of disease due to type I pneumococcus promised the best results from serum treatment, an early diagnosis was essential. The serum was obtained from horses highly immunized to this organism. The total number of cases referred to the hospital since 1913 is 1256, of which 431 were due to pneumococcus type I. Serum, as a rule, has been administered in large doses. The number of deaths was 44, a mortality of 10.2 per cent. The same quality of result does not seem to have been obtained by others who have used the serum in question and the superior outcome at the Rockefeller may be attributed to the high quality of the serum and the large doses used. Early diagnosis may also have been a factor. Of those who succumbed to the disease, some certainly should have recovered and the author does not anticipate lowering the death rate below 10 per cent. The use of a concentrated serum in small doses, suitable perhaps to intravenous use, does not appeal to the author and it may be added that such se-

rum has already caused a fatality in a patient oversensitive to equine emanations.

POETRY. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH LITERATURE, PHILOLOGY, MODERN.

POLAND. A European republic formed as a result of the World War and comprising the territory formerly divided among the three governments, Austria-Hungary, Russia, and Prussia, from the three partitions of Poland in 1772, 1793, and 1795, which were confirmed by the Congress of Vienna in 1815. After the World War (1914-18), Poland in addition to this original territory known as Congress Poland, acquired Prussian Poland, Polish Galicia, Upper Silesia, and a portion of the Vilna territory Capital, Warsaw.

AREA AND POPULATION. The total area, according to recent estimates, is 149,958 square miles, and the population, according to the first official census of the Polish Republic in 1921, 27,176,717; estimated in 1928, 30,212,962. The largest cities with the estimated populations in 1928, and the 1921 census population in parentheses, were Warsaw, 1,050,182 (936,713), Łódź, 580,529 (451,974), Lemberg, 238,303 in 1927 (219,388); Posen, 236,265 (184,758), Kraków, 191,385 in 1927 (183,706), Wilno, 200,000 (128,954), Katowice, 115,697 in 1927 (104,868). Poles formed 69 per cent of the population in 1921, and Ruthenians 15 per cent, followed by Jews, Germans, and white Russians. Births averaged 994,379 and deaths 510,099 annually from 1923 to 1927.

EDUCATION. Primary instruction is free and compulsory and all other grades of education are free. In 1928 there were 26,642 elementary schools with 70,585 teachers and 3,379,967 pupils, 796 secondary schools with 14,808 teachers and 215,470 pupils, 204 colleges for teachers with 1931 teachers and 37,420 pupils; and 850 technical and professional schools with 110,000 pupils. The universities and institutions of university rank numbered 16 with 950 professors and 36,590 students in 1926.

PRODUCTION. The principal occupations of the country are agriculture and stock raising, which engage about 66 per cent of the total population. In 1927 about 47 per cent of the total area, or 45,239,000 acres, were under cultivation, 15,732,000 acres were permanent meadow and pasture, and 22,392,000 acres were woods and forests. The area and production of the chief crops in 1928 were: Wheat, 3,187,000 acres, 59,218,000 bushels; rye, 13,197,000 acres, 204,648,000 bushels; barley, 2,857,000 acres, 70,145,000 bushels; oats, 5,036,000 acres, 172,077,000 bushels; corn, 224,000 acres, 3,348,000 bushels; potatoes, 6,189,000 acres, 1,016,332 bushels; sugar beets, 499,000 acres, 4,400,000 metric tons; beet sugar, 758,000 metric tons; flax, 281,000 acres, 114,640,000 pounds. There was little change in the area sown, since virtually all the arable land was under cultivation. As the best means of increasing production, the government and agricultural co-operatives were fostering intensive farming. The application of modern methods of farming showed marked increase. Livestock in the country on Jan. 1, 1928, included 8,571,000 cattle, 6,397,000 swine, 1,918,000 sheep, and in 4,128,000 horses. The 1929 crops were the best in a number of years, but low prices prevailed.

Lumbering is an important industry in Poland,

accounting for about a fourth of the total foreign trade. The forested area totals 22,323,630 acres, of which 7,058,515 acres are owned by the state and 10,498,342 acres by private owners.

Poland is one of the leading industrial nations of eastern Europe, employing 899,000 workers in the principal industries in 1928, as compared with 808,000 in 1927. The workers were distributed among the industries as follows: Mining and metallurgy, 212,000; textiles, 178,900; metals and machinery, 99,800; foodstuffs, 88,350; cement, ceramics, and other nonmetallic minerals, 65,000; wood, 50,750; chemicals, 37,100. The output of all the leading mining and metallurgical industries continued on the up-grade in 1928, the production in terms of quantity being as follows: Coal, 40,599,000 metric tons; petroleum, 5,461,000 barrels, natural gas, 459,486,000 cubic meters, iron ore, 698,900 metric tons, salt 401,000 metric tons, crude potash, 342,900 metric tons, petroleum products, 633,685 metric tons, osokerite (pure), 770 metric tons, pig iron, 684,000 metric tons, steel, 1,437,000 metric tons; lead, 36,480 metric tons, zinc, 161,700 metric tons. In most lines the expansion of production was based on increased domestic production, exports of manufactured products having failed to keep pace with the development of production.

In value of output the textile industry ranks highest among the manufacturing lines. The manufacture of leather, paper, and chemicals also is important. Imports of raw hides and skins and of finished leather increased by from 12 to 18 per cent in 1928, the paper output increased 10 per cent, and the value of chemical production reached 660,000,000 zlotys (\$73,000,000) in 1928, as against 250,000,000 zlotys in 1924. The number of unemployed at the end of 1928 totaled 126,420, as compared with 165,268 at the end of 1927. Industrial production in 1929 showed a gradual downward trend, with the exception of coal production.

COMMERCE Poland after the World War annually borrowed large sums abroad for the development of her resources and industries and consequently was usually faced with an adverse balance of foreign trade. The trend toward a heavy excess of imports over exports continued in 1928, when imports reached a peak of \$377,000,000, or 16 per cent more than in 1927, while exports totaled \$281,000,000, or slightly less than in the previous year. The adverse trade balance was \$96,000,000, as against \$42,000,000 in 1927. In 1929, however, there was a 7 1/4 per cent decline in imports while exports increased by 12 per cent over the 1928 figure. Germany was the principal source of Polish imports in 1928, supplying 26 9/10 per cent of the total, while the United States followed with 13 9/10 per cent, the United Kingdom with 9 5/10 per cent, France, 7 3/10 per cent, Austria, 6 6/10 per cent; and Czechoslovakia, 6 3/10 per cent. Germany was also the leading customer, taking 34 2/10 per cent of the total exports, while Austria took 12 4/10 per cent, Czechoslovakia, 11 8/10 per cent, the United Kingdom, 9 per cent, and France 17 per cent.

The chief imports for consumption included raw cotton, \$35,023,000, machinery, other than electrical, \$32,589,000, electrical machinery, \$13,780,000, chemicals and allied products, \$30,745,000, metals and manufactures, \$27,446,000, wheat, \$13,363,000; wool, \$20,521,000, leather, \$11,294,000; hides and skins, rice, rye, and other

foodstuffs, wool and cotton yarn, automobiles and parts, etc. Leading exports were wood and its manufactures, \$66,204,000, coal, \$40,708,000, metals and manufactures, \$30,187,000; swine, \$23,350,000, eggs, \$16,235,000; and raw sugar, eggs, seeds, chemicals and allied products, and various animals products.

FINANCE. For the calendar year ending Dec 31, 1929, the revenues and expenditures exceeded the budgetary estimates by 6 and 7 per cent, respectively, with total receipts reaching 3,009,714,000 zlotys (1 zloty equaled approximately \$0 11/20) and expenditures 2,921,915,000 zlotys, leaving a surplus of 87,799,000 zlotys (\$9,833,488). Higher receipts from most of the internal taxes and from the state monopolies produced the higher revenues while the increase in expenditures was due to the higher salaries paid military officers and public officials, larger investment expenditures, and an increase in the payment on the public debt. Actual returns for 1927-28 and 1928-29 and the budget for 1929-30 are shown in the accompanying table.

POLISH FINANCIAL OPERATIONS

Item	[In millions of zlotys*]		
	1927-28,	1928-29,	1929-30,
RECEIPTS			
	actual	actual	budget
Income tax	171	243	235
Business and turnover taxes	282	350	250
Other direct taxes	193	177	206
Consumption taxes	179	182	172
Customs	272	425	425
Tobacco monopoly (net)	175	384	405
Alcohol monopoly (net)	361	417	426
Other monopolies (net)	64	73	73
State enterprises (net)	201	101*	165
All other	575	618	598
Total	2,769	3,009	2,955
EXPENDITURES			
Debt service	187	228	247
National defense	824	810	811
Public instruction	161	420	411
Public works	119	137	162
Labor and social relief	69	63	65
Pensions	244	279	249
State enterprises (net)	41	39	39
All other	706	801	780
Total	2,554	2,808	2,788
Equivalent (\$1,000,000)			
Receipts	311	318	312
Expenditures	287	315	311

* 1 zloty equals approximately \$0 11/20

For the fiscal year 1929-30 preliminary returns showed an increase in receipts over those for the previous year. Expenditures showed a greater proportionate increase than in the previous year, however, and the surplus was considerably reduced. The public debt late in 1929 totaled \$460,000,000, or about \$15 50 per capita, according to Charles S. Dewey, American financial adviser to the Polish government. On Dec 31, 1928, the total debt was \$464,742,000, of which \$206,187,000 was due the United States government.

COMMUNICATIONS. Practically all of the Polish railways, which had a total of 12,040 miles of line in 1927, were owned and operated by the Government. In the same year the railways carried 158,505,000 passengers and 73,432,000 metric tons of freight, earning gross receipts of 1,352,707,000 zlotys (152,721,000). In 1928 about 60 miles were put in operation on a new line, which, when completed, will shorten the

distance between the coal fields and the Baltic seaports by about 90 miles. Traffic through the Polish port of Gdynia nearly doubled in 1928 while that through the Free City of Danzig remained stationary. The ancient water route from the Baltic ports of Gdynia and Danzig to the Rumanian ports of Galatz and Constantza on the Black Sea was being developed in 1929 and a treaty was being negotiated with Rumania covering traffic over the route. In 1928 Polish commercial aviation lines, which are under the Ministry of Communications, carried 6656 passengers, 593,622 pounds of goods, and 73,338 pounds of mail, the total distance flown being 740,559 miles. In 1929 there were 54,372 miles of telegraph line and 48,028 miles of telephone line, all owned and operated by the state.

Vessels entering and clearing from Gdynia in 1928 totaled 1108 of 985,000 net registered tons and 1093 of 974,000 tons, respectively, as compared with entrances of 530 vessels of 423,000 tons and clearances of 519 vessels of 416,000 tons in the preceding year. At Danzig 6108 vessels of 4,045,000 net registered tons entered and 6183 of 4,027,000 tons cleared in 1928, as against entrances of 6950 vessels of 3,900,000 tons and clearances of 6942 of 3,933,000 tons in 1927.

GOVERNMENT Under the constitution adopted May 17 1921, executive power is vested in the President, chosen by both houses of the National Assembly for a period of seven years, and legislative power is vested in the National Assembly, consisting of the Senate of 111 members and the Diet (444 members), called the Sejm, both elected by universal suffrage. President in 1929, Ignace Moscicki, elected June 1, 1926. The cabinet was composed as follows: Premier, Casimir Bartel, War, Joseph Pilsudski, Foreign Affairs August Zaleski, Finance, M. Grodvnski, Justice, Stanislaw Cat, Interior, Slawoj Skladkowski, Commerce and Industry, Eugene Kwiatkowski, Agriculture, Charles Niezabytowski, Agrarian Reforms, Witold Stanciewicz, Communications, Alphonso Kulm, Labor and Social Affairs, Dr. Jurkiewicz, Public Works, Andrew Moraczewski, Education, Casimir Switalski, Posts and Telegraphs, Boguslaw Miedzinski.

HISTORY

As in previous years, important events in Poland during 1929 revolved almost entirely around the dominating figure of Marshal Joseph Pilsudski. Despite the repeated attacks of the disorganized Opposition parties in the Sejm under the outspoken leadership of the Speaker, Ignace Daszynski, former Vice Premier, and a partial victory obtained by the Opposition in the overthrow of the Switalski cabinet in December, Pilsudski still remained virtual dictator of the country at the end of the year. In the field of foreign affairs the year was marked by a few important developments. The dispute with Lithuania over Vilna continued to agitate the relations of these two countries, and there were some evidences of a growing intimacy with Italy, which were considered nothing more serious than a warning to France that the continuance of her alliance with Poland depended upon the exchange of mutual benefits. There was some irritation in Warsaw at France's failure to consult Poland in connection with the evacuation of the Rhineland.

PARLIAMENTARY DIFFICULTIES Marshal Pilsudski's antipathy to the Sejm and to attempts to restore parliamentary government in Poland

was demonstrated again early in the year when he and his supporters in the cabinet, refused to attend the parliamentary hearings on the budget to present reasons in support of requests for appropriations. Furthermore, he announced January 31 that he would not preside at the tenth anniversary of the opening of the Sejm on February 9. The Marshal's conception of the rôle parliamentary government ought to play in Poland found expression in the draft of a projected new constitution which was published on February 21 with the indorsement of 111 deputies forming the government, or Pilsudski bloc, in the Sejm. Among the radical changes proposed were that the President be elected by plebiscite of the whole population instead of by the two Houses of Parliament, and that the choice be restricted to two candidates, one chosen by the Sejm and the other by the retiring President, and that the President should have the right to open and dissolve Parliament, appoint ministers and judges, sign and ratify treaties without the approval of Parliament, veto bills passed by the Sejm, and give the final decision in case a parliamentary election was protested. The Senate of 111 popularly elected members would be replaced by a chamber of 150, two-thirds elected by popular suffrage and one-third nominated by the President. Although enthusiastically acclaimed by the pro-government press, no action was taken to put the proposed constitution into effect during the year.

The Minister of Finance Gabriel Czechowicz, resigned on March 8 after the budget committee of the Sejm had voted to investigate expenditures of some \$880,000 which he had authorized in 1927-28 without the required approval of the Sejm. His resignation was followed on April 3 by that of Premier Casimir Bartel. It was indicated that both Finance Minister and Premier resigned principally because obstruction interposed by the numerous conflicting groups and interests within the Sejm made it difficult to carry on their cabinet duties. Premier Bartel had long been little more than a mouthpiece for his Minister of War, Marshal Pilsudski. Difficulty was experienced in forming a cabinet and it was not until April 14 that the Minister of Education, Maj Casimir Switalski, another Pilsudski follower, was elevated to the Premiership. Four other changes were made in the cabinet which further strengthened the Marshal's hold on that body.

These events and the impeachment of the former Finance Minister by the Sejm led Pilsudski to publish a violent denunciation of Parliament. He threatened to again become Premier to prevent the Supreme State Tribunal from trying M. Czechowicz. At the trial of the former Finance Minister in June Pilsudski assumed full responsibility for the unauthorized expenditures and debed the court, indirectly, to do something about it. The court avoided the issue by suspending the case until the Sejm should give its opinion as to whether the excess expenditures, which M. Czechowicz had admitted making, were "necessary and expedient."

The impeachment of M. Czechowicz represented an effort on the part of the Sejm to reassert its power, which for some time had been restricted to voting the budget. In an apparent attempt to prevent further efforts in this direction, Marshal Pilsudski, at the opening of the new session of Parliament on October 31, entered the Sejm ac-

companned by some 80 armed officers. The speaker of the Sejm, M. Daszynski, refused to convene Parliament while Pilsudski and his army officers were in the building and later, by presidential decree, the session was ordered to reconvene on December 5.

On December 6 there was a motion expressing lack of confidence in the Switalski cabinet was carried by a vote of 246 to 120 and on December 7 the cabinet presented its resignation, agreeing to remain in office, however, until a new cabinet could be formed. Due to the illness of Marshal Pilsudski and the lack of unity among the Opposition parties, it was December 21 before President Moscicki brought the cabinet crisis to an end by calling on M. Switalski's predecessor, Casimir Bartel, to form a new government. Four of the new members were holdovers from the Switalski ministry, including Marshal Pilsudski, who retained control. The new cabinet was composed as follows: Prime Minister, Casimir Bartel, Foreign Affairs, August Zaleski, Interior, Henry Joscifski; War, Marshal Pilsudski, Finance, Col. Ignaz Matuszewski, Justice, Felix Dutkiewicz; Education, Adolf Czerwinski; Communications, Alfonso Kuhn, Commerce and Industry, Eugene Kwiatkowski, Agriculture, Wiktor Lesniewski, Public Works, Max Matakiewicz, Labor, Col. Aleksander Prystol, Agrarian Reforms, W. Staniewicz, Posts and Telegraphs, Col. Ignaz Horner.

FOREIGN AFFAIRS. The German government was indirectly charged with participating in the agitation for revision of the Polish western frontier by Foreign Minister Zaleski early in 1929. Declaring such activities to be contrary to the spirit of the League of Nations protocol, he said that Poland distrusted Germany but "did not hate her." Relations between the two countries improved thereafter and on November 1 a treaty was signed at Warsaw intended to end the economic differences which had agitated Polish-German relations for the preceding eight years.

Poland's rising position as an important European power was evidenced in October when Great Britain raised its legation in Warsaw to the status of embassy. In December it was announced that the United States would follow suit. Poland on September 9 was elected a new member of the Council of the League of Nations. For the status of the Vilna dispute, see LITHUANIA, under *History*, see also VILNA, JEW.

POLAR RESEARCH, ANTARCTIC. On Nov. 29, 1929, Richard Evelyn Byrd returned to his base at Little America having accomplished one of the major objectives of his expedition—that of reaching the South Pole by airplane. This polar flight, however, was far from being the only achievement of the Byrd Antarctic Expedition. On Nov. 22 at the Ross Sea Barrier on Dec. 23, 1929, camp was established at Little America in the Bay of Whales near the former site of Framheim. Amundsen's base for his trip to the South Pole in 1911. Although all energies were directed to preparing the base camp for the winter season, a short flight on Jan. 16, 1929, was followed by a longer trip to the Scott Nunataks whence, 50 miles to the southwest, a new range of mountains rising over 2000 feet was seen and named the Rockefeller Range. A further flight on February 19 disclosed more mountains to the east of the Rockefeller Range and outside of the Ross Dependency. This region was claimed for the United States and named Marie Byrd Land. On a later

trip the Rockefeller Range was photographed from the air. On March 7 a party including Professor Gould, the geologist and second in command of the expedition, flew to and landed at the Rockefeller Range in order to determine their correct position and to make geological and topographical studies. A prolonged silence on the eleventh day of this expedition resulted in an aerial rescue by Byrd who found that their plane had been wrecked by a 120-mile gale. The whole party was returned to Little America by plane.

During the winter the necessarily close confinement to quarters was alleviated by constant radio communication with many parts of the world and especially with the United States whence programmes were regularly broadcast to Little America. Much valuable information on radio and atmospheric problems was acquired. On October 16 the outdoor season opened when a depot-laying party set out in advance of the geological party. On November 4 the geological sled party headed by Professor Gould commenced a 440-mile trek to the Queen Maud Mountains. On November 19, a base of supplies was established by Byrd at Mt. Fridtjof Nansen at the edge of the Polar Plateau by means of an airplane flight. This flight which paralleled Amundsen's route to the Queen Maud Range failed to confirm the existence of Amundsen's Carmen Land. A new range was discovered (Charles Boh Mountains).

The supply depots being laid and the weather being reported as favorable by the geological party which was then 400 miles to the south and ready in case of emergency, Byrd took off by airplane for the South Pole on November 28. He was accompanied by Balchen and June as pilots, and by McKinley who operated the surveying camera. The high Polar Plateau was reached by flying up Liv Glacier, a perilous passage where air currents tossed the plane about and all superfluous weight had to be discarded in order to attain the necessary 12,000 feet of elevation and reach the Plateau itself. A flight over the "limitless plateau" brought them to the South Pole, a circuit was made and a northerly course was set. After descending the Plateau at Axel Heiberg Glacier an easterly detour was made before returning to Little America.

On December 5 another flight was made east of King Edward VII Land where Byrd discovered a new mountain range separated from the Alexandra Mountains by an arm of the sea and running into Marie Byrd Land. This flight was also recorded by the aerial camera. Meanwhile the geological party confirmed Byrd's discoveries at the edge of the Polar Plateau and obtained geological evidence that the Queen Maud Mountains are of the same rock formation as the mountains in South Victoria Land. The supply ships of the expedition at the end of the year were preparing to reach the Bay of Whales and embark the expedition.

On the other side of the Antarctic Continent, Captain Sir Hubert Wilkins continued his exploration of the Graham Land Sector. Bad weather at Deception Island made a more southerly base necessary and the royal research ship, *William Scoresby*, was employed to transport the expedition to the south of Adelaide Island. There, a short flight confirmed the discoveries of 1928. On December 31 a flight over Charcot Island and to the south added some 300 miles of new coastline to the Antarctic Continent.

members, 221 life members, and 1200 subscribing members, chiefly libraries and organizations. All States in the Union, the District of Columbia, Porto Rico, Hawaii, the Philippine Islands, and more than 60 foreign countries are represented in both the individual and subscribing memberships.

Two general meetings were held in 1929. The semi-annual meeting was held on April 24 at Columbia University to discuss the subject, "Railroad Consolidation." Three sessions were held dealing with unification under the present law, advantages and disadvantages of consolidation, and pending consolidation legislation. The papers and addresses, with some additional material and a prefatory note giving some account of the meeting and information concerning the speakers, were published in the *Proceedings*, vol. xiii, no. 3, under the title, "Railroad Consolidation."

The annual meeting, held November 22, was devoted to the subject, "Business, Speculation, and Money." Three sessions were held as follows: Speculation, credit, and business, credit regulation through the Federal Reserve System, and business, speculation, and money. The market cataclysm of the autumn of 1929 afforded a spectacular demonstration of the need for scientific exploration of this subject. Seldom has a financial event of such moment been so closely followed by a contemporary account devoted to expert analysis of its causes and meaning. The papers and addresses prepared for the meeting were published in the *Proceedings*, vol. xiii, no. 4, together with some account of the meeting.

Four issues of the *Political Science Quarterly*, the official organ of the academy, were published during the year. The officers for 1929 were: McCune Lindsay, president; Albert Shaw and Paul M. Warburg, vice presidents; Parker T. Moon, secretary and editor of publications; George A. Plimpton, treasurer; and Ethel Wainer, executive director and assistant treasurer. Headquarters are in Fayerweather Hall, Columbia University, New York City.

POLITICS. INSTITUTE OF FORMED for the discussion of foreign affairs, so as to promote a more sympathetic understanding of the problems and policies of other nations, these annual sessions were inaugurated by the trustees of Williams College in September, 1919. The first session of the institute was held in Williamstown, Mass., in the summer of 1921. Membership is open to men and women on the faculties of colleges and universities, to writers on foreign politics, to persons engaged in the direction of foreign commerce or banking, to diplomatic and consular officials, to officers of the Army and Navy, to editors, foreign correspondents of the press, and, by invitation, to others who have had training and experience in international law and politics. In 1924 the General Education Board and the Carnegie Corporation joined with Bernard M. Baruch, who had made the first three meetings possible, in financing the movement for a five-year period.

The ninth session of the institute met Aug. 1-29, 1929, in Williamstown, Mass. Addresses were delivered by visitors of international reputation, including George Young and Prof. T. E. Gregory of London, and Count Giovanni Elia of Rome. Lecture courses were conducted by Dr. William E. Rappard of Geneva, whose topic was "The Trend of International Cooperation in Europe since the

War," and by André Siegfried of Paris, his subject being "The Political System in France." The following is a list of round-table subjects with their respective leaders: "Canadian-American Relations," Dean P. E. Corbett, McGill University; "Limitation of Armaments," Rear Admiral C. L. Hussey, U. S. N., ret.; "The Interests of United States Citizens in Latin America," Prof. Herbert I. Priestley, University of California; "Post-War Constitutional Changes in Europe," George Young, London; "Planned Prosperity: The Effect of Public Fiscal Policies on Trade and Employment," Dr. William T. Foster, Newton, Mass.; and "Waddill Catchings, New York City; "Banking, Currency, and Exchange," Prof. T. E. Gregory, London School of Economics; "Trade Relations as Affected by Politics, Science, and Finance," Dr. Harrison E. Howe, Washington, and "Inter-Ally Debts and Reparations," Prof. Jacob Viner, University of Chicago.

Each of these leaders conducted two open conferences during the session at which there were discussions, for the benefit of those who were not members of the round-table, of the more specialized study which had taken place in these conferences. In addition, there were special general conferences on the following subjects: "Mexico: Financial, Social, and Political," since 1910," led by Dr. Eyer N. Simpson, Mexico City; "Financial and Commercial Relations with Latin America," Prof. Harry T. Collins, University of Pennsylvania; "American-Canadian Mineral Resources," Prof. C. K. Leith, University of Wisconsin; and "Chinese-Russian Relations," Prof. George H. Blakeslee, Clark University.

There were 266 members in attendance at the 1929 meeting. The institute publishes an annual report including an outline and selected bibliography for each of its conferences and a summary of all the main ideas developed by the conference leaders, lecturers, and members of the institute, copies may be obtained from the office of the secretary, 1 Hopkins Hall, Williamstown, Mass. The officers of administration in 1929 were: Harry Augustus Garfield, chairman; Walter Wallace McLaren, executive secretary; and Willard Evans Hoyt, treasurer. Headquarters are at 1 Hopkins Hall, Williamstown, Mass.

POLO. After the extraordinary interest of the preceding international years when the United States repelled the British and Argentinian invaders, the year 1929 provided a calm for the high-goal players. It was a busy year with the players concentrating on weekly matches and the tournaments under the auspices of the United States Polo Association. The younger element which took hold of United States polo in the series with the Argentine team in 1928 again dominated the scene. The United States not only watched with interest the work of the veteran youngsters—Tommy Hitchcock, E. A. S. Hopping, and Winston Guest, but followed with even more care the work of the Old Aiken four, a team composed of college graduates, not one member of which was over twenty-one. This Old Aiken four, consisting of Elbridge T. Gerry of Harvard, and James P. Mills, Stewart B. Inglehart, and J. C. Rathborne of Yale, won the national junior championship, the Third Westbury Cup, and the Herbert Memorial Cup, besides reaching the final in the hunt for the Monty Waterbury Cup.

Hitchcock played amazingly well all season, yet his Sands Four lost the open title and the Waterbury Cup. The open championship was

captured by Laddie Sanford's Hurricanes for the second time in four years. Sanford had Capt. C. T. I. Rcar, the Irish internationalist, J. Watson Webb, veteran lefthander, and Bobby Strawberry riding with him John Hay Whitney's Greentree four, with Whitney, Winston Guest, Eric Pedley, and Elmer J. Boescke, Jr., won the Waterbury Cups. The latter two players, Pedley and Boescke, the Californians, made a fine showing on Eastern fields during the season as did H. W. Williams, six-goal Texan, and the Roarks, Captain Pat, and Aidan.

The indoor game spreading further in the land was featured by the continued championship success of the Brooklyn Riding and Driving Club. Carl Pfug, Gerard Smith, and Warren Sackman of that club won the open title for the third year, while Stewart Iglehart and the two guests, Winston and Raymond, formed the Optimist Club team which won the Class-A championship. Harvard won both the outdoor and indoor intercollegiate laurels.

POND, REAR ADMIRAL CHARLES FRÉMONT American naval officer, died Aug. 4, 1929, in Berkeley, Calif. He was born in Brooklyn, Conn., Oct. 26, 1856, and was graduated in 1876 from the U. S. Naval Academy. He was promoted through the grades of the U. S. Navy to the rank of rear admiral in 1914. He retired in 1918, after more than 24 years of service at sea and almost 18 years of shore duty. With the U. S. Coast and Geodetic Survey, he was engaged in a survey of the Pacific coast (1879-83 and 1886-90), during 1881-83 he inaugurated a coast and geodetic survey in Alaskan waters. In the Spanish-American War, he served on the U. S. S. *Panther*. Admiral Pond was commander-in-chief of the Pacific Reserve Fleet from April to October, 1915, was with the Atlantic Fleet in 1915-16, and commander of the cruising force of the Atlantic Fleet from July to November, 1916.

POPE, RALPH WAINWRIGHT An American engineer and editor, died Nov. 1, 1929, in Great Barrington, Mass. He was born there Aug. 16, 1844, and at the age of 15 became a telegrapher for the Housatonic Railroad Company. From 1862 to 1865, he was an operator for the American Telegraph Company in New York City, New Haven, Conn., and Providence, R. I. In 1866 he was quartermaster on the Collins Overland Telegraph Expedition to British Columbia. Mr. Pope became associate editor of the *Telegrapher* in 1868 and of the *Electrical Engineer* in 1884; and in 1890 he founded and became editor of *Electric Power*. From 1885 to 1911, he was secretary of the American Institute of Electrical Engineers in New York City, and after that time, honorary secretary.

POPE PIUS XI. See ROMAN CATHOLIC CHURCH.

POPULATION, RURAL. See AGRICULTURE.

POBK. See LIVESTOCK.

PORTLAND CEMENT. See CEMENT.

PORTO RICO, pór-to-rikó An island possession of the United States in the West Indies, the most easterly and smallest but most densely populated of the Greater Antilles, lying 480 miles east of Cuba, 1380 miles southeast of New York, Capital, San Juan.

AREA AND POPULATION The area of the island is 3425 square miles and the population, according to the census of 1920, 1,299,809. On June 30, 1920, the population was officially estimated at 1,472,755, about 27 per cent of whom live in

cities. The movement of population in 1928-29 was: Births, 50,682; deaths, 40,890, marriages, 16,414. Deaths in 1928-29 totaled 11,208 more than in 1927-28, the increase being due exclusively to the hurricane of September, 1928. The capital, San Juan, had a population of 70,707 in 1920, estimated in 1929 at about 100,000. Other important towns are Ponce (78,608), Mayaguez (44,375), Arecibo (50,313), and Caguas (43,804). In 1928-29, 17,369 persons emigrated to the United States and 6458 returned to the island from the United States.

EDUCATION Elementary education is free and compulsory between the ages of 8 and 14. According to the governor's annual report for the fiscal year 1928-29, in the publicly supported schools of all grades under the Department of Education, there were employed 4498 teachers. The total enrollment for the year was 220,634. Of this number, 125,549 were enrolled in the rural schools, 87,547 in the elementary urban schools, 6879 in the secondary schools, and 659 were special students. In addition to those enrolled in the public schools, 8879 were enrolled in private schools. The total expenditure for educational purposes by the Department of Education was \$4,191,657. In addition \$1,625,785 was disbursed by municipalities from their own funds. The total amounted to \$5,817,442. A total of 443 government-owned schoolhouses were wholly or partially destroyed by the hurricane of 1928 and a larger number of rented school buildings were wrecked. The University of Porto Rico had an enrollment of 3493 in all its various schools in 1928-29.

PRODUCTION Porto Rico is primarily dependent upon sugar production for its prosperity, with tobacco and coffee as the other major crops. Cotton, cacao, beans, fruits, and various textile fibres also are grown. For the fiscal year ending June 30, 1929, the production of sugar was 586,760 short tons, or 21.6 per cent less than the 1927-28 crop of 748,677 tons, the largest ever produced on the island. Sugar exports shrank to \$35,222,162, as against \$54,579,020 in the preceding year, with resultant depressing effects upon the economic condition of the population. The decline in production of sugar, as well as other crops in 1928-29 was due to damage wrought by the 1928 hurricane. Crop damage alone was estimated at \$54,462,945, losses to farm buildings, sugar mills, etc., bringing the total agricultural loss to \$62,432,076. The tobacco crop for 1928-29 was estimated at 246,000 quintals, as compared with 270,000 quintals in the preceding year. The storm destroyed the largest crop of coffee ever produced on the island, valued at about \$12,000,000.

Likewise attributable to hurricane damage was the decline in exports of grapefruit, oranges, pineapples, and other fruits to \$2,322,980 in 1928-29 from \$5,657,000 in 1927-28, and the decline in coconut exports from 23,088,000 valued at \$697,972 in 1927-28 to 8,668,000 valued at \$249,665 in 1928-29. The hurricane also destroyed one-fifth of the depleted forests of the island, setting back the reforestation programme of the insular government, which owns about 40,000 acres of forest land.

The chief manufacturing industries are engaged in the production of sugar, needlework, women's wear, and men's clothing. The dense population of the island, averaging 400 to the square mile, results in a more or less

continuous unemployment problem Reconstruction work necessitated by the hurricane furnished some relief in 1928-29

COMMERCE Porto Rico's commerce with the United States and foreign countries during the fiscal year ending June 30, 1929, declined by \$16,203,438 to a total of \$179,583,630, the decrease being almost entirely attributable to the hurricane of September. The growth of the island's trade and the effects of the hurricane are shown in the accompanying table

PORTO RICAN TRADE

	1900	1927-28	1928-29
Brought from the United States	\$6,952,114	\$79,743,088	\$85,078,596
Shipped to United States	3,350,577	96,662,619	76,418,210
Brought from foreign countries	3,037,391	12,599,241	12,782,184
Shipped to foreign countries	3,261,922	6,872,120	5,304,660
Totals	\$16,602,004	\$195,877,068	\$179,583,630

For the 28 years ending in 1928 the trade of the island showed an average annual increase of \$6,400,000. The balance of trade, which had been favorable to Porto Rico with the exception of four years in the period 1900-1928, showed an adverse balance of \$16,137,890 in 1928-29, as compared with an excess of exports valued at \$11,102,410 in 1927-28, at \$9,256,684 in 1926-27.

The four major exports are sugar, tobacco, coffee, and fruits. The amount and value of these exports in 1928-29, with figures for the previous year in parentheses, were as follows: Sugar, 471,244 short tons (905,538), valued at \$35,222,162 (\$54,579,020); coffee, 1,278,615 pounds (7,838,104), \$456,831 (\$2,596,572); tobacco, 26,593,693 pounds, \$10,773,481; fruit, \$2,322,980 (\$5,657,000). Ninety per cent of all trade was with the United States.

FINANCE Revenues during the fiscal year 1928-29 amounted to \$11,004,138, as compared with \$12,446,219 in the preceding year and with the budget estimate of \$10,499,000. Including the balance of \$758,797 from the previous year, non-revenue receipts of \$2,764,520, hurricane loans extended to the amount of \$1,002,050, and miscellaneous receipts, the total available resources for 1928-29 amounted to \$14,834,129, leaving a cash balance on June 30, 1929, of \$810,555. Of the disbursements those against appropriations totaled \$11,320,663, repayments amounted to \$2,764,520, and the remaining payments were for the reduction of the floating debt (\$462,660), redemption of municipal bonds (\$32,500), and transfers (\$253,775).

Preliminary returns for the fiscal year 1929-30 indicated that the tax receipts would not exceed \$9,500,000, as against the budget appropriations of \$10,499,000. At the end of 1929 the net insular bonded indebtedness stood at \$25,390,000 and the insular floating indebtedness at \$3,024,950, as compared with a bonded indebtedness on July 1, 1928, of \$25,517,000 and a floating indebtedness of \$1,945,833. Much of the increase in the floating indebtedness was incurred through the issuance of temporary hurricane loans.

COMMUNICATIONS There were in Porto Rico in 1928 about 335 miles of railway line, 1072 miles of telegraph wire, and 27,745 miles of telephone wire. An air-mail line between Porto Rico and the United States was inaugurated in January, 1929.

In 1928, 1118 vessels of 1,257,000 tons entered and 1119 of 1,306,000 tons cleared Porto Rican ports.

GOVERNMENT The constitution, as determined by the so called Jones Act passed by the United States Congress in 1917, vests executive power in a governor appointed by the President of the United States and legislative power in a legislature of two elective houses: a senate of 19 members and a house of representatives of 49 members. A resident commissioner, elected by the people for a term of four years, represents Porto Rico in the United States Congress. The six departmental heads form an Executive Council, presided over by the governor. The Jones Act conferred United States citizenship upon the people of the island. Governor in 1929, Theodore Roosevelt, son of the late President Roosevelt, appointed by President Hoover in 1929.

HISTORY The poverty habitually afflicting large numbers of Porto Ricans became increasingly prevalent in 1929 due to the blow inflicted upon the island's agriculture and industry by the hurricane of September, 1928. The newly appointed Governor, Col. Theodore Roosevelt, appealed for aid to the people of the United States in December. From personal observation and official reports Governor Roosevelt estimated that 60 per cent of all children on the island were undernourished and partially starved.

The first session of the legislature elected in November, 1928, was convened Feb. 11, 1929, and much of its deliberations were concerned with measures for hurricane relief. Laws were also passed abolishing the death penalty and amending the electoral law so as to confer suffrage on literate females and to restrict it to literate males. A special session of the legislature was called by the Governor on June 10 to make appropriations for essential services inadequately provided for in the general appropriations act passed at the regular session.

PORTS AND HARBORS The notable series of articles on the harbors of the world by Dr. Bryson Cunningham (continued throughout the year in *Engineering* (London) and included discussions of Bremerhaven, Bremen, and Hamburg.

TOMB DRY DOCK, BROOKLYN N. Y. In spite of unusual difficulties encountered in excavation, difficulties which recalled the struggle during the construction of the Brooklyn Navy Yard Dock, this new work made rapid progress. It was built by the Todd Shipyards Corporation at its Rohms Plant in Erie Basin and was opened during the year. It is the largest dock in New York Harbor, with a total length of 715 feet, a top width of 113 and a bottom width of 93 feet. In constructing the dock new methods were followed. In the inner portion or section, 500 feet long, the usual plan of driving piles and then placing a heavy blanket of concrete, sufficiently thick to counter-balance the upward water pressure when the dock is empty, was abandoned. Instead, a line of steel sheet piling was driven around the section, to cut off any direct water flow, and the timber bottom of the lock was left open, permitting ground water to seep up through the floor when the dock is emptied. This water will be taken care of by drainage pumps. Obviously, this plan offers a great reduction in the amount of excavation and concrete required. The 250-foot outside section was built under water. That is, dredges were used for excavation, foundation piles were driven and reinforced concrete side walls and bottom were built by depositing the concrete



TODD DOCK AT THE ROBINS DRY DOCK AND REPAIR COMPANY'S PLANT,
BROOKLYN, N. Y.

This dock of the Todd Shipyard's Corporation is the largest private dock of its type on the Atlantic seaboard. The Munson Liner, "Southern Cross," is shown entering the Gate.



Photo by Photopress, London

OPENING OF TILBURY DOCK, PORT OF LONDON
NEW DOCKS OF 1929

through a tremie tube. A 500-ton floating steel gate, similar to that used at the Brooklyn Navy Yard, is used to close the entrance to this dock.

LONDON The Port of London officially opened the improved docks at Tilbury in September. This is considered the most up-to-date dock system in the world and cost \$15,000,000. The works include a dry dock 750 feet long and 110 feet wide which can be lengthened, it found necessary later, to 1000 feet.

SOUTHAMPTON Early in March the first of the huge monolith blocks of concrete for this great dock project was placed. The work will cost in all about \$65,000,000 and its most imposing feature will be a huge quay wall with concrete deck.

AIRSHIP DOCK One of the most interesting of modern structures was the Goodyear-Zeppelin Airship Dock or hangar nearing completion at the Akron, Ohio, municipal airport. The building has a total length of about 1184½ feet and is foimed by 13 arch trusses having spans of 325 feet and a centre height of 108½ feet. A unique feature of the design is the huge 450-ton "orange-peel" doors. The doors form roughly a half-hemisphere in two sections. The top of these sections is pivoted on a huge pin at the centre of the roof over the entrance. The base of each door, a quarter-circle in form, rests on curved tracks. When the doors are opened, they are moved to each side on these curved tracks, fitting closely along the sides of the building and giving a full end opening. It was expected that this type of construction would reduce the cross-wind currents which interfere with airship docking and which the usual flat vertical doors, such as those at Lakehurst, were said to develop. Similar but smaller docks have been built in Germany. See **AERONAUTICS**.

PORTUGAL. A republic of Europe, situated west of Spain in the Iberian Peninsula, the westernmost of all the States of Europe. Capital, Lisbon.

AREA AND POPULATION The area of continental Portugal is 34,254 square miles, population, according to the census of 1920, 5,621,977, as compared with 5,545,595 in 1911. The Azores, with an area of 922 square miles, had a population of 242,613 in 1920, and Madeira, with an area of 314 square miles, a population of 169,777 in 1920; the total area, therefore may be considered 35,490 square miles and the population in 1920 may be placed at 6,032,991, because the Azores and Madeira are considered integral parts of the Republic, estimated population in 1927, 6,265,000. During the years 1923-27, inclusive, births averaged 209,932 and deaths 127,120, the excess of births amounting to 82,812 annually. The Portuguese colonial possessions in Africa and Asia had an estimated area of 934,204 square miles, with a population of 8,737,853, of which 927,292 square miles with a population of 7,736,700 were in Africa. Lisbon, the capital, had a population at a special census in 1925 of 529,524 and Oporto, the next largest city, 225,000 (1926). Primary education is compulsory. In 1926-27 there were 7174 public elementary schools with 318,437 pupils, 33 secondary schools with 11,430 pupils, and 5 primary normal schools with 793 students. For higher education there are three universities, which had 4461 students in 1926-27.

PRODUCTION Agriculture is the main industry. The Ministry of Agriculture estimates that of the total continental area of Portugal, about 26 per cent is cultivated annually or under meadows or

pasture, about 8 per cent is under vineyards or fruit trees, 17 per cent under forests, and 49 per cent waste land. Nearly all sections of the country experienced a partial failure of the crops in 1928, but due to the considerable crop surplus from the large harvest of 1927 the effects were minimized. The area and production of the chief crops in 1928 were: Wheat, 1,082,000 acres, 6,578,000 bushels, rye, 618,000 acres, 3,418,000 bushels, barley, 193,000 acres, 1,983,000 bushels, oats, 552,000 acres, 3,876,000 bushels. In 1927 the potato crop was 11,427,000 bushels, wine 244,808,000 gallons, and olive oil, 39,109,000 gallons. Corn is another major crop, the production in 1926 being valued at \$16,080,000. In 1925 there were 768,000 cattle, 1,117,000 swine, 3,684,000 sheep, 1,558,000 goats, and 30,000 horses.

Although Portugal has considerable mineral deposits, only a few are worked due to the lack of fuel and cheap transportation. In 1927 the mineral output consisted of 204,400 metric tons of coal and lignite, 302,300 tons of copper pyrites and cement ore, and 1083 tons of tin ore. Textiles constitute the principal manufacturing output, the textile industry employing 60,000 workmen in 1928. Other manufactures are decorative tile, chinaware, superphosphate of lime, handmade lace, and embroidery. Fishing is an important industry, employing 52,518 men and boys in 1926.

COMMERCE In 1927, the last year for which figures were available, imports totaled \$133,904,000, as compared with \$120,156,000 in 1926, and exports declined to \$36,345,000 from \$37,775,000 in the preceding year. The large excess of imports shown in these two years is a normal condition in Portuguese economy. The chief items of import in 1927 were: Wheat, \$13,649,000, coal, coke, and briquets, \$7,544,000, machinery and tools, \$7,121,000, raw and waste cotton, \$6,774,000, codfish, \$6,522,000, vegetable oils, \$6,028,000. The principal export items were: Wines, \$12,141,000, fish and shellfish, \$6,788,000, cork, \$4,020,000, coal (ships' supplies), \$2,321,000, fruits and nuts, \$1,238,000. The United Kingdom and Germany are the principal purchasers of Portuguese products and also the chief sources of imports. In 1927 the United States ranked third as a source of imports and sixth as a market for exports.

FINANCE. The total of the annual deficits which characterized Portuguese budget operations from 1919-20 to June 30, 1928, the end of the fiscal year, was \$191,349,000, the estimated deficit for 1927-28 alone being \$19,508,000. The budget estimates for 1928-29 virtually balanced, receipts being estimated at 1,919,388,000 escudos (\$85,700,000), and expenditures at 1,917,811,000 escudos (\$85,630,000). The expenditure budget was 19,000,000 escudos lower than in the previous year, while by a revision of taxation, an increase in revenues of 364,629,000 escudos was anticipated. The ordinary budget for 1929-30 provided for revenues of 1,910,933,000 escudos and expenditures of 1,843,855,000 escudos. With the extraordinary budget figures added, total revenues were estimated at 2,033,433,000 escudos and total expenditures at 2,024,855,000 escudos (1 escudo exchanged at \$0.446 in 1928-29).

The total public debt was estimated in 1927 to amount to \$406,134,000, exclusive of the World War debt to Great Britain which had a "present time" value of about \$27,000,000 in December, 1926. Of the total, \$95,419,000 represented the floating debt, \$246,537,000 the internal funded debt, and \$154,179,000 the external funded debt.

COMMUNICATIONS The railways of Portugal, which totaled 2103 miles of line in 1927, were practically all operated by one private company, including 894 miles of state line leased from the Government in 1926. In 1927 the railways carried 29,950,000 passenger miles and 5,959,000 metric tons of freight, earning gross receipts of 288,796,000 escudos (\$14,526,000). There were also 19,317 miles of telegraph wire and 78,880 miles of telephone wire. The telegraph system and some telephone lines were operated by the government.

GOVERNMENT According to the constitution of 1911, executive power is vested in the President, elected by the parliament for four years but ineligible for reelection, who acts through a responsible ministry, and legislative power in the Parliament of two chambers, the Upper House having 71 members elected by the municipal councils and the Lower House, 164 members elected for three years by direct suffrage. Acting President in 1929, General Antonio Oscar de Fragozo Carmona (appointed in December, 1926). The cabinet as constituted Nov. 10, 1928, was as follows: Prime Minister, Minister of the Interior, and Minister of Commerce and Communications, José Vicente de Freitas, Foreign Affairs, Commander Manuel Carlos Quintão Meireles, Marine, Commander Masquita Guimarães, Finance, Dr. Antonio de Oliveira Salazar, Justice, Dr. Mario de Figueiredo, War, Col. Ernesto de Moraes Sarmiento, Instruction, Dr. Gustavo Ramos, Agriculture, Pinto Bravo, Colonies, Jose Bacelar Beibano.

HISTORY Portugal experienced a comparatively uneventful year in 1929 under the tactful and able supervision of its dictator, President Carmona. Increasing friendliness in the relations between Portugal and Spain, as evidenced by a visit to Spain made by President Carmona in the autumn, the reorganization of the cabinet in July, and the continuation of internal progress were the most noteworthy developments. The budget was reported to show a surplus in 1928-29 for the first time since the World War and improvements in the roads, ports, and telephone and telegraph systems were provided for in the 1929-30 budget. President Carmona announced that he would sanction the return to a parliamentary form of government as soon as he had ironed out the financial difficulties of the country and reorganized commerce and industry on modern lines. In anticipation of the end of the dictatorship the cabinet council on October 4 announced that the drafting of a new constitution would be one feature of an extensive programme of social and economic reform, which included the reorganization and extension of the educational system.

An Associated Press report from Lisbon on November 10 announced that the cabinet council had authorized the return to Portugal of 86 army officers and noncommissioned officers who had been banished to the Azores for taking part in a conspiracy against the dictatorship. Two eminent citizens of Portugal died during the year, Dr. Antonio José Almeida, President of the Republic from 1919 to 1923, on October 31 and Field Marshal Gomes de Costa, commander of the Portuguese expeditionary force on the western front in the World War, on December 5.

PORTUGUESE EAST AFRICA, or MOZAMBIQUE A colony of Portugal, extending along the east coast of Africa from 10° 40' S latitude to the boundary of the Union of South Africa, bounded on the west by the Union of South Africa and

Rhodesia, and on the north by Tanganyika. Area, 428,132 square miles. The estimated population is 3,657,008. There are three clearly defined divisions of the colony: (1) the Province of Mozambique, 295,000 square miles, population in 1927, 3,482,914; (2) the territory under the Mozambique Company, 59,840 square miles, population in 1926, 308,543; (3) the district under the Nyassa Company, 73,292 square miles. In addition, there is the Kionga Triangle, formerly belonging to German East Africa, situated south of Rovuma, which was allotted to Portugal by the Treaty of Versailles. Lourenço Marques, the capital and chief port for foreign trade, had a population of 37,301 in 1927. Other ports are Mozambique, with a population of about 361,839 (472 Europeans). Ibo, Chinde, Beira, Quilmane, and Inhambane. The chief products are beeswax, coconuts, sugar, raw cotton, maize, and mineral products. Rubber and ivory are exported. Imports into the province in 1927, exclusive of gold and silver, amounted to 57,260,765 escudos and exports to 56,905,087 escudos. The proposed provincial budget of Portuguese East Africa for the fiscal year 1928-29 balanced at 322,483,961 escudos (one escudo equalled \$0.503 in 1927).

PORTUGUESE GUINEA, g'ñe A colony of Portugal on the west coast of Africa, entirely surrounded on the land side by French territory. It includes the archipelago of Bijagoz, together with the island of Bolama on which is situated the capital, Bolama. Area, estimated at 13,940 square miles, population at 350,000. The principal port is Bissau. The chief products are wax, rubber, ivory, hides, and oil seeds. The imports in 1927 were valued at 34,322,414 escudos, exports at 34,309,015 escudos. The estimated public revenue and expenditure for 1928-29 was 34,970,000 escudos (one escudo equalled \$0.503 in 1927).

PORTUGUESE LITERATURE. See PHILology, MODERN.

PORTUGUESE WEST AFRICA. See ANGOLA.

POST OFFICE. See UNITED STATES.

POTASH. The potassium salts produced in the United States in 1929, according to the U. S. Bureau of Mines, contained the equivalent of 61,590 tons of potash (K₂O). The output in 1929 increased 3 per cent in K₂O content above that of 1928. Sales of salts decreased 4 per cent with a decrease of 5 per cent in K₂O content. Potash materials of domestic origin sold in 1929 were valued at \$2,988,448, that imported, at \$23,719,056, for approximately 929,819 short tons. This represented a decrease of 4.7 per cent in gross weight; and an increase of 5 per cent in value.

The production of potassium salts came from natural brines, flue dusts of blast furnaces, from the waste of molasses distillation, and from Steffen's water. During the year the Bureau of Mines, the Geological Survey, and other government bureaus continued the investigation of potash deposits in Texas, New Mexico, and other localities.

Of the 1928 imports, virtually all crude salts and much the larger part of the refined salts imported originated in Germany and France, Germany alone sending material valued at \$14,544,000. The potash produced in Germany in 1928 was stated as 1,990,469 metric tons, while in France the production for 1928 was stated as 427,997 tons. In 1929 the United States imported potash fertilizers as follows: Crude chloride (muriate), 230,966 tons valued at \$8,224,661; crude sul-

phate, 79,510 tons valued at \$3,047,839; kainite, 75,930 tons valued at \$643,950, manure salts, 390,828 tons valued at \$5,113,085, and other potash-bearing substances, 675 tons valued at \$9,313. See **CHEMISTRY**, **INDUSTRIAL**, **FERTILIZERS**, **GEOLOGY**.

POTASSIUM. See **CHEMISTRY**, **INDUSTRIAL**.
POTATOES. In 1929 the potato production of 20 countries reporting to the International Institute of Agriculture, Rome, was estimated at 3,054,586,000 bushels, indicating a decrease of 4.4 per cent as compared with the production in 1928 and an increase of 9 per cent over the average crop of the five years 1923-27. The area devoted to potatoes in these countries, 17,169,000 acres, was 2.5 per cent below that of the year before and 2.2 per cent above the area of the five-year period. The European crop, which constitutes about nine-tenths of the world's yield, was reported as generally satisfactory although below the large production of 1928. Among the important producing countries, Germany reported a decrease of 6.7 per cent and Poland of 12.9 per cent as compared with their yields in 1928. In all countries of Europe reporting, the production was above the average for the five years 1923-27. The leading producing countries, not including the United States, reported the following yields: Germany, 1,414,771,000 bushels, Czechoslovakia, 340,341,000 bushels, England and Wales, 125,067,000 bushels, Netherlands, 121,252,000 bushels, Belgium, 112,710,000 bushels, and Hungary, 80,586,000 bushels.

A preliminary estimate placed the yield of Poland for the year at 884,774,000 bushels. The Soviet Republics, which generally rank highest in potato production, reported a yield of 2,009,149,000 bushels in 1927. Of the countries of the Southern Hemisphere, which usually report a total yield of less than 100,000,000 bushels, Argentina, the leading country, has an annual production of about 30,000,000 bushels and Australia of about 15,000,000 bushels. Canada in 1929 had an estimated yield of 74,447,000 bushels.

The Department of Agriculture estimated the potato crop of the United States in 1929 at 357,451,000 bushels, which was 107,899,000 bushels or 23 per cent below the preceding crop of 465,350,000 bushels and 6.6 per cent below the previous five-year average of 382,756,000 bushels. The smaller production in 1929 was due to a reduction in acreage and a lower yield per acre. The area in potatoes was estimated to be 3,370,000 acres as compared with 3,337,000 acres in 1928, a decrease of about 12 per cent. The average yield per acre was 106.1 bushels as against 121.3 bushels in 1928 and 106.4 bushels for the 10-year average. The commercial production of early potatoes amounted to 35,613,000 bushels or 36 per cent less than the crop of 55,475,000 bushels in 1928 but its value of \$46,662,000 was 50 per cent above the 1928 value of \$31,076,000. The average farm price on Dec. 1, 1929, of \$1.31 per bushel was nearly two and one-half times the average price of 53.9 cents per bushel in December, 1928. The total value of the 1929 production based on this price was estimated at \$469,701,000, which was 87 per cent greater than the value of the 1928 crop, although the 1928 production was 30 per cent larger. Potatoes were produced in all the States, the leading ones and their yields being as follows: Maine, 47,644,000 bushels, Minnesota, 25,896,000 bushels, Pennsylvania, 25,740,000 bushels, New York, 24,840,000 bushels, Wisconsin, 20,240,000 bush-

els, Michigan, 18,410,000 bushels; Virginia, 17,461,000 bushels, and Idaho, 17,136,000 bushels. In average yield per acre, Utah led with 185 bushels followed by Maine with 176 bushels, Nevada with 170 bushels, and Idaho with 168 bushels. The average farm prices per bushel on Dec. 1, 1929, ranged from \$1 in Minnesota and Utah to \$1.80 in Florida.

The results of a study by the Department of Agriculture indicated that of the production in 1928 of 420,801,000 bushels of 35 States growing late potatoes, 266,541,000 bushels were sold or available for sale and 64 per cent of the yield graded as U S No. 1. Of the portion not sold, 7,406,000 bushels were not harvested on account of market conditions, 8,245,000 bushels had been tied to Jan. 1, 1929, 30,929,000 bushels were unfit for food or seed, and 64,479,000 bushels were saved for food where grown. The production of certified potatoes for seed in 1929 was reported at 7,916,000 bushels for the United States and 4,750,000 bushels for Canada. Of the certified seed crop of the United States, nearly 4,000,000 bushels were produced in Maine.

POULTRY. See **LIVESTOCK**.

POULTRY DISEASES. See **VETERINARY MEDICINE**.

POWER DEVELOPMENT. See **WATERS**.

POWER

POWER TRANSMISSION. See **ELECTRIC POWER TRANSMISSION**.

POZNAN EXPOSITION. See **EXPOSITIONS**.

PRAIRIE PROVINCES. The name applied to the three Canadian provinces of Manitoba, Saskatchewan, and Alberta. Total area, 758,817 square miles (Manitoba, 251,832, Saskatchewan, 251,700, Alberta, 255,285). Population in 1929, 2,195,900 (Manitoba, 663,200, Saskatchewan, 886,700, Alberta (646,000). For production, etc., consult the articles on the respective provinces and on CANADA.

PRATT INSTITUTE. A nonsectarian educational institution in Brooklyn, N. Y., founded in 1887 and composed of four schools. Fine and applied arts, household science and arts, science and technology, and library science. The 1929 autumn enrollment was 4920, distributed as follows: Arts, 1704, household science, 910, science and technology, 2174, library school, 26. There were 183 members on the faculty and 36 special lecturers. The library contained 143,000 volumes. President, Frederic B. Pratt, A. M., LL. D.

PRAYER BOOK. See **ENGLAND**, **CHURCH OF**; **PROTESTANT EPISCOPAL CHURCH**.

PREHISTORIC MAN. See **ARCHAEOLOGY**.

PREHISTORY. See **ANTHROPOLOGY**.

PRESBYTERIAN CHURCH. The Presbyterian Church, with the Reformed churches, rests on features of the Reformation brought forward by Zwingli and Calvin. It consists of bodies in the United States, the British Isles, and elsewhere, following the doctrinal and ecclesiastical system developed in Holland and France and more fully in Scotland under John Knox. The distinctly Presbyterian bodies of the United States are derived for the most part from bodies in Great Britain, but are in many respects similar to the Reformed churches in the United States, sprung from parent bodies in other parts of Europe, and particularly in Holland. The following organizations in the United States bear the Presbyterian name. The Presbyterian Church in the United States of America, Presbyterian Church in the United States (South), United Presbyterian

Church of North America, Cumberland Presbyterian Church; Cumberland Presbyterian Church, Colored, Reformed Presbyterian Church, Reformed Presbyterian Church, General Synod, Associate Synod of North America, also known as the Associate Presbyterian Church; and the Associate Reformed Presbyterian Synod, The Presbyterian churches of the United States have general affiliations with the Alliance of Reformed Churches throughout the World Holding the Presbyterian System and also with the General Council of the Presbyterian and Reformed Churches in America, a similar organization of purely American scope Steps were taken at the meeting of the American section of the World Alliance at Richmond, Va., in 1925 to effect a union of the world and American bodies, and at the meeting at Pen Mar, Pa., in August, 1929, resolutions were adopted calling upon all presbyteries, synods, and general assemblies of the Presbyterian and Reformed churches to take definite action toward achieving absolute, organic union In Scotland, the union of the Church of Scotland and the United Free Church took place in Edinburgh in October, 1929, after 20 years of negotiation. The Very Rev John White of Glasgow was elected first moderator of the reunited church

PRESBYTERIAN CHURCH IN THE UNITED STATES OF AMERICA This is the largest body of the denomination and is represented by churches in every State of the Union and by official mission stations in Alaska, Cuba, Porto Rico, and foreign lands In 1929 the churches in the United States were organized into 46 synods and 296 presbyteries Statistics for the year ending March 31, 1929, showed a net gain in membership for the year of 41,029 and a total membership of 2,004,467 The Sunday-school enrollment totaled 1,595,313, a loss of 18,700 for the year, whereas for

the previous year there had been a gain of 17,496, As a result of the movement on foot to dissolve churches having a nominal existence and to combine churches where possible, the number was decreased by 71, giving a total of 9361, including 46 churches organized during the year, as against 121 which were dissolved The number of ministers in 1929 was 9906 Contributions during the year amounted to \$65,113,110, the largest amount ever raised by the denomination in one year and an increase of \$514,580 over the previous year Of the total income, \$49,450,086 was used for congregational expenses, while \$15,233,818 was devoted to benevolences, including \$4,404,123 given to the board of national missions, \$1,800,946 to the board of foreign missions, \$920,000 to the board of Christian education, and \$3,093,208 to miscellaneous benevolences The board of pensions received \$423,877 of the total contributions to benevolences and, in addition, \$2,239,914 from subscriptions to the \$15,000,000 endowment fund of the laymen's committee for the new service pension plan, making a total of \$8,264,081 received in three years.

The 1929 meeting of the general assembly was held May 23 to 29 in St Paul, Minn., the Rev Cleland Boyd McAfee, D D, LL D, of Chicago being elected moderator for 1929-30 The assembly authorized continuance of special emphasis on young people's work throughout the year and also evangelistic emphasis leading up to the observance in 1930 of the 1900th anniversary of the founding of the Christian Church Convancing the returns on overtures, it found that the proposal to eliminate willful desertion as a recognized cause of divorce was defeated, and a special commission was appointed to study further the entire subject of divorce and marriage Overtures also were sent to the presbyteries, to be acted upon

COMPARATIVE SUMMARY OF THE PRESBYTERIAN CHURCH IN THE UNITED STATES OF AMERICA FOR FIVE YEARS
[Year ends March 31]

	1925	1926	1927	1928	1929
Synods	46	46	46	46	46
Presbyteries	299	299	299	294	295
Ministers	10,017	9,990	9,961	10,013	9,966
Licentiates	241	214	215	225	194
Local evangelists	150	154	156	166	141
Candidates	1,258	1,214	1,294	1,246	1,207
Licensures	201	227	194	194	193
Ordinations	177	236	169	187	167
Installations	729	745	711	719	643
Pastoral dissolutions	652	657	641	647	613
Ministers received	159	115	114	132	96
Ministers dismissed	72	52	75	49	41
Ministers deceased	178	178	219	201	233
Elders	47,986	48,416	48,916	49,730	49,651
Deacons	19,324	20,498	20,908	21,462	21,577
Churches	9,649	9,565	9,497	9,432	9,361
Churches organized	72	57	64	51	46
Churches dissolved	129	129	105	78	121
Churches received	3		3	1	2
Churches dismissed	2	6		4	3
Every member-plan churches	6,352	6,342	6,424	6,424	6,281
Churches with stewardship instruction					3,630
With stewardship enrollment					992
Communicants					
Added on confession	107,691	110,715	90,416	106,545	113,995
Added by certificate	74,493	71,959	64,711	68,522	67,631
Restored	12,249	12,055	11,028	11,107	11,708
Dismissed, etc	59,437	61,328	54,557	55,996	52,221
Suspended roll	60,680	65,183	67,060	65,722	67,805
Deceased	21,707	26,370	22,182	22,960	25,257
Whole number	1,873,859	1,909,111	1,927,268	1,962,838	2,004,467
Net increase	42,931	35,252	18,157	35,750	41,629
Resident	1,737,657	1,776,680	1,777,828	1,816,104	1,859,614
Nonresident	136,202	130,431	149,440	146,734	144,853
Baptisms on confessions	37,818	45,580	31,017	35,454	36,720
Baptisms, infant	45,597	44,057	42,333	44,624	45,470
Sunday-school members	1,596,259	1,580,780	1,596,515	1,614,013	1,595,313

during the year, which, if adopted, would admit women members to equal rights with men as local evangelists, elders, and ministers. A special national loyalty commission was appointed to promote law observance, particularly as relating to the Eighteenth Amendment. The denomination maintains 52 colleges and 13 theological seminaries. Its official organ is the *Presbyterian Magazine* (monthly). Privately-owned Presbyterian periodicals are the *Presbyterian Advocate*, the *Presbyterian Banner*, and the *Presbyterian* (all weekly). The chief permanent officer is the stated clerk, who in 1929 was the Rev. Lewis Seymour Mudge, D.D., LL.D., 514 Witherspoon Building, Philadelphia.

PRESBYTERIAN CHURCH IN THE UNITED STATES (South) This division of the Presbyterian denomination covers the territory commonly known as the Southern States. It was composed in 1929 of 17 synods and 92 presbyteries, with 3581 organized churches, 2386 ministers, and 453,988 members. The ruling elders numbered 15,877 and deacons, 17,579. Contributions for the year were: Current expenses, \$10,423,182, a gift of \$21.38 per capita, and benevolences, \$4,361,974, a gift of \$10.53 per capita. In 1929 the church was supporting 434 missionaries in Africa, Brazil, China, Japan, Korea, and Mexico; these missionaries were assisted by 3177 native workers. In the six countries there were 44,481 church members and 71,489 Sunday-school members. The church maintains four theological seminaries, one training school for lay workers (white), one training school for lay workers (colored), 18 colleges, 13 junior colleges, 12 secondary schools, 19 mountain schools, two Mexican mission schools, and 15 orphans' homes and schools. The church publishes the *Presbyterian Survey* which is the medium of communication of all departments with the membership of the church. Privately owned papers of the denomination are the *Christian Observer*, *Presbyterian Standard*, and *Presbyterian of the South*.

The General Assembly of the Presbyterian Church in the United States met in Montreal, N. C., May 16, 1929. This assembly approved the basis of union with the United Presbyterian Church of North America recommending the submission of the plan to the presbyteries for their advice and consent. The ad interim committee on closer relations also was instructed to approach the Associate Reformed Synod, and an ad interim committee on union with all Presbyterian churches in the United States was appointed with the moderator, the Rev. William Ray Dobyns, as chairman. The next meeting of the assembly was to be held in Charlottesville, Va., May 22, 1930. The offices of the general assembly and bureau of vacancy and supply are in Dallas, Texas. The Rev. J. D. Leslie was stated clerk and treasurer in 1929. See REFORMED CHURCHES THROUGHOUT THE WORLD HOLDING THE PRESBYTERIAN SYSTEM, ALLIANCE OF.

PRESBYTERIAN CHURCH OF NORTH AMERICA, UNITED. A branch of the Presbyterian Church formed by the union of the Associate and the Associate Reformed churches (Secession and Covenanters) effected in Pittsburgh in 1858. It represents the earlier covenant and secession movements of the denomination in Scotland, from which it inherited whatever was distinctive in their views and usages. In organization and government it is in accord with other Presbyterian bodies, having the same courts,

session, presbytery, synod, and general assembly, and observing the same general methods of baptism, admission to church membership, and ordination to the ministry.

The general assembly convened in Pittsburgh May 29, 1929. On that date there were in the United States 11 synods, 57 presbyteries, 894 congregations, 908 ministers, 5016 ruling elders, and a church membership of 178,131. The total membership, including missionary fields, was 240,983. The Sunday-school enrollment was 176,397, while the young people's societies numbered 955 with a membership of 25,806. Contributions during 1929 totaled \$6,023,607, an average of \$33.81 per member and missionary contributions, \$1,949,606, an average of \$10.94 per member. Congregational expenses amounted to \$4,179,960, and the average pastor's salary was \$2489. New houses of worship were erected during the year at a cost of \$807,100 and the total estimated value of the church property of congregations was \$26,027,400.

The denomination supported 385 men and women in four foreign-mission fields and 365 men and women in homeland missions. It carried on medical work in 31 foreign hospitals and dispensaries, conducted educational work in 333 schools at home and abroad, maintained nine colleges and four theological seminaries at home and abroad, and reached 35,500 young men and women in its schools and colleges, from which more than 6000 were graduated. In 1929 the value of property and permanent funds of the mission boards was \$9,710,776, the value of property and permanent funds of the colleges, seminaries, and women's association was \$9,737,266, and the total value of property and permanent funds of the denomination was \$48,718,630. The official organ of the church is the *United Presbyterian*, a church-owned yet independent weekly, published in Pittsburgh. The moderator of the general assembly in 1929 was the Rev. John McNaughton, D.D. of Pittsburgh, Pa., and the stated clerk was the Rev. D. F. McGill, D.D., LL.D. of Bellevue, Pa.

PRESIDENTS, COLLEGE See UNIVERSITIES AND COLLEGES.

PRICES See BUSINESS REVIEW.

PRIESTLY MEDAL See CHEMISTRY, INDUSTRIAL.

PRIMITIVE METHODIST CHURCH See METHODISTS.

PRIMROSE, ARCHIBALD PHILIP See ROSEBURY, FIFTH EARL OF.

PRINCE, MORTON. An American neurologist and author, died Aug. 31, 1929, in Brookline, Mass. He was born in Boston, Mass., Dec. 21, 1854, and was graduated from Harvard University in 1875. He received the M.D. degree from Harvard in 1879, and the following year began the practice of medicine in Boston. From 1885 to 1913, he was physician for nervous diseases in the Boston City Hospital, and consulting physician after 1914. He was professor of nervous diseases at Tufts College Medical School from 1902 to 1912, and professor emeritus after 1912. In 1926 he became also associate professor of abnormal and dynamic psychology at Harvard University. He became editor of the *Journal of Abnormal and Social Psychology* in 1900. Dr. Prince was in Paris during 1918-19 as manager of the Massachusetts Soldiers' and Sailors' Information Bureau, and in 1915 he became chairman of the Serbian Distress Fund. For his service, he received a number of foreign decorations. Dr. Prince wrote *Nature of Mind and Human Automatism* (1885),

Dissociation of a Personality (1906); *The Unconscious* (1913); *The Psychology of the Kaver* (1915); *The Creed of Deutschtum* (1918). He also collaborated in the writing of *Nervous Diseases by American Authors*, *American System of Practical Medicine*, *International System of Electro-Therapeutics*. In 1920 Dr. Prince's collected works were published under the title *Clinical and Experimental Studies in Personality*. See **PSYCHOLOGY**.

PRINCE EDWARD ISLAND. A Maritime Province of Canada, the smallest province in the Dominion, situated at the mouth of the Gulf of St. Lawrence and separated by Northumberland Strait from the mainland of New Brunswick and Nova Scotia Area, 2184 square miles, population, according to the census of 1921, 88,615. Estimated June 1, 1929, at 86,100. The capital is Charlottetown, with a population of 12,347 in 1921. In 1927 the average daily attendance in the schools was 11,777. The chief industries are agriculture, stock raising, fishing, and the breeding of silver foxes. (For particulars of agriculture and livestock, see under CANADA.) The value of the fish catch in 1927 was \$1,367,807, as against \$1,358,934 in 1926. The gross value of manufactured products in 1927 was \$4,493,628. The revenue for 1927 was \$836,748 and the expenditure \$870,427. The bonded indebtedness of the province in the same year was \$1,933,000. The province is under a lieutenant-governor and a legislative assembly of 30 members, elected for four years, a property qualification being required in the case of one-half the members and the other half being elected by universal man and woman suffrage. Lieutenant-Governor in 1929, Frank R. Heartz, Premier and Attorney-General, A. C. Saunders, Secretary-Treasurer, W. M. Lea, Public Works, J. P. McIntyre, Ministers without Portfolio, J. Blanchard, P. Sinclair, B. W. Le Page, W. B. Butler, and J. F. McNeill.

PRINCETON UNIVERSITY. A nonsectarian institution of higher education for men in Princeton, N. J., founded in 1746. The total enrollment for the autumn of 1929 was 2489, of whom 2250 were undergraduates and 239 were graduate students and fellows. The faculty numbered 308, there were also 36 assistants and 34 administrative officers. In addition to several promotions and reappointments, E. I. Katzenbach, Attorney-General of New Jersey, was appointed lecturer in politics, L. A. Morrison, visiting professor of economics, and W. W. Swingle, professor of biology. Losses by death included Dean Henry B. Fine and Prof. C. R. MacInnes of the department of mathematics, Prof. H. C. Longwell of the department of philosophy, and Dr. J. M. Carnochan, university physician.

The endowment in 1928 was \$19,351,475, the total income, \$2,419,016, and the total expenditures, \$2,383,022. Requests during 1929 included \$100,000 from the late Charles H. Ditson to establish the Charles H. Ditson endowment for the musical interests of the university and \$100,000 from the late Percy R. Pyne to establish a chair in French literature. Among the gifts received were \$200,000 from the class of 1897 to endow a chair of astronomy, \$1,000,000 from the General Education Board in recognition of the extensive capital expenditure made by the university for buildings and research in the scientific field, thus enabling the university to restore that sum to its endowment fund, \$500,000 from D. B. Jones and Miss Jones for the erection and endowment of a

mathematics hall in memory of the late Dean H. B. Fine; \$500,000 from the family of the late James T. Walker, toward establishing a bureau of international finance, affiliated with the department of economics and contingent on the university's raising an additional \$200,000 for a professorship in international finance in honor of Dr. Edwin W. Kemmerer, and \$100,000 from L. W. Smith to permit an intensive study of the history of New Jersey and the publication of a series of monographs to be known as the *Princeton History of New Jersey*. The library in 1929 contained 620,000 volumes, exclusive of pamphlets, broadsides, and manuscripts.

New buildings planned and in process of erection during 1929 were the H. B. Fine Mathematics Hall, the T. N. McCarter Theatre, the Walker and 1903 dormitories, which will reduce to 15 per cent the number of students rooming off the campus, and Dickinson Hall, a new wing of McCosh Hall which perpetuates the name of the old recitation hall burned in 1920. The Fick Chemical Laboratory was formally dedicated in September, 1929. A reorganization of the freshman curriculum also was effected in 1929, a feature being the arrangement whereby freshmen with distinguished entrance records might elect sophomore courses. The expedition of the department of geology in Wyoming, financed by the W. B. Scott Fund, made discoveries of great importance to American paleontology and stratigraphy. President, John Grier Hibben, Ph.D., Litt.D., LL.D.

PRISON OUTBREAKS. See **CRIME**.

PRIZE FIGHTING. See **BOXING**.

PRODUCE. See **HORTICULTURE**.

PROHIBITION ENFORCEMENT. The subject to receive the greatest general attention, in the Prohibition debate of the year, was that of enforcement. It will be recalled that, during the presidential campaign of 1920, Mr. Hoover, the successful Republican candidate, promised that he would provide for the conduct of an impartial inquiry for the purpose of looking into the question of the enforcement of the Prohibition law. Early in 1930, a Commission was appointed, the scope of its work being extended, however, to include an examination of the enforcement of all law, not merely the Prohibition Amendment and the statutes affecting it. In the article **CRIME**, the details are presented concerning the make-up of this commission and the elaborate plans laid out by it for the conduct of its inquiry. While the year closed without any definite conclusions having been presented as to where the fault lay in the failure of public authority to enforce the Prohibition law, a preliminary announcement was made by Chairman Wickersham in July, 1929, which seemed to indicate along what general lines the final report would be made.

Speaking before the annual conference of State governors at Groton, Conn., Mr. G. W. Wickersham, chairman of the Law Enforcement Commission, asked for a division of authority and co-operative action between the Federal and State governments. Asserting that, because of lack of cooperation from the States, the Federal government had been compelled to carry the chief burden of Prohibition enforcement, Mr. Wickersham outlined his proposal as follows: (1) The national government was to attend to the checking of importation, manufacture, and the shipment in interstate commerce of intoxicants. (2) The States were to undertake the internal

police regulations to prevent the sale in saloons and speak-easies Mr Wickersham's statement contained the remarkable admission that Prohibition was not being enforced at the present time, when he said that, as a result of such a division of functions, "The national and State laws might be modified so as to become reasonably enforceable and one great source of demoralizing and pecuniarily profitable crime removed."

The reception accorded Mr. Wickersham's proposal was of mixed character. A number of the governors present at the conference indicated their hostility by insisting that State public authority was making every effort short of general compulsion to enforce the Prohibition laws, as they then stood. Andrew J. Volstead, father of the Volstead Act, declared that such a division of authority, in effect, would repeal the Eighteenth Amendment in wet localities. On the other hand, Seymour Lowman, Assistant Secretary of the Treasury, in charge of Prohibition activities, and Dr James M. Doran, Commissioner of Prohibition, gave their approval to Mr. Wickersham's programme. Mr. Lowman believed that it was imperative that the States become more aggressive and Dr Doran called for a clarification of Federal and State functions. It was apparent that, with the sort of division proposed, nullification on the part of the wet States was possible, particularly if Federal authority was not in a position to exercise the police power.

In December, it became increasingly apparent that White House councils were seriously divided as to the form which the final recommendations to be made by the Law Enforcement Commission would take. In March, in announcing his preliminary plans for the Law Enforcement Commission, President Hoover had declared that it was to be the work of the commission "to cover the entire question of law enforcement and organization of justice. It will also naturally include consideration of the method of enforcement of the Eighteenth Amendment and abuses which have grown up."

As the year drew to a close and no definite statement of policy had yet made its appearance from the Law Enforcement Commission, dry advocates became openly impatient. Their discontent was brought into the open, late in December, when it became plain that Senator Borah, one of the nation's outstanding dry leaders, was beginning to evidence serious dissatisfaction with the President's enforcement programme (or lack of any). This presaged a bitter fight on the floor of Congress, with the opening of the session after the Christmas recess, and it was apparent that party whips were failing in their efforts to bridge the ever-widening gap of disagreement. Senator Borah charged that many of the United States district attorneys were permitting flagrant and open violation of the liquor laws to go on without taking any steps to punish the guilty. Mr. Borah was understood to have stated bluntly to the President that enforcement was not sufficiently stringent because of "inefficient personnel."

It was generally understood that President Hoover was almost prepared to submit to the Congress the first recommendations of his Law Commission covering plans to relieve congestion in the courts, unification of broader patrols and transfer of the dry unit from the Treasury to the Department of Justice. By the end of 1929, criticisms of the public press became more open, some of them verging on hostility, when they taxed

the President with an attempt to avoid directly the issue in question. The whole machinery of the Law Enforcement Commission was looked upon by the more outstanding critics, notably the *New York World*, as a device for the purpose of side-tracking the bothersome question of Prohibition in a general discussion of the sanctity of the law, the adequacy of the courts, the police authorities, crime statistics, etc., etc. From all quarters as the year closed, there appeared demands for a frank facing of the issue, i.e., was or was not the Federal government prepared to admit that the Eighteenth Amendment could not be enforced in those areas where public opinion would have none of it?

THE JONES LAW. Early in the spring, Congress made another effort to strengthen the hands of public authority in the enforcement of the Eighteenth Amendment. On March 2, President Coolidge signed the so-called Jones Law, with its provisions for heavy penalties for all those persons engaged in the illegal manufacture, sale, and transportation of intoxicating liquors. The Jones Act itself was framed by the prohibition division of the Department of Justice, under Mrs. Mahel Walker Willebrandt. It contains two sections as follows:

Section 1. Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled: That wherever a penalty or penalties are prescribed in a criminal prosecution by the national prohibition act, as amended and supplemented, for the illegal manufacture, sale, transportation, importation, or exportation of any liquor as defined by Section 1, Title II, of the prohibition act, the penalty imposed for each such offense shall be a fine not to exceed \$10,000 or imprisonment not to exceed five years, or both. Provided that it is the intention of Congress that the court, in imposing sentence hereunder, should discriminate between casual or slight violations and habitual sales of liquor in which the offender attempts to commercialize such sale.

Section 2. This act shall not repeal or eliminate any minimum penalty for the first or any subsequent offense now provided by the said national prohibition act.

One of the principal arguments by the Drys, in the Senate debate, was that the measure was necessary for the enforcement of Prohibition in the large urban areas, certainly in New York, where it was generally estimated that there were 32,000 speak-easies in operation. The Jones Law met with immediate hostility, particularly in New York. Here, there was at once organized a lawyers' defense committee composed of prominent members of the New York City bar, who pledged themselves to defend free of charge all persons arrested for violation of the Jones Law. The committee was headed by Frederick R. Coussitt, Jr., later Republican nominee for the office of District Attorney of New York County. It characterized the penalties in the Jones bill as preposterous, called them un-American and wholly incompatible with the spirit of the country's institutions.

A statement issued by the committee is significant as indicating the character of nullification that is to be found in New York City. "It is felt that, if the Congress of the United States, under the spur of dry organizations, is prepared to imprison for five years any and all violators of a law which has created a legal offense which is not a moral wrong, lawyers who still believe in the Bill of Rights, can well afford to offer some of their time and energy in a purely professional capacity as a protest against such savage fanaticism." It is interesting to record that six months after

the passage of the law, New York City had not yet seen a single conviction under it. It is interesting to record, too, that in other cities throughout the country defense committees headed by young lawyers were springing up to fight to a finish the drastic penalties provided under the Jones Law. When the year ended, it was seen that the United States attorneys were employing "a wise discretion as to the character of the cases in which they were seeking indictments" (This last phrase is from an order to the United States attorneys by Mrs. Willebrandt, Assistant Attorney-General, who was in charge of Prohibition enforcement).

Another effort to strengthen the Prohibition enforcement machinery was the bill introduced by Senator Shepherd of Texas for the purpose of amending the Prohibition law to make the purchasers of whisky as guilty in the eyes of the law as the sellers. Senator Shepherd's device was simple. He called merely for the amendment of the national Prohibition Act by inserting the word "purchase" between the words "manufacture and sell," so that the law would read: "No persons shall on or after the date when the Eighteenth Amendment to the Constitution of the United States goes into effect manufacture, purchase, sell, barter, transport, import, export, deliver, furnish, or possess any intoxicating liquor."

The bill was referred to the judiciary committee and had not been reported to Congress, when the year closed.

PROHIBITION KILLINGS. One of the most important aspects of the Prohibition question arousing public attention during the year was the continuance of Prohibition killings. The public press and the floors of Congress carried on the debate heatedly, and the recurrence of Prohibition deaths, justifiable or not, over the year continued to excite public opinion. The Association Against Prohibition Amendment, in a pamphlet published in November, reported that the government estimate of 263 civilians or officers killed as the result of Prohibition was a serious understatement. It was their contention that the figure would exceed 1000, if a thorough canvass were to be made of all local records throughout the country.

The Treasury figures itemized 199 deaths, 145 of these being civilian deaths and 54 those of "dry" officers. This naturally does not take into account the many deaths as a result of State enforcement operations. Through 1929, according to the Federal Bureau of Investigation, the year-by-year killings were as follows: 1920, 6 agents and 5 civilians; 1921, 8 agents and 14 civilians; 1922, 12 agents and 13 civilians; 1923, 4 agents and 17 civilians; 1924, 2 agents and 22 civilians; 1925, 5 agents and 20 civilians; 1926, 6 agents and 17 civilians; 1927, 5 agents and 16 civilians; 1928, 7 agents and 10 civilians; 1929, 1 agent, and 8 civilians.

The Association Against the Prohibition Amendment insisted that, in this total, were to be included the deaths as a result of the activities of the Customs Service, the Coast Guard, and the Indian Service. The work of the Customs Service had resulted, up to mid-October, 1929, in 37 deaths, of which 26 were those of civilians and 11, those of agents. The work of the Coast Guard had resulted in 18 deaths, of which 12 were civilians and 6, those of agents. The work of the Indian Service had resulted in 9 deaths, of which 3 were those of civilians and 6, those of agents.

ADMINISTRATION. The report of the Assistant Attorney-General Mabel Walker Willebrandt, in charge of Prohibition enforcement, showed that, during the fiscal year 1929, 21,602 persons were sent to jail or prison for violating the Prohibition law for an average sentence of 147 days. The number of criminal Prohibition prosecutions instituted during the year was 56,786. Cases were terminated in four different ways, as follows: Convictions, 47,100; nolle prossed or discontinued, 4835; quashed or dismissed, 3043; acquittals, 1477. Thus, there were about 32 convictions to each acquittal. The aggregate of fines, forfeitures, and penalties imposed was \$7,476,300, and the total amount collected was \$4,200,000. There were 4885 trials by jury and 43,183 pleas of guilty.

Mrs. Willebrandt reported considerable gains in Prohibition enforcement by use of the padlock or injunction proceedings. There were 7455 petitions for injunctions, an increase of 1949 over the preceding year. Of these, 6303 permanent injunctions were granted, as compared with 3999 over the preceding year. Mrs. Willebrandt reported considerable success in the celebrated New York night-club cases. Of the 98 defendants in 22 clubs, 18 stood trial and, of these, 15 were convicted. The remaining 80 were sentenced on pleas of guilty. The total fines imposed aggregated \$18,660, total actual jail time, 125 months and 10 days, total jail time sustained, 138 months, total time on probation, 59½ years. In addition to the criminal cases, padlock actions brought closing orders aggregating 18 years. In Brooklyn, N. Y., 140 defendants were indicted in a conspiracy case. There, it was ascertained that "real whisky" of popular domestic and foreign brands was being manufactured by soaking in a solution of alcohol and distilled water shavings from barrels which had, in the distillery, contained whisky.

Mrs. Willebrandt declared that the control of various rum rows continued to be a significant problem in law enforcement. During the fiscal year 1929, 17 foreign liquor-running vessels were seized, of which 14 were forfeited. These 17 seizures constituted the smallest number in the last five-year period. It would appear, too, that the larger vessels were gradually abandoning the trade because of the increasing risk of seizure and that a greater portion of the captured foreign vessels was made up of motor boats. The Year Books have reported from time to time the witting of treaties between the United States and foreign nations under which Prohibition enforcement authorities were to receive the right under proper circumstances of boarding, search, and seizure of suspected liquor-running vessels within a distance of one hour's run from the coast of the United States. A complete list of the treaties of this character now effective follows:

Contracting Governments	Date of signing	Effective date
Great Britain	Jan. 23, 1924	May 22, 1924
Norway	May 24, 1924	July 2, 1924
Denmark	May 29, 1924	July 25, 1929
Germany	May 19, 1924	Aug. 11, 1924
Sweden	May 22, 1924	Aug. 18, 1924
Italy	June 3, 1924	Oct. 22, 1924
Panama	June 6, 1924	Jan. 19, 1925
Netherlands	Aug. 21, 1924	Apr. 8, 1925
Cuba	Mar. 4, 1926	June 19, 1926
Spain	Feb. 10, 1926	Nov. 17, 1926
France	June 30, 1924	Mar. 12, 1927
Belgium	Dec. 9, 1925	Jan. 11, 1928
Greece	Apr. 25, 1928	Feb. 18, 1929

From time to time, the United States government sought to strengthen the liquor-smuggling treaty of June 6, 1924, between Canada and the United States. Because the treaty permits the official clearance through Canadian customs of intoxicating liquor, the United States' view has been that it led to the illegal introduction of whisky into that country. In January, 1929, a conference between the representatives of the two governments was held in Ottawa, Canada, for the purpose, as far as the United States was concerned, of strengthening the treaty. This conference terminated without any favorable results having been obtained. Another question that had significant international repercussions was the sinking of the *I'm Alone*, a British schooner, by a Coast Guard vessel in the Gulf of Mexico in March, 1929. The *I'm Alone*, a recognized rum runner, was detected by the Coast Guard off the Louisiana coast on March 20.

The Coast Guard reported that the schooner was within boarding distance of the shore (an hour's run) as specified in the convention with Great Britain, above indicated. The vessel, upon its refusal to heave to, was pursued for two days and sunk on March 22, 215 miles off the Louisiana coast, with the loss of a seaman's life. The captain and the crew of the vessel were brought back to the United States in irons and accused of conspiracy to violate the Prohibition laws. Upon direct orders from Washington, the members of the crew were released on their own recognizance, and the captain of the boat was placed under a nominal bond of \$500. The Canadian government filed a formal protest, in view of the fact that the boat was under its registry, with the result that the case was referred to international arbitration as provided in the Treaty of 1924.

Mrs. Willebrandt resigned her post during the summer and on November 1, the White House announced the appointment of G. Aaron Youngquist, Attorney-General of Minnesota, to the office of Assistant Attorney-General, in charge of Prohibition enforcement. It was expected that Mr. Youngquist would head up the whole dry-enforcement machinery under the new scheme of Prohibition enforcement contemplated by Mr. Hoover, by which there would be combined in the Department of Justice the various Prohibition activities at that time in the Treasury and Justice departments. This last recommendation was largely held to be the result of the work of John MacNab of San Francisco, who was appointed by Mr. Hoover on October 1 to study and formulate the changes in Federal administration and judicial machinery for the more effective enforcement of the laws under the Eighteenth Amendment.

STATISTICS The Moderation League reported in October that its researches indicated that the rate of death from alcoholism under national Prohibition had increased over the rate under State Prohibition, in practically every State which had dry laws before the enactment of the Eighteenth Amendment. There follows here an analysis of these death-rates in the States which had Prohibition laws before 1920.

Alabama had Prohibition in 1915. The earliest census figures are for 1925, 1926, and 1927, showing alcoholic death rates of 0.9, 1.8, and 1.1 per 100,000 population. **Arizona** adopted Prohibition in 1914. The alcoholic death rate figures for 1926 and 1927 are 2.5 and 3.5, respectively. **Arkansas** adopted Prohibition in 1915, but in view of the fact that this State does not belong to the death registration area, figures were not available. **Colorado** adopted Prohibition in 1914, effective on Jan. 1, 1916. The rate was 3.0 in 1916 and,

in the ensuing years, it fell steadily to 0.8 in 1919. In 1920 it fell to 0.7. In 1922 it climbed to 4.2, dropping to 1.7 in 1925, then going up to 2.4 in 1927. **Florida** adopted Prohibition in 1918, effective Jan. 1, 1919. The rate was 1.4 in 1919, 1.0 in 1920, and 4.9 in 1927. **Georgia** adopted Prohibition in 1907. The 1922 rate was 2.5, the 1923 and 1924 rates were each 1.8.

Idaho adopted prohibition in 1915. The 1922 rate was 2.2, in 1926, 3.8, in 1927, 3.9. **Iowa** adopted Prohibition in 1917, effective Aug. 2, 1918. The rate in 1919 was 0.8, in 1920, 0.5, in 1927 it climbed to 2.1. **Iowa** adopted Prohibition in 1925. In 1923 the rate was 1.05 and in 1927, 2.2. **Kansas** adopted Prohibition in 1867. The earliest figure for alcoholic death rates was in 1914, when the rate was 1.3, in 1919, 0.2, since that time, the trend has been upward, the 1926 and 1927 rates being 1.8 and 1.4, respectively. **Kentucky** adopted Prohibition in 1919, effective July 1, 1920. The rate was 0.4 in 1920, but by 1927 reached 2.1. **Maine** the oldest Prohibition State, adopted Prohibition in 1858. The rate in 1910 was 2.8, in 1914, 3.5, in 1919, 1.7, in 1920, 1.3, in 1921, 3.1, in 1927, 2.1.

Michigan adopted Prohibition in 1917, effective May 1, 1918. In 1919 the rate was 1.1, in 1927, 4.4. **Mississippi** adopted Prohibition in 1908. In 1919 the rate was 0.6, in 1920, 0.3, in 1927, 1.4. **Montana** adopted Prohibition in 1916, effective Dec. 31, 1918. In 1919 the rate was 1.9, in 1920, 1.8, in 1927, it climbed to 8.1, the highest rate under national Prohibition. **Nebraska** adopted Prohibition in 1916. The rate in 1920, the first year available, was 0.5, in 1927 it reached 1.5. **Nevada** adopted Prohibition in 1918, but no rates were available for this State. **New Hampshire** adopted Prohibition in 1917, effective May 1, 1918. In 1919 the rate was 1.6, in 1920, 1.8, in 1927, 4.2. **New Mexico** adopted Prohibition in 1918, but rates were not available. **North Carolina** adopted Prohibition in 1916. The rate in 1917 was 0.9, in 1918, 0.5, in 1927, 1.3.

North Dakota adopted Prohibition in 1899. The 1924 rate was 1.0, 1925, 1.1, 1926, 1.9, 1927, 0.9. **Ohio** adopted Prohibition in 1918, effective May 27, 1919. The rate for 1920 was 1.2 and in 1927, 3.2. **Oklahoma** came into the Union in 1907 with constitutional Prohibition but no rates were available. **Oregon** adopted Prohibition in 1914. In 1918 the rate was 0.9, in 1927, 2.4. **South Carolina** adopted Prohibition Dec. 31, 1915. In 1918 the rate was 0.5, in 1927, 1.5. **South Dakota** adopted Prohibition in 1916. No rates are available. **Tennessee** adopted Prohibition in 1909. The 1917 rate was 1.0, 1927, 1.4.

Texas adopted Prohibition in 1918. No rates available. **Utah** adopted Prohibition in 1916, effective Aug. 1, 1917. The 1919 rate was 0.7, 1926, 2.5, 1927, 1.5. **Virginia** adopted Prohibition in 1914, effective Nov. 1, 1916. From 1917 to 1920, the rate varied from 1.0 to 0.7. The 1927 rate was 1.9. **Washington** adopted Prohibition in 1914, effective Jan. 1, 1916. The 1917 rate was 1.8, 1927, 3.3. **West Virginia** adopted Prohibition in 1912. The 1925 rate was 2.0, 1927, 2.8. **Wyoming** adopted Prohibition in 1918. The 1922 rate was 3.9, 1927, 5.8. In the District of Columbia, Prohibition went into effect Nov. 1, 1917. In 1918 the rate was 0.9, in 1920, 1.1, in 1927, 2.6.

On the other hand, the Metropolitan Life Insurance Company reported that, among its 18,500,000 industrial policyholders, the death rate from alcoholism in 1928 was 3.3 per 100,000, as against 3.5 in 1927. In 1928 there were 599 deaths among policyholders, resulting from acute or chronic alcoholism, as compared with 603 deaths in 1927. These figures (and the same is true of the discussion above) do not include deaths from poisoning from wood and denatured alcohols. Of the 1928 deaths from alcoholism, only 7 occurred in Canada among 1,200,000 insured persons, while there were 591 deaths among the 17,250,000 policyholders in the United States. In 1922-28, inclusive, deaths from alcoholism among the company's policyholders in the United States totaled 3459 and in Canada, only 37. The company estimated that, if the American rate had held in Canada, the total of Canada would have been 241, or a little more than six times the number that actually occurred.

In August, the Association Against the Prohibition Amendment issued a pamphlet which reported a steady rise in drunkenness and liquor deaths. The organization's report also contended

that there was an increase in alcoholic insanity, a larger number of cases of acute alcoholism in public hospitals, and more arrests for drunkenness. The report also declared that the number of pieces of distilling apparatus increased from 15,416 in 1920 to 261,511 in 1928, and that the gallons of liquor seized increased from 153,735 in 1920 to 32,474,234 in 1928. Arrests for drunkenness in 518 cities rose from 279,939 in 1920 to 608,324 in 1927. The association's figures showed that deaths from alcoholism per 100,000 population in the registration States were 5.5 in 1910, 6.3 in 1917, 3.1 in 1918, 1.9 in 1919, 1.2 in 1920, 2.0 in 1921, 3.0 in 1922, 3.9 in 1923, 3.9 in 1924, 4.4 in 1925, 4.7 in 1926, and 5.0 in 1927.

REFERENDUMS. Since November, 1926, Prohibition had been brought directly before the electorate in 10 States. In Illinois, by a vote of 3 to 2, in New York, by a vote of 3 to 1; and in Nevada, by a vote of 4 to 1, the electorate had petitioned Congress to amend the Volstead Act. In Massachusetts, the Wets carried 33 State senatorial districts out of 36, on the question of a petition favoring amendment. In Montana, a State enforcement act was repealed by popular vote in 1926 and in 1928 a referendum also defeated an alternative proposal to employ the Federal law as a State statute. In Wisconsin, two referendums were held, one in 1926, approving a petition to Congress to legalize 2.75 per cent beer, and the other in March, 1929, favoring the repeal of the State enforcement act. In the following four States, proposals to repeal the State laws were voted down: North Dakota, Colorado, California, and Missouri.

The New York *World*, in analyzing the figures in these popular votes, found that the wet victories have been won by wide margins, as in Illinois, New York, and Nevada, while the wet defeats have been produced by small margins. In Missouri, the Wets lost by votes of 4 to 3, in Colorado, by 5 to 4, in California, by 10 to 9, and in North Dakota, by 15 to 14. In the vote of North Dakota, particularly, the *World* found a refutation of the contention that moderation was essentially an urban sentiment. North Dakota in the Middle West is essentially a rural community, a thousand miles from the influence of the Atlantic seaboard. It has no cities and only one town of 20,000 population. It has been dry for 40 years, entering the Union with a dry law on its statute books in 1889. Yet, in 1928 this State showed that 48 per cent of the electorate was prepared to relinquish the State enforcement law. The *World* concludes:

It is ridiculous, in the face of every referendum, without exception, held on the Prohibition question in the last few years, to talk of dissatisfaction with Volsteadism as if it were something confined to the sidewalk of New York. Prohibition has failed so signally to command popular support that, in all sections of the country, save perhaps the South, there is either a majority or a ponderable minority ready to vote for moderation or repeal.

CANADA. Observers have found that Canada has succeeded in putting bootlegging out of business, as the result of the operations of the government liquor control administrations. For example, the Association Against the Prohibition Amendment found, in an extensive survey made public during 1929, that (1) The actual operations of government control have demonstrated that the liquor traffic can be so regulated as to prevent abuses which affect public welfare and morality, (2) that the liquor boards are enabled, because of their broad powers, to correct summarily any

disturbing conditions; (3) that organized bootlegging has been wiped out; (4) that the trend of drinking is toward wine and beer; (5) that the law is being generally supported by public opinion, (6) that intemperance has decreased, (7) that prison sentences for intoxication have increased, owing to stricter enforcement and heavier penalties, including mandatory jail terms.

This survey found that, in 1928, the total consumption of spirits was 4,105,982 gallons (in a population of 9,658,000), as compared with a consumption of 7,605,254 gallons in 1912 (in a population of 7,365,205). In 1912 per-capita consumption was 1.032 gallons, as compared with 0.425 gallons in 1928. In 1912, the consumption of wine was 898,389 gallons, or 0.122 per person, in 1928, the consumption of wine was 5,486,614 gallons, or 0.567 per person. Consumption of beer and ale increased from 48,970,003 gallons in 1912 to 58,625,673 gallons in 1928.

Under government control, it would appear that the rate of arrest for drunkenness for all Canadian provinces is now less than half of the pre-war rate and considerably well below the 1920 rate. Gross sale receipts of the liquor boards for the fiscal year 1928 totaled \$107,694,384, or more than \$10 per capita. In 1929, as a result of the action of Nova Scotia, only the Province of Prince Edward Island still clung to Prohibition. In the remaining eight provinces, Prohibition has been abandoned in favor of government liquor control. In October, in a popular referendum by a majority of at least 20,000 votes, Nova Scotia voted to repeal the Prohibition law and substitute government control. See NOVA SCOTIA, under *History*.

In Ontario, in the provincial elections in October, the Ferguson government, committed to the retention of government liquor control, was overwhelmingly victorious, returning 90 members to the House, against 21 members of other groups. Ontario, which is the richest and most populous of the Canadian provinces, instituted the system of government control in 1927. The victory of the Ferguson government, after a two-year trial of the government-control system, indicates that popular sentiment is definitely committed against state Prohibition. The Ontario system was devised after careful observation of the liquor-control associations of Quebec and the Western provinces. Liquor can be bought only by possessors of annual permits in sealed packages not to be opened on the premises. The government liquor stores are established only in those communities which want them and never in dry communities. See ONTARIO, under *History*.

Mention has been made above of the failure of the American and Canadian commissioners to reach an agreement looking toward the strengthening of the 1924 liquor treaty existing between the two countries. A statement issued in July by the Dominion Minister of National Revenue, W. D. Euler, while it did not point definitely toward the clearing up of the difficulties between the two nations, indicated that Canada was willing to help in keeping her nationals out of the business of running liquor into the United States. Mr. Euler, however, indicated that the responsibility rested to a large extent with the Americans and that the Canadian government was willing to consider reasonable measures to co-operate, if the United States authorities would first insist on clearances for their own boats. Mr. Euler was authority for the statement that practically 100 per cent of the rum runners were

American citizens. From 2 to 5 per cent of the liquor consumed in the United States comes from Canada. His statement said:

There is a remarkable condition to which the attention of the United States has been called, whereas we in Canada oblige all boats leaving our shores to obtain clearance, the United States has no such regulation. The boats engaged in the traffic leave the American shore without being obliged to obtain clearances. Thus, the United States have no effective check on their own boats and their own people engaged in violation of their own law. In my opinion, if they would follow the Canadian practice, they would have a means of control which would provide in a large measure the remedy for the conditions of which they complain.

Mrs. WILLEBRANDT on PROHIBITION. In a series of widely published newspaper articles, Mrs. Mabel Walker Willebrandt, United States Assistant Attorney General, in charge of prohibition enforcement from August, 1921, to September, 1929, dealt with a great variety of questions including the following: Is the Prohibition amendment law unenforceable? Is Prohibition enforcement effective? Who is responsible for the nonenforcement of the Prohibition laws? Are the best methods being employed in the enforcement of Prohibition? Should there be more rigid enforcement? What are the big leaks under Prohibition enforcement? Can our big cities be "dried" up?

Mrs. Willebrandt charged that politics was, to a large extent, the basis of the current dispute of the Prohibition laws. For many years, the Prohibition force was filled with unfit men and in the six years, 1920-1926, for example, more than 750 Prohibition agents were dismissed for delinquency or misconduct. There were notoriously poor appointments in high places under General Lincoln Andrews. In discussing the sources of Prohibition leaks, Mrs. Willebrandt added nothing new to current knowledge. Leaks from industrial alcoholism came first, border smuggling ranked second, and the operations of rum row were third.

That nullification was possible where the State authorities refused to cooperate with the Federal government was confessed by Mrs. Willebrandt. She cited the case of New York State, where, as a result of legislative repeal of the State enforcement law, the Federal authorities were left alone in the field and obtained no cooperation, or very little, from 2000 to 3000 State police, the 16,000 city police, 113 State Supreme Court judges, and the 62 county prosecutors. She approved the passage of the Jones Law with its rigorous penalties of five years' imprisonment and \$10,000 fine.

In conclusion, Mrs. Willebrandt charged that Prohibition was not being effectively enforced, often with and by the connivance and collusion of public officials. It was her personal opinion, after 10 years' experience in the work, that the Prohibition law was as much enforceable as the laws against burglary, murder, and embezzlement. She confessed that an articulate public opinion in the States and localities in favor of the law was a prime desideratum. "It is impossible for a comparatively small force of Federal Prohibition agents to do the work of local police in small boot-legging cases and when all such cases are diverted to the limited number of Federal courts, with only one or two judges in a large district, jury trials cannot be had for months or even years." In her programme, the former Assistant Attorney-General made the following concrete suggestions:

(1) The division of responsibility between Federal Government and State and local governments. (2) The concentration of the Prohibition enforcement machinery in the Department of Justice. (3) The employment of a higher grade of personnel. (4) The cutting off of bootleggers from the supply of industrial or denatured alcohol. (5) The cutting off of the flow of liquor from Canada and other points outside the United States. (6) The strengthening of the border patrol. This can be effected by the coordination and consolidation of the two patrols operating under the Commissioner of Customs and the immigration border control. (7) Elimination of political appointees and the placing of the Prohibition enforcement personnel strictly on a civil service basis. (8) The appointment of United States district attorneys and their assistants on the basis of legal fitness, integrity, and willingness to enforce the laws, instead of on a basis of political influence.

"When the majority of Federal Prohibition agents are men whose honesty and integrity are amply vouched for and who have brains and judgment, as well as special training for the collection of legal evidence by means that will not endanger lives or outrage the law-abiding citizens, Prohibition will gain 100 per cent in effectiveness."

A careful reading of Mrs. Willebrandt's proposals indicated that there was nothing novel in either her analysis of the situation or the recommendations she made.

SUPREME COURT. A Prohibition case of outstanding importance was decided during 1929, when the United States Supreme Court upheld a decision of a lower court in its ruling that the obtaining of evidence by the tapping of telephone wires was legal. The case arose out of the prosecution of a bootlegger named Olmstead, at Seattle, Washington. Most of the evidence against Olmstead and his gang was obtained by enforcement officials through the interception of messages over telephones. The wires of the violators were tapped just outside their homes, and the telephone lines leading from their office also were tapped.

The State of Washington had no law against the tapping of wires, and the case was fought on the grounds that the Federal Constitution prevented the obtaining of evidence in this fashion. The conviction of Olmstead was appealed to the Circuit Court of Appeals, where it was upheld. The Supreme Court of the United States had first denied a review of the suit, but finally it granted one. In its decision, the Supreme Court upheld the legality of the methods employed. Concerning the contention of the conspirators that wire tapping violated the Fourth and Fifth Amendments of the United States Constitution, the opinion of the United States District Judge sitting on the case is significant.

A man's house is his castle, the invasion of which was the evil prohibited without a search warrant, based on proper cause. These amendments [the 4th and 5th] do not make the walls of this house or castle coextensive with the limits of the city, State, or nation, and give immunity to criminals in carrying forward their unlawful schemes by telephonic activities. In the light of the evil to be averted which must be taken into consideration, the law cannot be given and the law-abiding people of the community placed at the mercy of criminals seated in their own homes, giving command and direction to conspirators throughout the city, State, or nation, and carrying forward the criminal activities. The people have some rights under these amendments as well as the criminals.

PROTESTANT EPISCOPAL CHURCH. A religious denomination representing the Anglican communion in the United States, of which the Church of England is the parent church, and which was brought to America by the Jamestown colonists in 1607. The first American service from its Book of Common Prayer, however, was held in the year 1579, on the first Sunday after Trinity, on the Pacific coast near the present site of San Francisco, when the Rev Francis Fletcher, chaplain of the fleet under command of Sir Francis Drake, conducted service, preached a sermon, and celebrated Holy Communion. The Virginia colony was permanently established with regular ministrations of the church in 1607, and, despite the absence of a colonial episcopate, the church, under English clergy, maintained a firm foothold for 170 years. In 1789 the first American bishop was consecrated in Scotland, and three years later two more were consecrated. The church completed its organization at a convention in Philadelphia in October, 1789, at which the constitution and name were adopted and the Book of Common Prayer was set forth.

The government of the church centres in a general convention which meets triennially, a convention having been held in Washington in October, 1928, and one was scheduled to be held in Denver in September, 1931. Between sessions, the affairs of the church are conducted by a national council made up of 16 representatives elected by the general convention, among whom there are four bishops, four priests, and eight laymen, supplemented by eight others named by the eight provincial synods. This council conducts its work with the aid of three major departments—missions, religious education, social service—and three others, finance, publicity, and field. The council is also the board of directors of the domestic and foreign missionary society, conducted through the department of missions and church extension. The presiding bishop of the church, elected by the general convention, is also president of the national council. The whole work of the church is incorporated in a general church programme adopted triennially.

In 1929 the total number of communicants was 1,267,016, an increase of 25,188 over the preceding year. There were also 6290 clergy, an increase of 53 over the preceding year, and the 15 theological seminaries of the church reported an increase of 37 in the number of candidates for the ministry. The total contributions to all causes within the church amounted to \$46,005,492, an increase of \$77,436 over the preceding year. There were more than 5000 church (Sunday) schools under the direction of 58,068 teachers, with an enrollment of 476,964 pupils.

Operating on a balanced budget, the church in 1928 reported total expenditures amounting to \$3,606,160. Of this sum, the total expenditure for missions, domestic and foreign, was \$2,697,664, divided in practically even amounts between the two fields. The foreign-mission field included Japan, China, Liberia, Mexico, the Philippines, Alaska, Hawaii, Brazil, the Canal Zone, Cuba, Porto Rico, Haiti, the Dominican Republic, the Virgin Islands, and Palestine, in addition, there were establishments in 10 important European centres. Domestic missionary activities included work among the foreign born, Indians, Negroes, mountaineers, and mill workers, in addition to a wide range of social service. American missionaries abroad numbered, men and women, respec-

tively, 147 and 181, native staff abroad, 1119 and 531; American missionaries in the United States, 457 and 90, native staff in the United States, 101 and 2, making a total of 2028 persons. During the year, 58 new missionaries were appointed. The church also maintains five colleges.

The National Council is assisted in its work by a group of cooperating agencies, including the Woman's Auxiliary, the Brotherhood of St. Andrew; the Daughters of the King, the Guild of St. Barnabas (for nurses), the Girls' Friendly Society in the United States (for girls and young women), the Young People's Fellowship (for young men and women), the Church Mission of Help, the Seamen's Church Institute, and the American Church Institute for Negroes. Official periodicals are the *Spirit of Missions*, *Church at Work*, *Findings in Religious Education*, and *Bulletins* of the national council, together with material dealing particularly with each department of the council. Several independently owned publications make an important contribution to the life of the church: *The Living Church*, *The Churchman*, *The Witness*, *The Southern Churchman*, weeklies, *American Church Monthly* and *The Chronicle*, monthlies. In addition, there are some 80 monthly diocesan publications in the home field and a score of others in the mission field.

In October, 1929, the first of the annual meetings of the House of Bishops, authorized by the previous general convention, was held in Atlantic City. The chief business of the session was the election of two missionary bishops, the Rev. Elmer N. Schmuck, D.D., was selected for the Missionary District of Wyoming and the Rev. S. Harrington Littell, S.T.D., veteran missionary in China, as Missionary Bishop of Honolulu. The resignations of the Rt. Rev. Boyd Vincent, Bishop of Southern Ohio, and the Rt. Rev. Robert LeRoy Harris, D.D., Bishop of Marquette, were accepted. A shadow was cast over the whole session by the death of the presiding bishop, the Rt. Rev. John Gardner Murray, D.D., at the closing meeting. The senior bishop of the church, the Rt. Rev. William A. Leonard, D.D., immediately issued a call for a special meeting of the House of Bishops in Washington on Nov. 13, at which meeting the Rt. Rev. Charles Palmerston Anderson, D.D., Bishop of Chicago, was elected presiding bishop to serve until the general convention in 1931.

The year 1929 was marked by the death of four bishops, besides the presiding bishop, the Rt. Rev. Charles Henry Brent, D.D., Bishop of Western New York and a world figure in peace and church-unity activities, who was succeeded by his coadjutor, the Rt. Rev. David L. Ferris, D.D., the Rt. Rev. Lucian Lee Kinsolving, S.T.D., first Bishop of Southern Brazil (1899-1928); the Rt. Rev. Davis Sessums, D.D., Bishop of Louisiana, and the Rt. Rev. Theodore Nevil Morrison, D.D., Bishop of Iowa, who was succeeded by his coadjutor, the Rt. Rev. Harry Sherman Longley, D.D. During the year, the Rev. II. P. Almon Abbott, D.D., was elected Bishop of Lexington, the Rev. Francis M. Tait, S.T.D., Bishop Coadjutor of Pennsylvania; the Rev. Harwood Sturtevant, D.D., Bishop Coadjutor of Pond du Lac, the Rev. Cameron J. Davis, D.D., Bishop Coadjutor of Western New York, and the Rev. Hayward S. Ablewhite, Bishop of Marquette.

In December, 1929, a call was issued for a meeting of the commissions appointed by the

Protestant Episcopal Church, the Presbyterian Church, and the Methodist Episcopal Church to be held in Atlantic City June 2-3, 1930, to discuss further a proposed platform for the ultimate union of these bodies. At this meeting the position of the communions also was to be considered on the following points: The relation of Church and State, war, international relations, industry, the family, marriage and divorce, racial relations, and law observance. The headquarters of the National Council are in the Church Mission House, 281 Fourth Avenue, New York City.

PROTOACTINIUM See **PHYSICS**

PROTOZOA See **ZOOLOGY**

PROVENÇAL LITERATURE See **PHILOLOGY**, **MODERN**

PRUSSIA, prûsh'â. A constituent republic of the German Republic, a kingdom of the German Empire until the October Revolution of 1918, proclaimed a republic Nov. 13, 1918. Capital, Berlin. Area, Apr. 1, 1925, 113,059 square miles, as compared with 135,134 square miles before the World War, population, according to the census of 1925, 38,120,178, as compared with 40,165,219 in 1910. The later figures for area and population are exclusive of the Saar district, Eupen and Malmédy, and the territory of Upper Silesia which was ceded to Poland, showing a loss to Prussia, as a result of the Treaty of Versailles, of 21,644 square miles and a population of 4,601,626. The movement of population in 1927 was Births, 738,824; deaths, 486,496; marriages, 343,245. The chief cities with their populations in 1925, according to the census of that year, are Berlin, 4,024,165; Cologne, 700,222; Breslau, 557,139; Essen, 470,524; Frankfurt-on-Main, 467,520; Düsseldorf, 432,633; and Hannover, 422,745.

The area under the principal crops and the yields in metric tons for 1927 were as follows: Wheat, 2,540,484 acres, 2,002,243 tons, rye, 8,812,115 and 5,138,645, summer barley, 1,901,853 and 1,487,209, oats, 5,757,981 and 4,388,726, potatoes, 4,578,707 and 24,873,668, hay, 6,933,106 and 11,435,426. In the same year, 40,292 acres of vineyards yielded 6,871,057 gallons of wine, valued at 40,605,858 marks (one mark equalled \$0.2376). On Dec. 1, 1926, the livestock included: Cattle 10,335,400, sheep, 2,379,700, swine, 13,781,400, goats, 1,684,400, horses 2,547,000, and poultry 49,682,142. The chief minerals are coal, lignite, iron ore, and salt. The railway mileage, which has been taken over by the Federal government, is about 19,500. The revenue and expenditure for 1928-29 balanced at 4,107,460,298 reichsmarks. Legislative powers are vested in the hands of the Diet and State Council, the members of the former being elected for four years by secret and direct ballot on the basis of proportional representation, the latter is elected by the provincial assemblies on the basis of one for every 50,000 inhabitants. Executive powers rest with the minister, which is appointed by the Prime Minister elected by the Diet. As a result of the elections of May 20, 1928, the following parties were returned: Social Democrats, 137, Centre (Catholics), 71, German National party, 82, National Socialists, 6, German People's party, 40, Democrats, 21, Communists, 56, Economic party, 21, German Hanoverians, 4, The Polish party, 2, Farmers' party, 8, German Race party, 2, People's Right party, 2, total 450. The Prime Minister in 1929 was Otto Brauns (Socialist, appointed Apr. 4, 1925).

HISTORY The Prussian Diet on July 9, 1920, ratified a treaty governing the relations between the State of Prussia and the Roman Catholic Church. Under the treaty, the Prussian government raised its endowment for the administration of the Catholic Church within Prussia from 1,400,000 marks, the sum formerly paid, to 2,800,000 marks (about \$672,000). It also agreed to continue to pay the salaries of the Roman Catholic clergy, totaling about 21,000,000 marks annually. The evangelical state churches receive similar subventions. The treaty provides that only German citizens educated in German schools and universities may be appointed to ecclesiastical posts and that candidates for appointment to the post of bishop must be politically acceptable to the Prussian government. It also provides for the creation of archbishoprics at Cologne, Breslau, and Paderborn and for the seating of two new bishops at Berlin and Aachen. For terms of the proposed merger of Prussia with the German Reich and for details of the negotiations with France for the return of the Saar coal mines, owned by the Prussian State, see **GERMANY**, under *History*; see also **VATICAN CITY**.

PRUSSIA, HENRY, PRINCE OF See **HENRY, PRINCE OF PRUSSIA**

PSITTACOSIS This strange and rare disease affecting birds and men came into evidence during the latter months of the year and provoked considerable discussion, as there seemed to be indications of its spreading. While this disease, the first case of which was reported from Germany in 1879, has been infrequent, during 1929 cases were reported in Europe and South America. Previously there had been recorded an epidemic of psittacosis in Paris in 1892 when parrots were fashionable pets, and subsequently cases occurred at intervals in Italy, France, and Germany, with but few in England and the United States.

The opinion was held by some scientists that the only cases of this rare and highly fatal malady had been reported among pets in homes or shops, none having developed in zoological parks or collections. The human cases have occurred as a result of intimate contact with infected birds, but the method of transmission from bird to man was not known. In fact, some scientists expressed doubt as to whether all cases pronounced parrot fever were due to infection contracted from parrots, as it was possible that cases of pneumonia or typhoid fever occurring in a home with a pet parrot might result in a report of parrot fever on the grounds of circumstantial evidence. This was particularly significant, as psittacosis in human beings presents the symptoms of pneumonia and also of typhoid fever. The patients suffer from extreme weakness, high fever, nausea, and intestinal disturbances. The disease is fatal in 35 to 40 per cent of the cases. In the parrot the disease is confined to the digestive system, but in man it is localized in the lungs. It seemed that generally the disease developed after direct contact with a sick bird, or under circumstances where the germs could be carried. At the end of the year research laboratories in various parts of the world were working on this disease which was attracting wide attention.

PSYCHIATRY See **PSYCHOLOGY**

PSYCHIATRY AND CRIME See **CRIME**

PSYCHICAL RESEARCH. Again a sharp distinction must be drawn between purported

mental phenomena and purported physical phenomena. Alleged mental phenomena include the presentation of knowledge not normally acquired, through telepathy, mediumistic deliverances, the handling of objects unknown to the psychic (psychometry), etc., the appearance of apparitions at or near the time of the deaths of the persons thus cognized or at the time of some significant and usually emotional event, and so on. Alleged physical phenomena include the corporeal reappearance of deceased persons, the production of a mysterious and protean substance called ectoplasm, which is supposed to issue from, and to be reabsorbed by, the body, telekinesis, or the movement of objects without contact, casts of spirit hands and feet, spirit photographs, the appearance of spirit writing upon slates, etc.

Not only are the two fields so sharply differentiated that skepticism regarding, say, the latter, logically should in no degree throw a shadow upon the former, as it in fact does in the minds of the majority, but also the distinction is emphasized by the reactions of investigators. There is, in regard to mental claims, a much nearer approximation to unanimity on the part of veteran investigators, that types are actual and certain outstanding cases valid, it is seldom that one who has spent years in the investigation of mental phenomena and has become convinced of certain types and certain cases, recants in either particular, and such differences as do exist in regard to actuality or mode of causation are usually discussed on calm academic lines. On the other hand, it is simply recording history to say that it is the commonest thing among subscribers to physical phenomena to be at war with each other as to which are the genuine cases, recantations are not infrequent, and it is almost the rule for argument to be carried on at least on one side, with bitterness and personal rancor.

Reviewing the literature of the year, one finds that, as hitherto, the writer of any report adverse to the claims of a physical medium is usually charged with prejudice and unfairness. One defender has covered much paper in ascribing to a dozen or more persons in disagreement with him, various shades of mental incompetence and moral obliquity.

It is not meant that all the leaders who accept the facts of the mental field agree in their theories of causation. They range from the writers who try to make telepathy the solvent of all types, to those who accept both the telepathic and the spiritistic hypothesis. Physical phenomena attract the major share of attention on the continent of Europe, while the tendency, with some marked exceptions, on the part of the more critical in Great Britain and America is to place emphasis upon mental phenomena. At the one extreme are certain writers so engrossed in telekinetic and ectoplasmic claims that they pay little heed to evidences in the mental field, at the other extreme are those who hold that the physical marvels are the product of sensory illusion through conjuring under favoring conditions, and that it is almost hopeless to get a hearing for the evidence in scientifically presented mental cases until the physical incubus has been finally banished. The divisions of opinion are hardly greater, however, than those of academic psychology, for example, between the introspective and psychoanalytic schools on the one hand, and behaviorism on the other.

Less spectacular, as the arts of peace are less

spectacular than those of war, the publications of the year relating to the mental field have made no great noise; but among the books which stand out for one or another reason, some critical and others less so, are the following: *Phantom Walls*, by Sir Oliver Lodge; *Comrades on the Homeward Way*, by Helen A. Dallas, *Our Sixth Sense*, by Charles Richet, *Case Studies Bearing on Survival*, by John F. Thomas; *Telka*, by "Patience Worth"; *The Case of Patience Worth* (2d ed.), by W. F. Prince, *The Life and Work of Miss Piper*, by Alta I. Piper, *James H. Hyslop—A His Book*, by Gertrude O. Tubby, *Telepathy and Spirit Communication*, by L. Margery Bazett, *The Projection of the Astral Body*, by S. J. Muldoon and Hereward Carrington, *L'Enigma de la Mort*, by E. Wiétrich, *L'Avenir et son Mystère*, by E. Wiétrich, *La Transmission de l'Esprit et Volonté* (partly physical), by E. Bozzano, *Die Psychometrische Begabung der Frau Lotte Plaatz*, by Dr. Paul Sumner Also, in *Proceedings, Society of Psychical Research*, "Report on Experiments with Mrs. Elliott," by J. F. Saltmarsh, and "Tests for Historicity," in a *Bulletin of the Boston Society for Psychical Research* in Theodore Besterman's "Report on a Four Months' Tour," of investigation in Europe (*Proceedings, Society for Psychical Research*), we learn that he was highly impressed by the work of Mme. Kahl, was so to a less degree by that of M. Fortuyn, and found M. Daumal's results suggestive but inconclusive.

Aside from the books *Erinnerungen aus Seances mit Kluski*, by O. Norbert, and relating to a medium much fought over in past years, and *Modern Psychic Mysteries, Millesimo Castle*, by Gwendolyn K. Hack (Preface by Bozzano), the ... of which were being fought over, ... of the year relating to physical phenomena was to be found mostly in the publications of societies. The chief subjects of battle during the year have been:

(1) The "mysteries" of Millesimo. These included such as the supposed bringing into the seance room by spirit agency of various objects, carrying the medium ... solid walls etc. Bozzano, chiefly ... the conduct of the sittings, was criticized by Rudolph Lambert, himself benevolently inclined toward physical phenomena, for gross neglect of precautions necessary to give the results any value. Count Solovovo, Mr. Besterman, and Miss W. H. Saltmarsh agreed with these criticisms, but *Light and Psychic Science* approved of Bozzano's indignant reactions.

(2) The trumpet medium, Valentine. Following a new burst of confidence in him, Professor Kroner, expecting to add another to the physical mediums who have impressed him, joined others in a series of experiments in Berlin and reported at length the indications which convinced him and the group that fraud had been employed throughout. Following the Berlin series, another was held in Genoa, with a similar conviction on the part of the investigating group there, which actually included some of the principals for and believers in Millesimo. Dennis Bradley of England attacked both groups in successive issues of *Light*, ... Valentine with great aid.

(3) ... Brothers, physical mediums of Austria. J. M. Bird reviewed the war in several issues of *Psychic Research*, recounting how Vincent, Prince, and he himself found indications of fraud, while Price, who is more fortunate than

most in such discoveries, found wondrous phenomena under supposedly perfect control.

(4) Margery of Boston This medium expressly declined to appear before any more scientific committees, and persons known to be suspicious were excluded from experimentation, hence the most that was written during 1929 was on one side The A S P R *Proceedings* was wholly devoted to advocacy of the case, and its *Journal* contains a number of articles of the same complexion On the one hand, the list of believers lengthened, and on the other, none of the obdurate have repented The moving agents, whether disembodied as held by one party, or corporeal, as believed by the other, were versatile, seeming resolved to leave no type of phenomena, physical or mental, unadorned Rather surprisingly, since the *Revue Métapsychique* was generally favorable to physical claims, one of its departmental editors expressed various reasons for doubting, followed by a reply from Dr Clandon and a rejoinder on the part of M Maire

(5) The . . . medium, Blaise, of Mantes, France Phenomena here had been quite noted for years, when M Maire and a friend visited the circle, discovered pantaloons under the draperies of the *so-disant* lady spirit, grabbed the spirit and found the medium, and were nearly murdered, according to their testimony, by the medium's friends, before they got out of the house A torrid controversy followed

(6) The discussion as to whether the famous horses and dogs which spell, solve arithmetical problems, etc., independently work out these results, get them telepathically, or in response to signals, this year concerned the horses, "Lady" and "Black Bear," and the dog, "Zou" Doctors J B and Louise E Rhine announced in the *Journal of Abnormal and Social Psychology* that their tests showed a faculty of telepathic reception by the horse "Lady," and that later, she lost it

There have been other minor conflicts, and the trip of Mr Besterman already referred to resulted also in further evidence emphatically adverse to the noted Fiau Silbert and in the complete exposure of the allied physical mediums, Molnar and Papp On the whole, it was a bad year for physical phenomena, while on the mental side, among accredited subjects, there was no scandal, but the addition of some good evidence together with a number of offers of evidence of little or no value, as usual

During the year, Dr Baron von Schrenck-Notzing, the leading protagonist for physical phenomena, died also Heri Karl Krall, of the Elberfeld "thinking horses," so-called, and Mr J Hewat McKenzie, a zealous English investigator

PSYCHOLOGY. NOTES AND NEWS The most significant event in the psychological world during 1929 was the Ninth International Congress held at Yale University, New Haven, Connecticut, September 1 to 7 It was the first time in the 40 years of the existence of the Congress that it met in America The total attendance was 1051, the largest group of psychologists ever assembled Twenty-one foreign countries were represented by from 1 to 22 psychologists There were 22 from England, 17 from Germany; 10 from the Union of Socialist Soviet Republics of Russia; 8 from the Netherlands, 6 from India, 5 each from Austria, France, Japan, and Switzerland, 4 each from Belgium and Poland, 3 from Italy;

2 from China, and 1 each from Australia, Brazil, Denmark, Egypt, New Zealand, Norway, Spain, and Sweden The president of the International Congress, James McKeen Cattell, delivered the opening address, "Psychology in America" This was followed by an address by Eduard Claparède, Secretary of the International Congress

As the annual meeting of the American Psychological Association was merged with the congress, the address of K S Lashley, president of the former, was one of the formal events of the congress "Basic Neural Mechanisms of Behavior" comprised a summary of the implications of his researches on the effects of cortical lesions upon learning and other mental functions

The work of the congress was divided into three parts a series of 79 formal papers was read at 11 morning sessions, a series of 31 symposia was conducted during the afternoons at which 370 papers were informally presented, and a series of eight lectures was given in the evenings by eminent psychologists The topics of the morning sessions were theory and history (2), comparative psychology, educational methods and technique, social psychology, child development, physiological psychology, personality, abnormal and clinical psychology, experimental psychology (2), industry and personnel

The symposia were arranged for the discussion of animal behavior, applications of psychology to methods of teaching, effects of drugs, industrial psychology, maladjustments, psychogalvanic reflex, theoretical psychology, character and personality, general intelligence, legal psychology, meaning and symbols, psychophysics, abnormal psychology, child development, eye movements, laboratory and teaching devices; memory and learning, . . . of music, race differences, nature of . . . personnel and physiological psychology, social psychology, statistical method, sleep, aesthetics; mental tests, motivation, reflexes, religious psychology, and sensation and perception

The evening lectures were delivered by Pavlov, Koehler, Michotte, Pieron, Stern, Ponzo, Spearman, and Thorndike Pavlov spoke in Russian (interpreted by Anep), Michotte, Pieron and Ponzo, in French, Stern, in German, and the others, in English

Prior to the congress, the foreign guests were entertained at the psychological laboratories of Columbia and Princeton universities, and after the congress, at Clark and Harvard universities Opportunities were afforded to many distinguished psychologists to visit and lecture at institutions in the East and Middle West It was decided to hold the next international congress at Copenhagen, Denmark, in the latter part of August, 1932

The research interests of 212 American psychologists were indicated in replies to a questionnaire concerning topics of discussion at a forthcoming meeting The order of preference for topics was in part as follows: Personality, the nature of a first course in psychology, mental tests, motivation, childhood and adolescence, feelings and emotions, abnormal psychology, individual differences, methods of learning Among the topics least preferred were Sensations of taste, smell, audition, and vision, aesthetics, language, mind-body problems and the introspective method These results were interpreted as showing a stronger technological than theoretical and experimental interest

The first number of the *Revue de psychologie concrète* appeared during February. This journal was intended to be the international medium of the "new psychology, to unify the criticisms against classical psychology, and to make firmer the foundations of psychoanalysis, individual and technological psychology, and characterology. The journal carried five departments—foundations of psychology, positive research; documentary studies; permanent problems, and reviews and bibliography.

The first Congrès International de psychologie appliquée was held at the Sorbonne Mar 21 to 27, 1929. Pierre Janet, Professor of the College of France, was elected the first president of this congress. The permanent association International de Psychologie Appliquée was organized with a central permanent committee comprising members from Germany, Belgium, Bulgaria, France, Italy, Netherlands, Poland, Rumania, and Czechoslovakia. The function of the organization was reported to be to bring together widely diversified interests within psychology and to draw scientists and men of action into closer contact. The work of the congress was organized into five divisions: General theory, methodology, and history; applications to learning; applications to business; applications to physical and mental therapeutics; and applications to social relations.

Announcement was made of the first International Congress on Mental Hygiene scheduled to convene in Washington, D. C., on May 5-10, 1930. President Herbert C. Hoover was chosen honorary president. The organization committee included representatives of 26 countries. Dr. William A. White, Washington, D. C., was chosen president and Clifford W. Beers, secretary-general. "It is the contention of those promoting the congress that mental hygiene has to do with the conservation of mental health in general, not merely with nervous and mental diseases. The point of view of clinical diagnosis and treatment will be considered, as well as that of administration of institutions and agencies."

In March, 1929, the initial number of the *Revue de la Science du Travail* appeared, it is the first publication in the French language to be devoted entirely to the technical applications of psychology. The founders and directors of the new publication are J. M. Lahy, France, a psychologist, P. Lallier, Belgium, a physician, and J. P. Atend, Luxembourg, an engineer. The journal was launched as a quarterly, to cover original articles and general reviews, new procedures in technopsychology, accounts of activities and organizations both at home and abroad, book reviews, and abstracts of periodicals.

The establishment of the Institute of Human Relations was announced at Yale University. Its purpose was described by President James R. Angell of Yale University to be "to bring together sociologists, biologists, psychologists, and economists, who will combine with their colleagues in such fields as law, medicine, and psychiatry to correlate knowledge of the mind and body, and of individual and group conduct, and to study further the interrelations of the many factors influencing human actions." The Institute of Psychology, already in existence at Yale University, was to function as a part of the Institute of Human Relations. The Rockefeller Foundation furnished \$1,500,000 for the construction of a building to house the institute.

The Sixth International Conference of Psychotechnic which was to have been held in Barcelona, Spain, on Sept. 25-29, 1929, was postponed until some time during the spring of 1930. This change of date was made because so many psychologists were planning to attend the International Congress of Psychology in America earlier in September and would have found it inconvenient or impossible to attend a second congress after so short an interval of time.

The National Vocational Guidance Association held its annual meeting in Cleveland, Ohio, February 20-23. Many problems of psychological interest found a place on the programme, particularly the question of personality and its measurement.

Announcement was made of the establishment of the Thomas William Salmon Memorial to be awarded each year to that individual anywhere in the world who has during that year made the greatest contribution in the fight against mental disease. The administration of the memorial rests with the New York Academy of Medicine. It was expected that the awards would provide for the wider dissemination of knowledge concerning mental hygiene and insanity. The late Dr. Salmon had been Professor of Psychiatry at Columbia University and Medical Director of the National Committee for Mental Hygiene.

The new York State Psychiatric Institute and Hospital, which is associated with the Medical Centre of New York City, was dedicated on Dec. 3-4, 1929, with a programme of scientific meetings. Among the guests from Europe who took part in the programme were Prof. Eugene Bleuler of Zurich, Prof. Henri Claude of Paris, Prof. Ernst Kretschmer of Marburg, Dr. Ernest Jones of London, Dr. David K. Henderson of Glasgow, Prof. Walter Spielmeier of Munich, and Prof. Constantin von Economo of Vienna.

Announcement was made of the establishment of the Institute de Recherches de Psychiatrie in connection with the Ecole des hautes Etudes, Paris. The institute was to comprise laboratories and lecture courses. The first series of lectures was to be on mental fatigue and diminution of the power of attention which underlie many psychopathic conditions.

The Social Science Research Council announced the establishment of a new publication, *Social Science Abstracts*, the first issue of which appeared about March, 1929. It was prophesied that about 15,000 articles would be abstracted the first year. The editor was F. Stuart Chapin, with headquarters at Columbia University.

Dr. Gustav Kafka, professor of psychology in the University of Dresden, was visiting professor of psychology at The Johns Hopkins University for the winter semester, of 1929-30.

Dr. Charlotte Buehler, professor of psychology in the University of Vienna, was visiting professor of psychology at Barnard College, Columbia University, during the winter semester, 1929-30.

On October 10, Prof. Carl E. Seashore, University of Iowa, celebrated the completion of his twenty-fifth year as professor of psychology. The chief events were the presentation by his former students of a life-sized portrait, and a commemorative volume of studies edited by Walter R. Miles and Daniel Starch, appearing as No. 178 of *Psychological Monographs*.

At the close of the academic year, 1929-30, Professor Mary Whiton Calkins, of the department of philosophy and psychology, Wellesley

College, retired from active teaching after 40 years of service. She was given the title of research professor.

Dr. Morton Prince (q v), eminent psychologist and neurologist, founder, owner, and editor of the *Journal of Abnormal and Social Psychology*, died on August 31. He was professor emeritus of neurology at Tufts Medical College. Among his best-known works were *The Nature of Mind and Human Automatism*, *The Dissociation of a Personality*, and *The Unconscious*.

The establishment of the National Institute of Psychology, incorporated in the District of Columbia, was announced in July. Its function was reported to be to conduct and promote research in psychology and other sciences and arts, and to promote the application of scientific facts to problems of life.

The *Psychological Register*, an international directory of psychologists, published by Clark University, Boston, Mass. (Carl Murchison, editor). The names were grouped according to countries. In addition to the customary biographical information, the *Register* contains the complete list (chronologically arranged) of the publications by each person.

GENERAL AND THEORETICAL PSYCHOLOGY. A survey of the field of theoretical psychology during 1929 shows a continuation of the controversy among the various schools. At the International Congress of Psychology held at Yale University in September, one of the most active of the many symposia was one devoted to the discussion of the "G" factor. This is the general factor in mental organization according to the theory of Charles Spearman, London. Numerous researches in the various laboratories, particularly in England and the United States, were directed toward the solution of the puzzle of general vs. special vs. group factors in mental organization.

The year saw the concept of the conditioned reflex actively extended from the simple reflexes studied by the physiologist to more strictly mental reactions. Attempts were being made particularly in Russia and the United States to give the concept a larger and larger place in mental development. On the other hand, the European countries were stressing an opposite trend, designated by Gestalt psychology and Intuitive psychology. While the concept of the conditioned reflex took mental life out of the stimulus-reaction units, the concept of Gestalt and Intuition (Verstehen) would find patterns of experience to be immediately perceived. The contrast was one between the study of the individual reacting as a whole and the study of specialized responses. There were signs of these controversial questions finding their way into textbooks of general psychology. R. H. Wheeler, for instance *The Science of Psychology* (New York, 1929), drew heavily from Gestalt psychology as "a means of reorganizing the facts of psychology in a way that may assist in removing the difficulties" (in introducing the status of psychology). R. S. Woodworth *Psychology: A Study of Mental Life* (rev. ed., New York, 1929) made much use of the conditioned-reflex concept, and the concept of reintegration systematically presented by H. L. Hollingworth, *Psychology: Its Facts and Principles* (New York, 1928).

Two noteworthy books published during the year testify to a growing interest in the laboratory type of psychology coordinate with the renewed interest in theory. *A History of Experi-*

mental Psychology, by E. G. Boring (New York, 1929) offered a comprehensive survey of the origin, growth, and present status of the experimental science. His treatment emphasized men rather than movements. The book filled a long-felt need for an adequate treatment of laboratory psychology. Somewhat in contrast to this was *The Foundations of Experimental Psychology*, edited by Carl Murchison (Clark University Press, Worcester, Mass., 1929). This was a collection of 23 surveys of specialized fields by as many authorities, about one-third of whom were not psychologists. For instance, "Heredity," was the subject discussed by T. H. Morgan, a biologist, "Hunger and Thirst," by W. B. Cannon, a physiologist, "Reaction," by Alexander Forbes, a physiologist, and "Chemical Senses," by G. H. Parker, a biologist. Although not a systematic survey of the whole field of experimental psychology, it represents one of the outstanding contributions of the year to that field.

A conference on experimental psychology was held under the auspices of the division of anthropology and psychology of the National Research Council in the spring of 1928. Its purpose was to study the peculiar difficulties under which the psychological laboratories labored in regard to the attack upon certain important problems. The conference led to the organization of a National Institute of Psychology. The ultimate purpose of the institute was to establish a national laboratory of experimental psychology with sufficient endowment to carry on long-time studies of certain selected problems, to provide fellowship facilities for research, and generally to promote the growth of scientific psychology. The institute was incorporated in the District of Columbia with a limited active membership of 50 experimental psychologists and with a few honorary members. In its articles of incorporation was the following statement of the purpose of the organization:

The particular business and object of the society is to conduct research in psychology and the other sciences and arts, to promote research in all suitable ways, to promote the application of scientific facts and principles to problems of life and welfare, to promote welfare and well-being in all ways consistent with the other purposes of the society, to hold scientific meetings, lectures, and discussions, to disseminate information through all or any appropriate means including radio and moving pictures, the manufacturing and publishing of books, monographs, journals, pamphlets, circulars, leaflets, and other vehicles of publicity, and to receive, hold, invest, and disburse funds for the support of research in experimental psychology and other purposes of the society.

SOCIAL PSYCHOLOGY. The problem of social psychology has come to be the study of the individual in the process of adapting himself to social, political, and economic institutions, while the social sciences concern themselves with the problem of such adaptation. Thus, the motivation of the individual in his reactions toward other individuals, toward his family, etc., as well as the reactions themselves have occupied the attention of investigators. Consult *The Motives of Men*, by George H. Coe (New York, 1928), *The Springs of Human Action*, by M. K. Thompson (New York, 1927), and *The Love of Superiority*, by Wayland F. Vaughan (New York, 1928).

One discordant note was struck during the year in the general trend noted above. Carl Murchison, in his *Social Psychology* (Clark University Press, 1929), discarded motivation and "drives" as logical fallacies and retained only the differ-

ences in the reactions of people as the basis of social life. Thus, in regard to ambition, he says (p 193)

It is usually supposed that ambition is a driving force in the affairs of men. It is so described in the drama, in romantic fiction, and in scientific literature. The fact, however, is supported by the fact that human life . . . great variation in the degree of success achieved by various individuals. It is usually supposed that this variation in degree of success is a direct result of variation in degree of ambition. Young men are usually classified as individuals who either possess a "drive" or who possess very little of it. . . . concerning eventual eminence and worldly success are based very largely upon the existing degree of the presence of this mysterious drive. There is no evidence, however, that such a drive exists. No one has made reported observation of it in any way. The only thing that can be observed is a great variation in the performance of individuals. It is this very fact of variation in degree of performance that suggests to the casual observer, the presence of some unseen drive to which is given the name *ambition*. . . . A description of the mere facts of inequality is all that can be used in support of the assumption of drives, and is in itself all that is necessary for an adequate description of social phenomena.

In the meantime, the bulk of the research that was done during 1929 was concerned with the measurement of the reactions of individuals and groups to each other, to institutions, to test situations, and the like. For a survey of methods, consult H. W. Odum and K. Kocker, *An Introduction to Social Research* (New York, 1929). As an illustration of the analysis of reactions to institutions, consult H. W. Drieser, *Psychology of Religion* (New York, 1929). For a study of the interaction of the individual and the group, consult G. R. Wells, *Individuality and Social Restraint* (New York, 1929).

As an illustration of the reactions of individuals to the artistic, consult M. J. Adler, "Musical Appreciation: An Experimental Approach to its Measurement" (*Archives of Psychology*, 1929, No. 110), and M. M. Meier, "A Measure of Art Talent" (*Psychological Monographs*, vol. 39, 1929). The studies of the differences among individuals, groups, nations, and races to test situations were numerous and varied. Many of these were directed to the measurement of personality as well as intellectual differences. (Consult P. C. Young, "Intelligence and Suggestibility in Whites and Negroes" (*Journal of Comparative Psychology*, 1929, vol. 9).) A great deal of effort was expended in the construction and perfection of tests for the measurement of social traits (consult, for example, L. L. Thurstone and E. J. Chave, *The Measurement of Attitude*, University of Chicago Press, 1929).

The Clark University Press announced a new periodical, *The Journal of Social Psychology*, under the editorship of John Dewey and Carl Murchison, with an international board of . . . editors. It was to be published quarterly . . . number to appear in February, 1930.

APPLIED PSYCHOLOGY. The year 1929 witnessed increasing recognition of the importance of the human factor in industry and business. Researches by the Personnel Research Federation into the causes of accidents in which vehicles are involved found the accident-prone individual to be a vital factor. It was found that an unduly large proportion of accidents were to be attributed to repeaters. Upon investigation of these cases, there were found to be only temporary handicaps in some cases, such as lack of skill, while in other cases there were constitutional defects, such as slow or irregular reaction time,

which clearly disqualified the individual for such service. Consult W. V. Bingham, "Personality and Public Accidents—A Study of Accident-Prone Drivers" (*Reprint and Circular Series of Personnel Research Federation No. 18, or Transactions of the 17th Annual National Safety Congress of National Safety Council*, 1928).

The annual conference of the Personnel Research Federation held in November in New York City was devoted to the psychological factors in industry. Studies reported by the Western Electric Company showed that, in the determination of output, the so-called mental factors, such as attitude toward the job, far outweighed in importance such factors as environmental conditions, hours of work, etc.

The influence of personality was further demonstrated in the work of V. V. Anderson in a large commercial organization, a report of which appeared in his *Psychiatry in Industry* (New York, 1929). Personality difficulties were found to be responsible for many cases of inefficiency. Some of these were corrected after readjustment of the individual, while others were found to be too serious for reconstruction. The need for due consideration of the human factor in industry, in terms of the personality of the worker, was the theme of *Human Nature and Management*, by Ordway Tead (New York, 1929).

The whole field of the applications of psychology to practical affairs was canvassed by H. E. Buitt in his *Psychology and Industrial Efficiency* (New York, 1929). Even here, heavy emphasis was laid upon the personality of the worker in creating efficient working conditions.

The National Institute of Industrial Psychology (England) continued its unusual service to business and industry and reported a number of its researches in the *Journal of the National Institute of Industrial Psychology*. C. S. Myers, director of the Institute, and his associates in *Industrial Psychology* (New York, 1929) presented a series of 12 papers on various aspects of industrial psychology. These papers reflected in a very effective manner the achievements of the institute during the last few years.

The process of measuring capacities and skills continued to play an important rôle in applied psychology. A convenient source of information in regard to the use of tests in vocational work will be found in *Vocational Psychology and Character Analysis*, by H. L. Hollingworth (New York, 1929).

ANIMAL PSYCHOLOGY. The most interesting development during the year in the field of animal psychology was the announcement of the construction of an ape farm in Florida to be conducted in conjunction with the animal research by the Institute of Psychology at Yale University. It was intended to provide adequate facilities for rearing and observation of anthropoids under conditions approximating the natural habitat of these animals.

As a part of the general project of research on the apes, R. M. Yerkes and A. W. Yerkes published *The Great Apes. A Study of Anthropoid Life* (Yale University Press, 1929). They say, "This volume is our attempt to share our laboriously achieved informational resources with all who may wish to acquaint themselves generally with the subject, to study aspects of it intensively, or to consult the relevant literature. Only incidentally does the volume support theses or present hypotheses, it is offered, in the disinter-

ested spirit of science, to promote knowledge and enlightenment through the encouragement of honest, painstaking, unprejudiced observation."

After a brief historical survey of our acquaintance with the anthropoid apes, there are sections dealing with the gibbon, orang-outan, chimpanzee, and the gorilla. The volume contains 172 excellent illustrations.

One of the important projects under way for several years in the animal laboratories of the United States, particularly at Yale, Columbia, and Stanford universities, namely, the study of sex development in animals, was continued actively during 1929. These studies took their significance from the fact that our knowledge of human sex development must rest largely upon research in the animal kingdom. Typical of the work done during the year was the study at the Yale University Laboratory, and financed by the committee for research in the problems of sex, National Research Council. It was reported in "Reproductive Behavior of the Guinea Pig," by C. M. Louthit (*Journal of Comparative Psychology*, 1927, vol. 7; 1929, vol. 9).

EDUCATIONAL PSYCHOLOGY The year 1929 witnessed a re-examination of the whole conception of the learning process. New discoveries and resulting new theories had made a reevaluation necessary. The studies of animal learning by the behaviorists, by the proponent of Gestalt psychology, by the champions of the concept of the conditioned reflex, and by the purposive psychologists have called into question the generally accepted laws of frequency, recency, primacy, and particularly Thorndike's law of effect. The application of the techniques of the animal laboratory to children presented the problem squarely before the educational psychologist. There has resulted a mass of discussion and research. Particularly noteworthy in the first class was the book by B. H. Bode, *Conflicting Theories of Learning*. It presented a clear statement of the various theories and their implications.

Laboratory studies in progress under the direction of Thorndike showed that, in the process of human learning, results increased as the rate of learning. These results were interpreted as the "connections" by a satisfying after-effect. These results were repetition without learning, and consequently without satisfying after-effect, produced little or no learning. (Consult "The Law of Effect," by E. L. Thorndike, *American Journal of Psychology*, 1927, vol. 39, also, M. B. Cuff, "The Law of Effect," *Journal of Educational Psychology*, 1929, vol. 20.) An annotated bibliography of recent work on educational psychology will be found in the *Psychological Bulletin*, 1929, vol. 26.

There was a continuation of activity in the development of measures of achievement in school work with a correlative examination of teaching techniques in the light of results disclosed by the tests. The first report of the use of achievement tests of college students on a grand scale appeared in the twenty-third Annual Report of the President and of the Treasurer of the Carnegie Foundation for the Advancement of Teaching (1929). Forty-four hundred seniors in 50 Pennsylvania colleges were tested in order to find out just what a college education teaches. The results were enlightening in many respects. Of more than casual interest were the comparisons of the various colleges as to the standing of their students in the tests.

In the primary and secondary schools, achievement tests have been developed and used for practically every school subject. The whole question of the relative value of the various measures of achievement has been dealt with in "A Critical Study of Measures of Achievement Relative to Capacity" (*University of Illinois Educational Research Bull.*, No. 45, 1929). For original reports of research upon tests of this nature, the reader should consult current numbers of the *Journal of Educational Psychology*, and the *Journal of Educational Research*.

ABNORMAL PSYCHOLOGY Of unusual interest in the field of abnormal psychology was the publication of the collected works of Morton Prince, under the title, *Clinical and Experimental Studies in Personality* (1929). The work was especially timely, as his death occurred in August. There is a preface and historical retrospect followed by a selection of basic papers covering a period of 40 years. With the death of Dr. Prince, the *Journal of Abnormal and Social Psychology*, which he founded and edited, passed into the hands of the American Psychological Association and its publication was to be continued by them.

The activities of psychologists, as distinguished from the psychiatrists, were concerned mainly with minor deviations of personality, their prevention, detection, and correction. The psychiatrists, too, have been particularly concerned with the same problems. The concentration of interest upon the normal is in strong contrast to that of earlier years in which the classical insanities occupied the field of attention. *Psychiatry in Industry*, by V. V. Anderson (New York, 1929) is a discussion of mild personality disorders such as are found in a large commercial organization. *The Adolescent His Conflicts and Escapes*, by S. I. Schwab and B. S. Veeder, represents an attack upon the same type of personality problem. Similar studies by psychologists were *Difficulties in Child Development*, by Mary Chadwick (New York, 1928), *The Process of Human Behavior*, by M. Sherman and I. C. Sherman (New York, 1929), and *Personality Adjustments of School Children*, by C. S. Zachary (New York, 1929). This latter work was particularly concerned with schoolroom problems. A more systematic discussion of the subject appeared in *The Child's Heredity*, by Paul Popenoe (Baltimore, 1929). A still more abstract treatment of the nature of normal and abnormal personality forms the subject matter of *Science and Personality*, by William Brown (Yale University Press, 1929).

A psychologist's interpretation of the more extreme deviations from normality was presented in "The Abnormal Individual," by S. I. Franz, being one of the chapters in *The Foundations of Experimental Psychology* (Clark University Press, 1929).

MENTAL TESTS The year 1929 was characterized by an examination of tests for validity and reliability and a searching for adequate concepts underlying tests more than by the construction of new tests. In the symposium on mental tests held during the International Congress of Psychology, 5 of the 30 papers were concerned with the *unit of mental measurement*, showing it to be the most important single topic offered for discussion. Nine other papers had to do with a critical examination of testing technique. In the symposium on statistical technique, all the papers were concerned with the treatment of test methods and results. Not a single new test of outstanding impor-

tance was presented at sessions of the congress.

The measurement of nonintellectual traits continued to receive the bulk of attention, particularly the measurement of interest. The urgent practical need for an adequate test of interest was felt in all vocational and school work. Stanford University reported that the interest test prepared by Cowdery and Strong had been standardized for the prognosis of interest in some 25 different occupations (see "Interests of Engineers: A Basis for Vocational Guidance," by I. K. S., *Personnel Journal*, 1929, vol. 7). The value of this interest test was discussed in "Diagnostic Value of the Vocational Interest Test," *Educational Record*, 1929, vol. 10.

Fred A. Moss, professor of psychology at George Washington University, designed a test, the purpose of which was to eliminate applicants for medical courses who would be likely to fail. Preliminary trial of the test in 22 medical schools gave hope that it would be more predictive of ability than present methods of choosing students.

R. H. Pavner, professor of psychology at Long Island University, reported some of his findings from the measurement of the mental reactions of drug addicts in various stages of addiction and treatment. The mental disorganization of individuals deprived of the drug appeared to be much less than was generally supposed to be the case.

One of the most significant and promising movements in the practical application of tests and measurements was inaugurated after two years of trial by the Educational Records Bureau, New York City. This is an organization for the administration of standard intelligence and achievement tests and keeping of records for school systems and individual schools. Over 100 independent schools had adopted the service at the end of 1929. Among the types of service offered by the bureau were the following: The administration of an annual testing programme in academic achievement and intelligence tests, the preparation of a cumulative educational history for each pupil on the basis of the tests, the comparison of any school with the work done generally by similar classes in other schools, and the comparison of the intelligence levels of the pupils of any school with the general level of similar schools. The service was being adopted by public schools, and according to the latest report a number of English preparatory schools had engaged the service. The comparison of schools, classes, and individuals from different countries would open new possibilities for a critical examination of teaching, etc. The bureau was not a commercial enterprise in any sense but was assisted financially by a corporation interested in educational progress. Its aim was to become self-supporting.

PUBLIC AFFAIRS, INSTITUTE OF An organization inaugurated in 1927 at the University of Virginia for the purpose of advancing the popular understanding of public questions and stimulating in the public mind a more vital interest in public matters, particularly the domestic problems of the United States. The attendance at the 1929 session, held from August 4 to 17, consisted of more than 200 delegates from Virginia appointed by Governor Byrd, 305 registered members from 34 States, the District of Columbia, the Philippine Islands, Porto Rico, Peru, Nicaragua, Panama, and Spain, and 737 registered guests, making a total registration of 1942. There was an average daily attendance at the round tables,

open forum discussions, and evening meetings of 1334. Membership in the institute is open to men and women who have taken part in public life and to those who are interested in any phase of public affairs, national, State, or local. Members may attend all lectures and addresses delivered during the session and any two of the round-table discussion groups.

The programme of the 1929 session was planned in accordance with the announced purpose of the institute to limit its discussions primarily to a study of governmental problems of national, State, and local concern and to certain economic and social conditions underlying them. However, since Latin-American affairs are so intimately connected with the economic and industrial progress as well as the National policy of the United States, a round table and open forum on this subject was introduced and proved one of the most interesting features of the institute, it was predicted that some phase of foreign relations would be a feature of each recurring session. The programme in 1929 consisted of eight round-tables, each of which met every other day during the two weeks, an open forum each morning, and addresses each evening.

Following is a list of the round-table subjects with their leaders: "The Country Life of the Nation," Dr. E. C. Branson, head of the department of rural economics and sociology at the University of North Carolina, "The Task of the Country Church," Dr. Henry W. McLaughlin, director of the country church department of the Presbyterian Church in the United States, "The Economic and Industrial Development of the South," Major LeRoy Hodges, major general of the Virginia State Chamber of Commerce, "Democracy as Operative in America," Dr. Thomas H. Reed, professor of political science at the University of Michigan, "Our Latin-American Relations," Dr. Clarence H. Haring, professor of Latin-American history and economics at Harvard University, "Law Enforcement," Dr. Raymond Moley, professor of public law at Columbia University, "The Press in Public Affairs," Dr. Victor Rosewater, former editor and publisher of the *Omaha Rec.*, "Problems in Contemporary Politics," Dr. William Starr Myers, professor of politics at Princeton University.

Speakers and topics at the evening sessions were as follows: "Legislative Farm Relief," the Hon. Carter Glass, "Tariffs as Trade Barriers," the Hon. Alfred Pearce Dennis, "The Passing of the Old United States," Dr. William E. Dodd, "A Realistic Approach to the Problems of Democracy," Norman Thomas, "Twenty-one Years of Rural Church Development," Dr. Warren H. Wilson, "Relations of the Church and the Press," the Hon. James I. Finney, "The Tariff," the Hon. David I. Walsh, "Farm Relief," the Hon. Tom Connally, "The Growth of the Chemical Industry," Dr. H. C. Parmelee, "The Newspaper and the Modern Age," Sherwood Anderson, "The Enforcement of the Eighteenth Amendment and the Volstead Act from the Point of View of the Individual States," the Hon. Albert C. Ritchie, "Prohibition," Stanley High, "Put the Liquor Problem up to the People," Wade H. Ellis, "The Policy of the South toward Labor," Dr. Matthew Woll, "The Government's Responsibility for Disrespect for Law," W. W. Cox, "The American Electoral Mission in Nicaragua," Maj.-Gen. Frank R. McCoy, "The Dilemma of Intervention," Dr. Henry Kittredge Norton, and "The Monroe

Doctrine," the Hon. Hugh Gordon Miller. The invited speakers, in addition to those who gave evening addresses, numbered 121.

The session of the institute in 1930 was to be held from August 3 to 16. The officers of administration in 1929 were Dr Edwin Anderson Alderman, president of the University of Virginia, Dr Charles Gilmore Maphis, dean of the summer quarter and director of the institute, and an advisory board composed of 29 prominent educators and recognized leaders in public affairs, selected from all sections of the country and from the two political parties. Headquarters are at the University of Virginia.

PUBLIC FINANCE, UNITED STATES. The management of Federal finance during the year 1929, brought few innovations, as compared with the preceding year, except to the extent that certain modifications toward the end of the 12 months were produced, as the result of the October panic. Of these latter, the chief features were the recommendation to, and adoption by, Congress of a measure making a reduction of about \$160,000,000 in income taxes, while previously (June 17) Congress had passed an act giving permission for the adoption of a new method of placing short-term loans through the issue of Treasury bills instead of certificates. The panic and the resulting conditions made it desirable to resort to this new method, and it was accordingly put into effect in December. Except for these changes, the year brought no alterations of law and few modifications of methods of operation.

The total ordinary receipts of the year, were about the same as during 1928, but income taxes furnished approximately \$250,000,000 more than during the preceding year, while there was a slight shrinkage in internal revenue, and a more than offsetting gain in customs. As compared with expenditures, the situation was slightly less favorable, there being a surplus of about \$188,000,000 for the year, as compared with \$398,000,000 for the preceding year. The reduction thus suffered was of little importance, inasmuch as the Treasury still showed an ample surplus while general conditions continued fully as favorable as they had been, except in so far as the stock-market panic might be thought likely to cause, during the year 1930, a reduction of Federal taxes from profits on sales of securities, as well as from the regularly imposed duties on financial transactions. Payments continued to be made as usual by foreign governments on their obligation, while the Treasury Department carried further its effort to collect tax arrears and to bring them as fully as possible up to date. There was a falling off in the receipts derived from sources of a temporary nature, and among them the back taxes

on incomes showed a decline of \$41,000,000, due to the fact that work was more nearly current, while refunds of about \$42,000,000 more than in 1928 were made from internal revenue. The repeal of the excise tax on automobiles (manufacturers' sales) cut taxes by \$46,000,000. In the accompanying tables, the general revenue situation is set forth.

ORDINARY RECEIPTS, EXPENDITURES CHARGEABLE AGAINST ORDINARY RECEIPTS, AND SURPLUS 1920 TO 1928

[On basis of daily Treasury statements (unrevised)]

Fiscal year	Total ordinary receipts	Expenditures chargeable against ordinary receipts	Surplus
1920	\$6,694,565,388	\$6,488,090,191	\$212,475,197
1921	5,624,932,960	5,538,909,189	86,723,771
1922	4,109,104,150	4,795,302,499	313,801,651
1923	4,007,115,480	4,697,478,020	109,657,460
1924	4,012,041,701	3,506,677,715	505,166,986
1925	1,780,148,684	3,529,643,446	250,505,238
1926	1,962,755,690	3,584,987,873	377,767,817
1927	4,129,494,141	3,493,584,519	615,809,622
1928	4,042,148,156	3,641,519,875	398,828,281
1929	4,013,250,225	3,848,463,190	184,787,035

It is interesting to note that customs duties again showed an increase coming almost up to the level of 1927, when they had stood at the highest point for many years. This was doubtless partly due to the fact that, during the campaign of 1928, tariff revision had been promised and that, in the special session of Congress which opened as soon as President Hoover had taken office, bills for the revision of the tariff were introduced. Such legislation almost invariably results in fairly heavy importations of goods designed to anticipate possible raising of rates. In the new tariff as it came from the House of Representatives at the beginning of summer, extraordinary increases were provided for and, for a time, it seemed likely that they would be enacted. The heavy importations continued accordingly until the year was well advanced, when it became plain that higher tariff rates probably would not become operative. Thereupon, a decline in the level of importations occurred and, during the later months of the year, customs receipts fell off. The new act, however, already had induced a sufficient enlargement of the trade to place duties at an exceptionally high level for the year, even when the recession of the later months was allowed for.

FEDERAL EXPENDITURES. Federal expenditures amounted in the aggregate to \$2,107,000,000, or about \$150,000,000 larger than those of the preceding year, which themselves had revealed a considerable falling off, as compared with 1927. A survey of the outlays for 1928 and 1929 sustains the opinion often expressed that Federal

ORDINARY RECEIPTS, FISCAL YEARS 1920 TO 1929

[On basis of daily Treasury statements (unrevised)]

Year ending June 30—	Customs	Income and profits taxes	Miscellaneous internal revenue	Miscellaneous revenues, including Panama Canal	Procedural	All other	Total
1920	\$122,902,650	\$1,941,949,288	\$1,460,082,287	\$74,296,622	\$892,314,542		\$6,694,565,389
1921	308,561,391	3,206,046,158	1,390,379,823	114,821,206	605,121,381		5,624,932,960
1922	356,443,391	2,008,128,193	1,145,125,064	75,232,068	464,185,439		4,109,104,151
1923	561,928,807	1,678,607,428	945,865,333	212,989,156	587,741,697		4,007,115,481
1924	545,637,504	1,842,144,418	953,012,618	221,774,675	449,475,887		4,012,041,702
1925	547,561,226	1,760,537,823	828,618,068	181,637,677	459,773,490		3,780,148,684
1926	579,130,093	1,992,040,088	855,599,289	194,237,957	351,448,263		3,962,755,690
1927	605,499,983	2,224,992,800	644,421,542	266,089,171	448,390,643		4,129,494,141
1928	569,000,000	2,173,400,000	621,000,000	205,000,000	468,900,000		4,042,148,000
1929	600,810,848	2,331,274,428	608,135,016	194,111,566	293,836,505		4,013,250,225

outlay had become fairly well stabilized of recent years. Among the factors which led to the increase already noted should be indicated the somewhat enlarged expenses for War and Navy resulting from the adoption of a larger programme of defense during the preceding year. Rather more money also was spent for the Veterans' Bureau. Among the ordinary executive departments, the one which received the greatest increase in appropriations was Agriculture. The accompanying tables show in detail the comparative development of the various items.

THE SURPLUS. What has just been said indicates the general conditions surrounding the position of the surplus which has given rise to so much controversy of recent years. For some time past there had been a feeling that too large a surplus was being habitually accumulated by the Treasury Department and that income taxes were being maintained at too high a level, notwithstanding the fact that business would profit greatly from curtailment of the tax burden. A review of recent experience shows that the annual

surplus reached its highest point in 1927, while 1928 reflected a decrease of rather more than a third in its amount. The change in income-tax legislation of two years previously cut this figure by rather more than one-half, leaving the balance for 1929 as already indicated. Of the total of about \$185,000,000 shown by the year's operations, about \$124,000,000 was applied to the retirement of public debt and the balance was carried forward as an increase in the net balance of the general fund, to be applied to debt retirement shortly after the beginning of the fiscal year 1930. Measured in terms of total receipts, the surplus for the year was only 4.58 per cent, and the income-tax reduction made by Congress at the close of the year was estimated (should receipts and disbursements be the same for the year 1930 as for 1929) to absorb practically all the remaining balance of receipts over expenditures.

This might bring about a rather different fiscal situation during the succeeding fiscal year. It is, of course, to be remembered, as usual, that the term "year," as used in this discussion, relates

EXPENDITURES CHARGEABLE AGAINST ORDINARY RECEIPTS

<i>General Expenditures</i>		1928	1929
Legislative establishment	\$	16,402,048 28	\$ 17,865,715 31
Executive proper		589,497 19	488,972 27
State Department		11,607,071 23	13,358,195 57
Treasury Department		195,648,941 27	199,502,209 95
War Department		390,540,803 49	413,999,436 52
Department of Justice		27,800,254 81	29,348,268 06
Post Office Department		276,692 81	43,048,196 27
Navy Department		731,335,491 98	366,183,984 33
Interior Department		298,999,534 09	300,948,612 39
Department of Agriculture		159,914,696 27	171,673,722 10
Department of Commerce		34,183,165 32	40,511,168 18
Department of Labor		9,821,480 97	11,352,031 91
Veterans' Bureau		401,124,893 17	418,534,704 92
Other independent offices and commissions		35,681,462 45	40,505,968 96
District of Columbia		39,399,622 44	39,718,470 08
Total		\$1,953,525,595 77	
Deduct unclassified items		198,554 39	
Total		\$1,953,327,041 38	\$2,107,009,577 82
Interest on public debt	\$	731,764,476 30	\$ 678,980,351 20
Refunds of receipts			
Customs		21,856,901 13	21,589,917 97
Internal revenue		148,286,060 13	191,416,012 86
Postal deficiency		32,080,202 46	94,999,734 06
Panama Canal		10,448,879 83	9,619,432 01
Operations in special accounts			
Railroads		619,721 67	1,804,267 75
War Finance Corporation		3,813,040 77	643,631 30
Shipping Board		34,881,713 16	16,053,045 16
War Relocation funds		351,151 52	546,466 66
Grain Corporation			
Sugar Equalization Board			
Purchase of obligations of foreign governments			
Adjusted service certificate fund		111,817,839 69	111,758,698 96
Investment of trust funds			
Government life insurance fund		61,701,568 44	52,069,885 46
Civil service retirement fund		109,272 28	19,975,087 26
District of Columbia teachers' retirement fund		513,917 75	521,557 32
Foreign service retirement		80,938 85	297,800 00
General railroad contingent		1,179,957 39	1,050,488 92
Total ordinary		\$4,101,264,854 83	\$3,302,047,233 29
Public-debt retirements chargeable against ordinary receipts			
Sinking fund	\$	354,741,800 00	\$ 370,277,100 00
Purchases from foreign repayments		19,068,000 00	671,150 00
Received from foreign governments under debt settlements		162,736,050 00	175,642,550 00
Received for estate taxes		1,500 00	
Purchases from franchise tax receipts (Federal Reserve and			
Federal intermediate credit banks)		618,397 05	2,933,400 00
Forfeitures, gifts, etc		3,089,803 25	159,708 75
Estate taxes			20,000 00
Total		\$ 540,255,020 30	\$ 549,603,703 75
Total expenditures chargeable against ordinary receipts		\$3,643,519,875 13	\$3,851,650,937 04
Surplus (+) or deficit (-)		+ \$398,828,281 06	+ \$187,805,631 04

to year ending with June 30. As against the reductions made by Congress in the income tax, it is further to be borne in mind that probably considerably less payment of back taxes would have to be made, during the succeeding year on ac-

count of the fact that public business was more nearly up to date, and that tax administration had become slightly more efficient

PUBLIC DEBT SITUATION Public-debt administration during the year resulted in carrying

PUBLIC DEBT OUTSTANDING JUNE 30, 1939, BY ISSUES

Detail		Amount outstanding
INTEREST-BEARING DEBT		
Bonds		
2 per cent consols of 1930	\$ 599,724,050 00	
2 per cent Panama Canal loan of 1916-1936	48,954,180 00	
2 per cent Panama Canal loan of 1918-1938	25,947,400 00	
3 per cent Panama Canal loan of 1961	49,800,000 00	
3 per cent conversion bonds of 1946-47	28,894,500 00	
2 1/2 per cent postal savings bonds (first to thirty sixth series)	16,887,180 00	\$ 770,207,110 00
First Liberty loan		
1 1/2 per cent bonds of 1932-1947		
Converted 4 per cent bonds of 1932-1947		
Converted 4 1/2 per cent bonds of 1932-1947		
Second converted 4 1/2 per cent bonds of 1932-1947	1,939,148,900 00	
Fourth Liberty loan—		
4 1/2 per cent bonds of 1933-1938	6,278,359,550 00	8,217,508,450 00
Treasury bonds—		
4 1/2 per cent bonds of 1947-1952	758,984,800 00	
4 per cent bonds of 1944-1954	1,036,834,500 00	
3 1/2 per cent bonds of 1946-1956	1,489,087,100 00	
1 1/2 per cent bonds of 1943-1947	493,037,750 00	
3 1/2 per cent bonds of 1940-1943	359,042,950 00	3,136,986,600 00
Treasury notes		
Series A-1930-1932	1,138,047,400 00	
Series B-1930-1932	100,313,550 00	
Series C-1930-1932	513,046,550 00	
Adjusted service—		
Series A-1930	15,000,000 00	
Series A-1931	53,500,000 00	
Series B-1931	70,000,000 00	
Series A-1932	124,400,000 00	
Series A-1933	114,400,000 00	
Series A-1934	127,700,000 00	
Civil service retirement fund—		
Series 1931	31,200,000 00	
Series 1932	14,400,000 00	
Series 1933	47,800,000 00	
Foreign service retirement fund—		
Series 1933	502,000 00	2,861,011,500 00
Certificates of indebtedness		
Series TS-1929	307,806,000 00	
Series TN-2-1929	202,818,000 00	
Series TD-1929	273,169,000 00	
Series TL-2-1929	452,197,000 00	
Series TM-1930	404,209,500 00	1,640,199,500 00
Treasury savings certificates		
Series 1924, issue of Dec 1, 1923	13,028,019 35	13,028,019 35
Total interest bearing debt outstanding		\$16,698,941,379 35
MATURED DEBT ON WHICH INTEREST HAS CEASED (PAYABLE ON PRESENTATION)		
Old debt matured—issued prior to Apr 1, 1917	1,914,180 26	
4 per cent second Liberty loan of 1927-1942	1,498,300 00	
4 1/2 per cent second Liberty loan of 1927-1942	8,108,550 00	
4 1/2 per cent third Liberty loan of 1928	20,453,400 00	
3 1/2 per cent Victory notes of 1922-1923	21,000 00	
4 1/2 per cent Victory notes of 1922-1923	1,702,450 00	
Treasury notes, at various interest rates, matured	619,900 00	
Certificates of indebtedness, at various interest rates, matured	12,872,700 00	
Treasury savings certificates	3,602,919 00	
Total outstanding matured debt on which interest has ceased		\$50,751,799 26
DEBT BEARING NO INTEREST (PAYABLE ON PRESENTATION)		
Obligations required to be reissued when redeemed		
United States notes	\$ 346,681,016 00	
Less Gold reserve	156,039,088 03	
	190,641,927 97	
U. S. notes "at will be retired on presentation"	53,012 50	
National bank notes and Federal Reserve bank notes assumed by the United States on deposit of lawful money for their retirement	45,337,150 50	
Fractional currency	1,991,560 04	
Thrifty and Treasury savings stamps, unclassified sales, etc	3,481,317 98	
Total outstanding debt bearing no interest		241,504,968 99
Total gross debt		\$16,931,197,747 60

further the programme which had been previously worked out and which involved constant payments into the sinking fund, with corresponding lessening of the total debt burden. Public-debt issues for the year, amounted to \$2,815,000,000, while retirements were \$3,488,000,000, so that the gross debt was reduced from \$17,604,000,000 to \$16,931,000,000, or a curtailment of \$673,000,000. This total reduction was composed of retirements of about \$550,000,000 and \$123,000,000 taken from the surplus, to which reference already has been made in a preceding paragraph.

The striking financial features of the year included the completion of the refunding of the Third Liberty Loan, which matured on Sept. 15, 1928. This was finally disposed of through the issue on July 16, 1928 (in the fiscal year 1929, therefore), of 3½ per cent Treasury bonds of 1940-43, followed by two issues of Treasury certificates of indebtedness at 4½ per cent and amounting, respectively, to \$549,000,000 and \$309,000,000. Other financing during the year was restricted to the usual quarterly issues of Treasury certificates of indebtedness. In the first quarter of the fiscal year 1930, Treasury certificates were offered at 4½ per cent, being dated Sept. 16, 1929, and being the first under the Act of June 17, 1929, which authorized issues exempt both as to principal and interest, from all taxation except State and inheritance taxes—a fact which led to a heavy oversubscription.

In the latter part of the calendar year, Treasury bills were issued dated December 15, under the Act of June 17, already referred to, permitting the Treasury to place these bills on a discount basis, i. e., to sell them at less than their face, the maturity resulting in the payment of a flat amount without interest, the discount having taken the place of the interest. This issue amounted to \$100,000,000 and was successfully floated, but the general attitude of the public toward the new method was still to be determined. It was announced that the purpose of the Government was not to displace the old system entirely, but rather to supplement it by the issue of small amounts of these bills when the need for funds between quarterly dates arises, and the need for funds coincided with a favorable condition of the money market. The table on page 707 states the position of the public debt at the latest available date.

TREASURY FINANCE The disposal of the Third Liberty Bonds, as already recalled, left the outstanding bond situation in a distinctly new position, with other maturities of long-term bonds considerably deferred, while the remainder of the World War financing, still left over, continued in short-term shape. For the years 1930, 1931, and 1932, very great redemptions were thought to be in sight, with the prospect of a need for continually renewed operations, while the market in the meantime became decidedly less favorable. Throughout the first ten months of the calendar year 1929, interest and money-market conditions were unfavorable, while the low rates of interest which succeeded the panic were recognized as purely artificial. The cost of Treasury financing consequently became heavier, relatively speaking, during the year and the necessity of relying largely upon the Federal Reserve System was continued, notwithstanding that that system was having great difficulties of its own in providing for the requirements of the banks of the country. The Treasury Department, however, having de-

termined to continue the war system of finance during the long-continued easy-money period after 1922, could not change it when money-market conditions became more difficult. It has, moreover, continued to expect the Reserve banks to maintain the value of government obligations by making a market for them, while the Reserve banks have found sales and purchases of Treasury obligations an easy way of "dumping" funds in the market, or withdrawing them, according to what may be deemed necessary. It seemed probable that this system of financing would be continued until some very unexpected and decided development should occur to check it. In that belief and owing to the steady decline of the amount of debt outstanding, as a result of regular redemptions through the sinking fund and out of surplus, government obligations became widely distributed among the banks and have obtained a sort of scarcity value there. This has not helped but has materially hindered efforts to get back to a sound method of dealing with the general market situation and of adjusting the banking position thereto.

BUDGET ESTIMATES The estimates of outlay for the years 1930-31 are herewith presented, with the usual comparison with former years. The statement as prepared by the Appropriations Committee foreshadowed a total of incomes and outgoes during the fiscal year 1931 expected to amount to \$5,915,000,000, or approximately \$21,000,000 more than the total shown in the general fund at the close of the fiscal year 1930 (June 30, 1930). No very material changes in expenditures were in sight. The tables on page 709 indicate the main facts of the situation.

This review of the state of things for two years and forecast for the ensuing year thus once again confirms the belief that Federal taxation conditions have become fairly well stereotyped and that income-tax reductions have probably about come to an end, in the absence, of course, of changes in the financial situation which cannot now be foreseen.

LEGISLATION, NEW AND PROPOSED As already mentioned, the legislative feature of the year from the Treasury standpoint was furnished by the recommendation of the Department, coinciding with the same recommendation, on the part of the President, that a cut in income taxes be made. President Hoover, in his message at the opening of the congressional session, recommended that "the normal income-tax rates, applicable to the incomes of individuals, for the calendar year 1929 be reduced from 5, 3, and 1½ per cent, to 4, 2, and ½ per cent, and that the tax on the income of corporations for the calendar year 1929 be reduced from 12 to 11 per cent." The President remarked, "It is estimated that this will result in the reduction of \$160,000,000 in income taxes, to be collected during the calendar year 1930. The loss in revenue will be divided approximately between the fiscal years 1930 and 1931. Such a programme will give a measure of tax relief to the maximum number of taxpayers, with relatively larger benefits to taxpayers with small or moderate incomes."

These changes were made by Congress in a measure passed prior to the holiday adjournment and the bill was immediately signed by the President, thus making it applicable to the tax returns to be filed early in 1930. Inspired by the fact that a serious panic had developed during the preceding autumn, the measure in question was hastily drafted and inevitably failed to pro-

SUMMARY OF RECEIPTS AND EXPENDITURES FOR THE FISCAL YEAR 1929
[On the basis of daily Treasury statements (unreversed) and estimated receipts and expenditures for the fiscal years 1929 and 1931]

	1929	1930	1931
Net balance in the general fund at the beginning of fiscal year	265,526,981	326,713,003	265,526,981
Receipts	4,033,250,225	4,249,263,434	4,225,727,666
Ordinary	2,309,293,135	1,318,466,844	1,424,187,034
Public debt			
Total	6,508,070,341	5,894,443,281	5,915,441,681
Expenditures			
Ordinary	3,998,859,486	3,393,716,700	3,467,614,700
Public debt chargeable against ordinary receipts	549,603,704	630,365,600	635,724,000
Other public debt	2,332,804,148	1,605,234,400	1,546,976,000
Net balance in the general fund at close of fiscal year	326,713,003	265,526,981	265,526,981
Total	6,508,070,341	5,894,443,281	5,915,441,681
POSTAL SERVICE			
Postal receipts	696,947,578	725,400,000	754,400,000
Postal expenditures	791,647,322	809,400,000	832,900,000
Deficiency in postal receipts ^b	94,699,744	84,000,000	78,500,000

^a Other public debt expenditures and public debt receipts, as shown in this statement, are exclusive of \$2,984,941,500 Treasury certificates issued and retired within the same fiscal year.

^b The postal deficiency for 1929 and the estimated postal deficiencies for 1930 and 1931 are included in the ordinary expenditure shown above.

GENERAL FUND OF THE TREASURY, JUNE 30, 1929

[Revised figures]

In Treasury offices			
Gold	\$175,568,898 06		
Standard silver dollars	18,364,967 00		
United States notes	2,271,041 00		
Federal Reserve notes	652,030 00		
Federal Reserve bank notes	88,154 00		
National bank notes	34,400 00		
Subsidiary silver coins	2,341,685 28		
Minor coins	3,002,465 78		
Silver bullion (at cost)	6,747,458 03		
Unclassified (collections, etc.)	1,166,997 26		\$209,238,696 40
In Federal Reserve banks			
To credit of Treasurer of United States	35,891,389 40		
In transit	6,864,737 78		
In special depository banks			42,756,127 18
Account of sales of Treasury bonds and certificates of indebtedness			356,841,912 95
In general and limited depository banks			
To credit of Treasurer of United States	\$ 7,202,830 19		
To credit of other Government officers	18,800,198 96		
In transit	2,407,912 75		
In foreign depository banks			28,410,941 00
To credit of Treasurer of United States	109,311 85		
To credit of other government officers	1,290,288 40		
In transit	373,319 91		
In treasury of Philippine Islands			2,172,940 16
To credit of Treasurer of United States	1,001,055 41		
In transit	3,027 79		
Total current assets			\$640,421,701 79
Deduct current liabilities			
Federal Reserve note 5 per cent fund (gold)	\$168,871,032 57		
Less notes in process of redemption	155,490 00		
National bank note 5 per cent fund	28,427,196 96	168,115,542 57	
Less notes in process of redemption	15,269,225 00		
Treasurer's checks outstanding		11,157,971 96	
Post Office Department balance		3,811,814 40	
Board of trustees, Postal Savings System, balances		59,813,372 53	
Balance to credit of postmasters, etc.		8,680,190 29	
Retirement of additional circulating notes (act of May 30, 1908)		60,929,119 18	
Uncollected items, exchanges, etc.		1,950 00	
		2,058,950 03	
			\$315,917,850 96
Balance in Treasury June 30, 1929			\$324,506,850 83

vide for the relief, most needed, from the inequalities of faultily prepared schedules in already existing income taxation. It seemed probable, therefore, that the next legislation that Congress would enact would be directed toward the rectification of these schedules rather than toward further net reductions in rates.

PUBLIC LANDS. See LANDS, PUBLIC

PUBLIC ROADS. UNITED STATES BUREAU OF SOILS, AGRICULTURE, UNITED STATES DEPARTMENT OF, ROADS AND PAYMENTS.

PUBLIC SCHOOLS. See EDUCATION IN THE UNITED STATES

PUBLIC UTILITIES. See FINANCIAL REVIEW

PUBLISHING. See LITERATURE, ENGLISH AND AMERICAN

PUGILISM. See BOXING

PULASKI COMMEMORATION. See CELEBRATIONS

PULITZER PRIZES. See LITERATURE, ENGLISH AND AMERICAN, THEATRE.

PULP, PULP-WOOD INDUSTRY See **FORESTRY; PAPER**

PURDUE UNIVERSITY. A State technological institution in Lafayette, Ind., founded in 1869. The main purpose of the institution has been to train men for service in the fields of engineering, agriculture, and applied science, and women in the fields of home economics and general science. The enrollment for the autumn of 1929 was 4026, of whom 3390 were men and 636, women; registration in the 1929 summer session was 564; and there were 390 members on the faculty. The endowment amounted to \$2,639,804 and the library contained 92,000 volumes. During 1929 a graduate school and a course in physical education for men were organized. President, Edward C. Elhott, Ph.D., LL.D.

PYROMETALLURGY. See **METALLURGY**
QUAKERS. See **FRIENDS, RELIGIOUS SOCIETY OF**

QUARANTINE, PLANT See **ENTOMOLOGY, ECONOMIC**

QUARTETS. See **MUSIC**

QUEBEC, kwā-bēk' The largest province in Canada and one of the four original provinces in the present Dominion of Canada, bounded on the west by Hudson Bay and Ontario, on the north by Hudson Strait, on the east by Labrador, and on the south by New Brunswick, the United States, and southern Ontario Area, as amended by the Labrador Boundary award, 594,434 square miles, population, according to the census of 1921, 2,361,199, of whom there were 1,038,128 rurals, 367,295 of British origin, and 1,889,090 of French origin, estimated June 1, 1929, 2,690,400. Capital, Quebec. The chief cities with their populations, according to 1926 municipal statistics are as follows: Montreal, 1,300,000, Quebec, 165,000, Hull, 35,233, Verdun, 42,247, Three Rivers, 35,000, and Sherbrooke, 25,021.

The area planted to crops in 1927 was 6,877,900 acres and the total yield was valued at \$144,273,000. Wheat, oats, barley, rye, peas, buckwheat, mixed grains, flaxseed, corn, potatoes, hay, clover, and alfalfa are the principal crops grown. For other statistics of production, see **CANADA**.

The mineral production of the province in 1929 reached a record valued of \$44,814,021 (including quarries), or an increase of \$7,488,734 over the previous high figure of \$37,325,287 in 1928. The province is exceeded as a mineral producer only by Ontario and British Columbia. The most important mineral products in 1929 were asbestos, with an output of 306,035 tons, valued at \$13,172,581, and copper ore, valued at \$10,019,901 (\$4,909,792 in 1928).

Quebec is the chief province in the production of pulp-wood, having more than half of the Canadian production. The total imports for consumption in 1927-28 amounted to \$305,065,204, total exports, \$362,860,712. The revenues for 1927-28 were estimated at \$31,000,000 and the expenditures at \$28,000,000. The public debt, as of June 30, 1928, was \$58,827,532. Quebec has 5267 miles of railway, including 400 miles of electric tramway. In 1929 the provincial department of roads maintained 10,195 miles of improved highways and constructed 1584 miles of new road. At the head of the . . . Lieutenant-governor appointed by . . . General of Canada,

who acts through a responsible ministry, legislative power is vested in a bicameral body, a council of 24 members appointed for life, and a legislative assembly of 85 members elected for five

years. Quebec is the only province in Canada in which women are not enfranchised or eligible for election to the legislature. Lieutenant-Governor in 1929, N. Pérodeau; Premier, Attorney-General, and Minister of Municipal Affairs, L. A. Taschereau; Lands and Forests, H. Mercier; Treasurer, J. Nicol; Secretary, A. David; Agriculture, J. E. Caron; Colonization, Mines and Fisheries, J. E. Perrault; Public Works and Labor, A. Galipeault; Roads, J. L. Perron; Ministers without portfolio, E. Moreau, L. Lapierre, J. H. Dillon, Alfred Leduc.

QUEEN'S COLLEGE. A college for women in Charlotte, N. C., founded in 1771, nonsectarian in purpose but under the direction of the Presbyterian Church. The enrollment for the autumn term of 1929 was 307. There were 30 members on the faculty. The income for the year amounted to \$130,000. The library contained 12,000 volumes. President, William H. Frazer, D.D., Litt.D.

QUEENSLAND. A state in the Commonwealth of Australia situated north of New South Wales, the second in size of the constituent Australian states. Area, estimated at 669,894 square miles, population, according to the census of 1921, 755,972; estimated, Sept. 30, 1929, 929,905. The movement of population in 1928 was: Births, 19,783, deaths, 7976, marriages, 6321. The immigrants in the same year numbered 68,894 and the emigrants, 65,031. Capital, Brisbane, with a population in 1928 (10-mile radius) of 308,580.

During 1927 there were 1738 state schools (including 13 high schools and 147 provisional schools) with 4296 teachers and an average daily attendance of 110,632. The total value of all crops in 1928 was \$12,709,041, as compared with \$14,503,791 in 1927. The principal crops are green fodder, sugar cane, corn, wheat, cotton, hay, and bananas. The total value of the mineral production in 1927 was \$1,045,991. Coal is also an important mineral product (1,099,040 tons produced in 1927) and among the other mineral products are copper, silver, tin, wolfram, lead, cobalt, etc. In 1927-28 the imports amounted to \$11,758,358 and the exports to \$21,854,945. For the fiscal year ending June 30, 1928, the net revenue totaled \$16,718,070 and the net expenditures, \$16,707,564. In 1928-29 there was a deficit from financial operations of about \$170,000. On June 30, 1928, the gross public debt stood at \$111,733,969 and the gross debt minus the accumulated sinking fund, at \$109,752,365. The registered shipping in 1928, consisted of 176 sailing vessels of 6651 net tons and 67 steamers of 17,428 net tons. In 1928, 6345 miles of railways were under operation.

Executive power is vested in the governor, who acts through a responsible ministry, and legislative power in the single Chamber or Legislative Assembly of 72 members elected for three years (the Legislative Council was abolished in 1922). Governor in 1929, Sir T. H. C. Godwin (appointed February, 1927); Lieutenant-Governor, W. Lennon; Prime Minister, W. McCormack.

HISTORY. After controlling the State of Queensland for 14 years, the Labor government headed by Premier W. McCormack was overwhelmingly defeated in the general election of May 11, 1929, and replaced by a coalition ministry of the Nationalists and the Country party led by A. E. Moore, the former leader of the Opposition. The chief issue was the Labor party's semi-socialistic

economic programme, which the Opposition charged had not only involved the state deeply in debt but also had prevented the development of its industries. Premier Moore later in the year announced that his government would sell to private interests all of the state enterprises except the State Insurance Department. He estimated the losses sustained through state operation at nearly \$20,000,000. See AUSTRALIA.

QUICKSILVER World production of quicksilver declined markedly in 1929, but the European cartel managed to keep price levels at about the same point as in 1928—from \$115 to \$130 a 76-lb flask. Consumption of the metal was probably not much lower than in 1928, but because of the slow liquidation of surplus stocks the output was only about 135,000 flasks, according to an estimate by *Engineering and Mining Journal* compared with about 150,000 flasks in 1928. Under these tying conditions, the Spanish and Italian producers who control the world output agreed to lower production rather than price. Spanish mines produced about 65,000 flasks and Italian mines about 42,000 flasks. Properties in the United States shared the benefits of the cartel, although not participating in it. Under the stimulus of continued high prices, output was about 21,000 flasks, compared with 17,000 flasks in 1928, and about 11,000 flasks in 1927. Nevada made the greatest strides of any of the States in quicksilver production, several new properties putting retort plants into operation.

QUINN, EDMOND, An American sculptor, died in New York City, Sept. 9, 1929. He was born in Philadelphia, Pa., Dec. 20, 1868, and was educated at the Pennsylvania Academy of Fine Arts, studied under Thomas Eakins and, in Paris, under Injalbert. Among his works are figures on Battle Monument at King's Mountain, S. C.; the statue of Zoroaster in the Brooklyn Institute of Arts and Sciences; the bust of Edgar Allan Poe in Poe Park, New York; the statue of Edwin Booth in the character of Hamlet at Gramercy Park, New York; the statue of T. C. Pemberton at Vicksburg, Miss.; busts of Chancellor Kent and Edwin Booth in the Hall of Fame, New York University; the Victor Herbert Memorial in Central Park, New York; and the World War Memorial in New Rochelle, N. Y. In 1915 he won the silver medal of the Panama-Philippine Island Exposition. He was a member of the Institute of Arts and Letters and an Associate National Academician. Mr. Quinn is represented in the Metropolitan Museum of New York.

RACING The sport of kings again showed that it is one of the most appealing sports by retaining its favor in 1929 and drawing huge throngs to the various tracks in the United States, Europe, Cuba, and Mexico. In no field, however, did an outstanding champion make his appearance. The Harry Payne Whitney Stable carried off honors in the matter of prize money won with the magnificent total of \$334,272. There seemed little doubt that Mr. Whitney possessed the juvenile champion of the year in one of two colts—Whirlone and Boojum. Whirlone captured the richest Futurity ever run at Belmont Park. Boojum might have won had he not bolted to the fence when he was far in front and had the race fairly clinched. The Futurity winner also won the Saratoga juvenile stakes, but Boojum took Whirlone's measure in the Hopeful. Neither raced after the Futurity, Whirlone being primed for the Preakness in 1930 and Boojum for the

Kentucky Derby. Another leading two-year-old was G. W. Foreman's Ned O that won the Walden. Flying Heels nosed out Spinach in the Pimlico Futurity, while Clyde Van Dusen won as he pleased in the knee-deep mud of the Kentucky Derby. Blue Licks, E. R. Bradley's horse, was generally recognized as the champion three-year-old, although beaten in the Kentucky Derby and in the Dwyer. He won the rich Withers and the Belmont stakes and took the Jockey Club Van Dusen in the Arlington Park stakes.

The Wheatley Stable's four-year-old Diavolo was unquestionably the best of the handicap division and a cup horse of rare quality as testified to by triumphs in the Saratoga Gold, Jockey Club, and Pimlico cup races. Walter J. Samlon's Display came back late in the season to place third among American money winners. Reigh Count, 1928 three-year-old champion, and that year winner of the Saratoga Gold, and Jockey Club cups, and the Lawrence Realization, which this year was captured by The Nut, tried for the Ascot Gold Cup in England but was beaten by the two-time winner—Invershin. The English Derby was taken by Trigo, while Hotwood won the Grand Prix de Paris. The Grand National Steeplechase went to Gregalach and the Thousand Guineas to Taj Mah. Trigo, owned by William Barnett, also finished first in the St. Leger stakes.

HARNESS RACING Whinnipeg, 1:57½, world's champion pacing gelding, led the fast brigade in both time and races won. He paced an exhibition mile at Grand Rapids, Mich., in July in 1:58½. He won at Toledo in 2:00 and won 11 races during the season without suffering a loss. The best time by a trotter was 2:01½ by Dewey McKinney at Syracuse in a memorable contest with his stablemate, Hazelton, 2:00½. A triple tie for time occurred in that the two, three-, and four-year-old records for trotters all held at 2:02½. Main McElwain won the first heat of the Lexington Stake in that time and Walter Dear, Hambletonian winner, won all three heats in that time. Gayworthy won at Lexington in 2:02¾.

RACQUETS, Huntington D. Sheldon, a young graduate of Yale University, was the sensation of the 1929 racquets season, conquering Clarence C. Pell of New York in the final round of the national amateur tournament played at the Racquet and Tennis Club in New York City in March. Pell had held the title nine times before bowing to the younger man. Ten days before his defeat at the hands of Sheldon, Pell had won the national doubles title paired with Stanley G. Mortimer, of Tuxedo, in the tourney at Chicago. The pair downed Howard Linn and Robert A. Gardner of Chicago in the final match. Pell also won the Gold Racquets championship for the ninth time at Tuxedo in late February.

In other court games, which have become increasingly popular of late, H. Morgan took the amateur court title, while the doubles event was captured by Jay Gould and W. C. Wright. Pierre Etchebaster, Basque and world's champion professional court player, successfully defended his crown at Philadelphia against the veteran Jock Soutar in January. J. Lawrence Pool, 2d, of the Harvard Club, played the amateur squash racquets title, the professional crown going to Charles Williams, of Chicago, formerly of England. Miss W. F. Howe Jr., of Weston, Mass., won the first holding of the women's national amateur tournament, defeating Mrs. George W. Wightman of Boston on the courts of the Har-

vard Club in Boston in February Rowland B. Haines retained the national squash tennis honors which he had held for the two previous seasons, defeating Dr Harold Mixsell, the national veteran's champion in the final of the tourney in March.

RADCLIFFE COLLEGE. A nonsectarian college for women in Cambridge, Mass., founded in 1879. The enrollment for the autumn of 1929 was 1103, distributed as follows: Regular students, 742, graduate students, 322, special students, 39. Instruction was given to the students of the college by 250 teachers from Harvard University. The first appointment of professorial rank under the new plan for appointments, supported in part by each institution, was that of Sidney Bradshaw Fay, formerly of Smith College, as professor of history. The productive funds amounted to \$4,804,486, and the income for college purposes was \$510,208. The library contained approximately 65,000 volumes, exclusive of pamphlets. During 1929 a lecture building, costing approximately \$600,000, was under construction to accommodate all classes except the science courses with laboratory. President, Ada Louise Cmonstock, Litt D., L. H. D., J. L. D.

RADIATION. See METEOROLOGY, PHYSICS.

RADIOBEACONS. See LIGHTHOUSES.

RADIO COMMUNICATION. The year 1929 was a very good one for the makers of radio receiving sets and proved that the popularity of radio in the home was still increasing. In spite of the unfavorable financial conditions in the last three months, there were more sets sold than in any previous years. These sets were mostly of the electronic type, using power from an electric-light socket, but differed from those of preceding years by the almost universal use of the "screen-grid" tube. This tube had an extra electrode between the grid and the plate, which had the effect of reducing the internal capacity of the tube, increasing the amplification factor and plate resistance and making neutralization easier. That is, making it possible to get a high degree of amplification without hown.

There also was introduced experimentally the "pentode," or five-electrode tube, with a screen grid about the main grid as well as about the plate, but this had not come into commercial use. There also was announced a new high-powered amplifier consisting of two tubes with which no transformer, or impedance, or resistance was required and thus the loss of energy and drain of current in any of these accessory devices were avoided. This was described under the name of the "Loftin-White Circuit."

The ever-increasing use of the "dynamic" or moving-coil loud speaker called for a much greater use of the larger high-power tubes and these have been manufactured on a large scale, and were standard products.

Many companies were manufacturing tubes of all kinds under various trade names, but mostly using the same standard number classification on the tubes according to their characteristics and application. These tubes were generally made under a license from the Radio Corporation, although there had been some court actions in the endeavor to avoid the requirement of a license.

The Radio Corporation of America divided its activities into two branches, that of maintaining radio telegraph communication, and that of manufacturing tubes and sets. The former was called

Radio Communications and an agreement has been reached by which it would be taken over by the International Telephone & Telegraph Co. if Congress would change the law which prohibited the combination on the ground of monopoly. The manufacturing business was merged with that of the Victor Talking Machine Co. as the Radio-Victor Co. which had its research and manufacturing headquarters at Camden, N. J. Later the General Motors Corporation came to an agreement with the Radio Victor Co. by which General Motors were to manufacture and sell radio receivers under the patents and licenses of Radio Victor.

The Radio Corporation also set up the Photophone Co. to engage in the business of making apparatus for talking moving pictures under Radio Corporation patents.

A number of the smaller companies in the business of making receiving sets were placed in the hands of receivers during the year as a result of overproduction and overconfidence.

There was general satisfaction among the listeners with the new assignment of wave-length channels, although the broadcasters themselves were not all so well pleased. Several cases were carried to the courts. WGY of Schenectady was successful in having full time awarded to it, while the municipal station of New York City, WNYC, was refused full time. The stations were maintaining more constant wave length as the result of improvements in the quartz crystal regulators. These were constructed to maintain the frequency within a range of plus or minus 50 cycles on either side of say 500,000 cycles.

There was a continued improvement in the programmes of the few larger broadcasting stations by the introduction of high-class artists, symphony orchestras, and opera companies. Noteworthy was the work of Dr. Walter Damrosch with his evening concerts for adults and morning concerts with musical instruction for the school-children of the whole continent. Unusual events were the programmes from London, Berlin and Vienna on Christmas Day to listeners in America. This came across the ocean on a short-wave channel and was re-broadcast by the National Broadcasting Co. on one of the popular channels, also the sending of the regular studio programmes from American stations to the Byrd Antarctic Expedition by means of special short-wave stations. For Education by Radio, see EDUCATION IN THE UNITED STATES.

Successful two-way radio telephone conversation was maintained between an airplane in flight and the ground, and in some cases, this conversation was relayed by wire and telephone. Regular ship-to-shore telephone traffic was established as a commercial feature with the two large steamships *Leviathan* and *Olympic* by two different companies.

Transatlantic telephony was very much improved by the addition of the new two-way short-wave circuit of the American Telephone & Telegraph Co. This operates at a wave length of from 16 to 35 meters, the shorter wave length being preferable in daylight, and the longer one at night. By use of a new directive antenna, an increase of 50 times has been obtained as compared with a simple antenna.

During the year there was reported an increase of 25 per cent in transoceanic radio messages over the preceding year by the RCA Communications, Inc. Particularly in November and December

there was a gain of 50 per cent because of the interruption of Atlantic cable traffic caused by the earthquake that severed the lines.

On Jan. 1, 1929, the Radio Corporation of America was operating radio telegraph circuits to Great Britain, France, Germany, Italy, Norway, Sweden, Poland, Holland, Belgium, Turkey, Brazil, Colombia, Venezuela, Porto Rico, Dutch Guiana, China, Japan, the Philippines, Dutch East Indies, French Indo-China, Dutch West Indies (Curaçao), Argentina, Canada, Cuba, Hawaiian Islands, and Liberia.

During the year new circuits were established to the Fiji Islands, Spain, Syria, and Costa Rica, and to these were added the company's first domestic radio circuit. This was opened on May 15 between New York and San Francisco. Besides the direct circuits, two important relay extensions were set up. A service was established to Albertville, Belgian Congo, by way of Brussels.

San Francisco operates directly with Manila, from which point extensions were set up to a number of islands in the Philippine group and the Asiatic Continent. Circuits were established from Manila to Hongkong and Shanghai in China, Osaka in Japan, Java, Dutch East Indies, Bangkok, Siam, and Saigon, French Indo-China. In addition to these eight feeder stations were established on islands of the Philippine group.

The corporation also reported that short-wave development had brought not only economy of apparatus but also economy of power. Transoceanic service was maintained on the short-wave circuits with one-tenth the power required ten years previously.

New direct circuits were planned to be opened during 1930 which would extend the RCA radio network to Russia, Czechoslovakia, and Chile.

RADIO FOG SIGNALS See LIGHTHOUSES.

RADIOGRAPHY. See PHOTOGRAPHY.

RADIUM. In 1929, as for a number of years, the radium industry was dominated by the Union Minière du Haut Katanga which, treating ores from the Belgian Congo, enjoyed a practical monopoly of production. It was stated that 40 grams of radium were sold by this interest in 1928, while in 1929 production was said to be at an even higher rate. In view of this monopoly the American industry had languished, but in other countries attempts were made to develop the mining and treatment and radioactive ores. In Russia it was stated that exclusive rights for such development had been granted to the Rjedkij Elementy. Various deposits in South and Southwest Africa also were under investigation, but little was accomplished in this region and lack of financing was given as a reason for the abandonment of further exploration. In Australia the Mount Painter radium deposits were being developed during the year, but no information was available as to results secured. The importance of an adequate supply of radium was evidenced in the report of the British Subcommittee on Radium published during the year, which tended to encourage the development of new radium enterprises that might make other nations and especially Great Britain, independent of the Belgian corporation. In 1929 there was incorporated the English Overseas Radium Merger, Ltd., with an authorized capital of £1,500,000 to develop an industry based on a merger of groups controlling radium-bearing ore properties in Cornwall, South Australia, and

Czechoslovakia. This syndicate was said to have acquired the mines and mining properties in the Mount Painter districts already referred to, various ore deposits and plants on Crow Hill, Cornwall, and various properties at Weipert, Czechoslovakia, adjacent to the radium mines at Joachimov which for a number of years were the leading source of radium. The plans of this organization included development of radioactive springs in the Fal Valley near St. Austell, Cornwall, England. In 1929 the United States imported 165 grams of radium salts valued at \$579,085 as against 169 grams valued at \$567,537 in 1928. For radium in medicine, see CANCER.

RADOSLAVOFF, VASHT A Bulgarian statesman, died in Berlin, Germany, Oct. 21, 1929. He was born in Lovec, Bulgaria, Mar. 11, 1854. He was connected with the government of Bulgaria as early as 1884, when he became Minister of Justice. In 1914 he was Premier, and in this position he was the leader in bringing his country into the Central European alliance at the opening of the World War. With defeat of the Central Powers in 1918, Radoslavoff fled from Bulgaria to Berlin. In his absence he was tried for high treason on the grounds that he and his cabinet had declared war without the assent of the Bulgarian parliament. He was condemned to life imprisonment and his property was confiscated. Though he escaped imprisonment by refusing to return to Bulgaria, the second part of the sentence made him a pauper. In July of 1929 he was granted an amnesty by the National Assembly, but at that time he was too ill to return. He wrote *Bulgarien und der Weltkrieg* (1923).

RAILROADS See RAILWAYS.

RAILWAY ACCIDENTS. The Interstate Commerce Commission, in its annual summary of accidents reported by the steam railways of the United States for the calendar year 1928, *Accident Bulletin No. 97*, reported 6509 persons killed as compared with 6821 in 1927, while the number injured was 85,561 as compared with 104,799 in 1927. The total number of persons killed in train accidents was 272, of whom 16 were passengers and 138 employees on duty; the total number injured was 2873, of whom 1404 were passengers and 1126 employees on duty. Accidents from collision, derailment, or other causes totaled 16,949, and the resultant damage to railway property was estimated at \$19,558,441. The total number of persons killed in highway grade-crossing accidents was 5800 in 1928, the largest number in history; the number of persons injured was 6666. Automobiles were involved in the case of 5046 of these accidents, resulting in the death of 2165 persons and injury to 6218 others. In 1927, 2371 persons were killed in highway grade-crossing accidents and 6613 were injured.

The annual report of the chief inspector of the Bureau of locomotive inspection to the Interstate Commerce Commission for the fiscal year ending June 30, 1929, showed that during the year there were 356 accidents caused by failure of some part of the steam locomotive, including boiler or tender, in which 19 persons were killed and 390 injured. In 1928 there were 419 such accidents, which resulted in the death of 30 persons and injury to 463, while in 1923 these accidents numbered 1348, resulting in the death of 72 persons and serious injury to 1560. This decrease has been largely the result of the cooperation of railroad officials and employees in

putting forth each year greater efforts to meet the requirements of the law

In Great Britain, the Ministry of Transport reported that the number of passengers killed in train accidents during 1928 was four times the average of the preceding eight years and that the number of employees killed was twice the eight-year average. According to these statistics, 48 passengers, 15 employees, and 9 other persons were killed in train accidents, and 716 passengers, 108 employees, and 71 other persons were injured. Of the 48 passenger fatalities, 41 were the result of the train wrecks at Darlington and Charfield. Train-service accidents and nontrain accidents increased the total number of persons killed in 1928 to 460 and the total number of persons injured to 24,324. In 1927, 435 persons were killed in all railway accidents in Great Britain and 25,403 were injured. The Board of Railway Commissioners of Canada reported, for 1928, 3013 railway accidents in which 445 persons were killed and 3193 injured, as compared with 2862 accidents in 1927 in which 353 persons were killed and 3091 injured.

Among the important railway accidents in the United States during 1929 were the following:

January 17. In a collision on the Pennsylvania Railroad at Shott Lane, Md., between northbound and southbound passenger trains, five employees were killed and 25 passengers, six mail clerks, and seven employees were injured. The primary cause of the accident was fog.

February 20. A broken rail caused the derailment of a northbound train on the Peoria Railway Terminal at Peoria, Ill., resulting in the death of six passengers and injury to 91 others. The train, consisting of eight wooden coaches, was loaded with miners on their way to work about 15 miles south of Peoria.

July 11. In a collision between a Cleveland-New York passenger train on the Erie Railroad and a derailed tank car of a westbound freight train near Corning, N. Y., six persons were killed.

July 18. The Colorado Express of the Chicago, Rock Island & Pacific Railway was derailed while crossing a bridge near Stratton, Colo., eight passengers and two Pullman porters being drowned and 80 others injured. The cause of derailment was the weakening of the track at the eastern end of the bridge by a flooded arroyo.

August 18. A St. Louis-San Francisco passenger train en route from Fort Worth, Tex., to Kansas City, Mo., struck an open switch and was derailed at Henryetta, Okla., causing the death of 13 persons. Investigation showed evidence of malicious tampering with the switch.

November 11. The Ponce de Leon Express of the Southern Railway was derailed at Glenmary, Tenn., four persons being killed and 50 others injured. It was conjectured that some part of a truck had become detached and caused derailment of the following car.

December 2. A derailment at Onley, Va., on the Norfolk division of the Pennsylvania Railroad caused the death of eight passengers and a brakeman and an injury to 40 others.

The significant European railway accidents of the year were the following:

January 8. An express train from Bristol to Birmingham cut through a freight train which was being switched at Aschurch Junction, near Tewkesbury, England. The engineer of the express and three passengers were killed and 25 others were injured.

January 16. In a collision near Turnu Severin, Rumania, of a Paris to Bucharest express 14 persons were killed and 40 or more injured. The wreck took fire from a gas tank, and most of the 14 victims were burned to death.

March 20. In a collision between westbound and eastbound passenger trains of the Canadian National Railways at Droccourt, Ont., 17 persons were killed. Most of the victims were in the passenger car of the westbound train which was derailed by the collision.

April 5. A passenger train was derailed near Busau, Rumania, four coaches falling down a bank and being piled one on top of the other. The disaster resulted in the death of 20 persons and injury to 60 others.

April 17. In a collision between the Paris-Brussels Express and a freight train near Hal, Belgium, 10 per-

sons were killed and 20 injured. The primary cause of the accident was fog.

June 19. A passenger train was wrecked near Grammont, Belgium, 12 persons being killed. The alleged cause of the accident was weakness of the roadbed.

July 4. In a collision at Plascon, Poland, 19 persons were killed and 35 others injured.

August 25. In a collision between the Vienna-Rome Express and a slow train from Loufarn, five persons were killed and 20 others injured near Schwarzbach St. Veit, Austria.

August 25. The Paris-Warsaw Express was wrecked at Bruir, Germany, resulting in the death of eight persons and injury to 80 others. The train consisted of 10 cars, seven of which were derailed.

September 25. A derailment of an express train from Moscow to Siberia in the Viatska district caused the death of more than 30 persons and injury to a considerable number.

RAILWAYS The O'Fallon decision by the United States Supreme Court fundamentally affected the possible price of railroad securities, especially stocks, in that it directed the Interstate Commerce Commission to give weight to present prices in determining the value of railroad properties on which value earnings of less than 6 per cent were to be retained by the companies carrying the railroads and above 6 per cent were to be divided with the government.

The O'Fallon decision was rendered by the Supreme Court in May, 1929. It was a test case submitted as such by agreement of both sides. The exact name of the case was the St. Louis & O'Fallon Railway Co. v. Interstate Commerce Commission.

The Transportation Act passed by Congress and made a law in 1918 provided that the Interstate Commerce Commission should fix freight and passenger rates for different sections of the country that would allow a well-managed railroad in one of these sections to earn a fair interest on a fair valuation of property. The Interstate Commerce Commission was given the power and the duty to make a valuation of the railroads and also to fix an interest rate that was fair.

Anything in excess of 6 per cent was to be divided and one-half was to be paid to the government to be used as a revolving fund from which the government could make loans to poor railroad companies. Thus the commission was told to make rates high enough to yield a fair interest rate on the value of the railroad property, but could recapture half of any net earnings in excess of 6 per cent on the valuation which the commission itself determined.

This involved making a valuation of the railroad properties of the United States by the Interstate Commerce Commission. This it proceeded to do at a considerable public expense and at a considerable expense to the railroads themselves. The Commission, feeling, as it always has, that it represented the public as against the railroads rather than that it was an impartial judicial body, attempted to find as low a valuation for the railroad properties as was possible.

It soon became obvious that an even approximately accurate valuation could not be based on historical value. That is, a railroad such as the Union Pacific which had been built from Civil War times to the present, the process never having been completed, never having stopped, could not be assigned a cost even approximating the actual cost in the past. Theoretically, if the bookkeeping had been on a sound basis such a determination of historical cost would have been possible, but as a practical matter the bookkeeping was not either on a sound or a uniform basis. The result was that the Interstate Commerce

Commission gave up the attempt to find an historical value and attempted to find a present value. But in doing this the Commission took the prices of 1914—not present prices. The huge difference in the value of the railroads of the United States amounted to many billions of dollars. What the Supreme Court did in the O'Fallon decision was to say to the Commission "You must take into consideration present prices as well as former prices before you fix a final value for railroad property and recapture (as it is called) half of their earnings above 6 per cent."

The Supreme Court did not say anything about rates. The Transportation Act, the Interstate Commerce Commission to fix rates that would yield a fair return to the average well-managed railroad in a certain territory, still stood. It was only the railroad so situated or so managed, or both, which could earn more than 6 per cent that the O'Fallon decision affected. The question of whether or not railroad companies could earn under rates fixed by the Interstate Commerce Commission a rate of interest that would enable them to pay their bond interest and an attractive dividend on their stocks was a matter of competition and management, situation and capitalization. What the Supreme Court did in the O'Fallon decision was to say that these other factors—management, competition, and situation—being favorable, the government could recapture earnings above 6 per cent on a valuation which took into consideration present prices for rails, ties, locomotives, shops, machinery, etc. Not a return of 6 per cent on a valuation arrived at by using 1914 prices.

The O'Fallon decision affected railroads in two ways. It stimulated the purchase of railroad stocks as an investment because it gave assurance that the government could not take away from the railroad stockholder any more than from the owner of a piece of city real estate, the unearned increment which came to the owner of the property with the growth in wealth and population of the country as a whole. The other effect has been almost entirely lost sight of by the general public but is of very great importance. It stimulated the railroad officer and the employee to put forth his best effort with the assurance that his employer, the railroad company—which means the railroad's stockholder—would benefit by his efforts. To see the results of this for oneself, one need only to travel or ship by railroad. The millennium has not come. There are still rude railroad employees, arrogant and arbitrary railroad officers. But the improvement that has taken place both in passenger service and freight service is immense.

To prove this, statistical reference may be had to the article in the annual statistical number of the *Railway Age*, by Julius H. Parmelee, Director of Bureau of Railway Economics. Mr. Parmelee said in this article:

Striking progress was made in operating efficiency. Nearly all of the factors of performance registered some gain, so that the whole standard of operation moved upward to a higher level than ever before. The results in 1929 again marked a forward step in the railway programme, for greater operating efficiency year by year since 1923 has been making a valuable contribution to the economic progress and stability of the United States.

From a shipper's point of view, time as well as tons carried one mile must be taken into consideration. While, therefore, the measure of econom-

ical transportation of freight is the ton-mile cost, the best unit measure for the satisfactory ton-mile cost is the net ton-miles per car-day. Thus if a car is loaded with 30 tons of freight and is moved 100 miles in a day, the net ton-miles for that car-day is 300. Quoting again from Dr. Parmelee's article:

The average net ton miles per car-day in January 1929, was 513 as against 470 in January, 1928. In February, 1929, 554 as against 496 in February, 1928. In October, 1929, the net ton-miles per car-day averaged 623 as against 627 in 1928. The net ton-miles in 1929 as compared with 1928 was due to an unusually heavy movement of grain in 1928. On an average for the ten months of 1929, 557 ton-miles per car-day were shown, which is 33 units above the corresponding figures for the ten months of 1928. Somewhat smaller than the figures, the number of miles made per freight car per day for the first ten months of 1929 was 32.8 miles, or an average of 1.6 miles above the mileage made per freight car per day in 1928.

EMPLOYEES AND WAGES The Interstate Commerce Commission requires the railroads to report the number and wages of its employees. The number of employees on railroad pay rolls averaged 1,685,000 during 1929 as against 1,680,000 in 1928. The aggregate wages for 1929 was \$3,000,000,000 as against \$2,862,000,000 in 1928.

RAILROAD CONSTRUCTION The *Railway Age* made a careful, accurate compilation of the miles built each year since 1903. The figures are interesting. In 1929, 666 miles of line were completed. In 1928, 1025 miles. The accompanying table shows the miles of new line completed in each year since 1893.

MILES OF NEW LINE COMPLETED IN THE UNITED STATES SINCE 1893

Year	Mileage	Year	Mileage
1893	3,024		
1894	1,760	1912	2,997
1895	1,420	1913	3,071
1896	1,692	1914	1,512
1897	2,109	1915	1,973
1898	3,265	1916	1,098
1899	4,589	1917	979
1900	4,494	1918	721
1901	5,368	1919	686
1902	6,026	1920	314
1903	5,652	1921	475
1904	3,832	1922	324
1905	4,188	1923	427
1906	5,621	1924	579
1907	5,212	1925	641
1908	3,214	1926	1,005
1909	3,748	1927	779
1910	4,122	1928	1,025
1911	3,066	1929	666

As might be expected, long stretches of new railroad mileage were not built. For instance, the largest single project which was undertaken during 1929 was the West Side improvements of the New York Central in New York City which involved an expenditure of \$175,000,000 and called for the elevation and relocation of its tracks on Manhattan Island and the elimination of 90 street crossings at grade.

MILEAGE ABANDONED There were 475 miles of railroad abandoned in 1929 as compared with 512 abandoned in 1928. Apparently new railroad building, such as the extension of the Chicago, Milwaukee & St. Paul, from the Dakotas to the Pacific coast on a large scale was over with. The weeding out process as reflected in abandonment of unprofitable or uneconomical railroad mileage was not quite as drastic as it was and the intensive development of railroad facilities was the order of the day.

Again quoting from the annual statistical number of *Railway Age*, this time from an article by C B Peck, mechanical department editor

The most striking innovation of the year 1929 in locomotive design is the decision to make an application of roller bearings to the journals of locomotive axles. An order for a locomotive was placed with the American Locomotive Company by the Timken Roller Bearing Company in July in the construction of which such an application of Timken bearings is to be incorporated.

For several years the outstanding development in passenger equipment has been the increased attention paid to architectural treatment and ornamentation of the interior of passenger cars and to the appointments affecting the comfort of passengers. During the past year (1929) a number of railroads have extended this attention from the individual coaches to entire trains and several trains with deluxe appointments for coach passengers have been inaugurated. No marked innovations in freight-car design or equipment have been brought out during the past year.

Of importance, but not paramount importance, in intensive development of railroad facilities was electrification. The most important electrification programme announced during the year was that of the Pennsylvania Railroad which had as its object the electrification of 325 miles of railroad line—that is, four tracks are counted as one mile of line. It is proposed to electrify, for both freight and passenger service, the railroad of the Pennsylvania extending from Hell Gate Bridge east of New York where connection is made with the New England lines south to Wilmington, Delaware, and west from Philadelphia nearly to Harrisburg, Pa.

The Reading Company announced the electrification of the suburban lines at Philadelphia. The Delaware Lackawanna & Western announced the intention of electrifying its suburban lines in New Jersey. The New York Central announced that it had under consideration the electrification of the road between New York City and Buffalo, N Y. The Cleveland Union Terminal, the Great Northern, and the Illinois Central were each extending their electrification.

LOCOMOTIVE BUILT. The *Railway Age* makes a compilation of the railroad equipment ordered and built during the year. From its annual statistical number the following figures are taken. The number of locomotives ordered during 1929 was 1395, of which 1212 were for service in the United States, 77 for service in Canada, and 106 for export to other countries. This compares with 728 locomotives ordered in 1928, of which 603 were for use in the United States, 98 for use in Canada, and 27 for export to other countries. The total number of locomotives built in the United States was 1065 in 1929, and the total built in Canada and the United States was 1161. This compares with a total in the United States and Canada built in 1928 of 747.

The total number of freight cars ordered in 1929 was 124,140. This compares with 62,631 ordered in 1928. Of the total ordered in 1929, 111,218 were for domestic use; 9899 for use in Canada, and 3023 for export to other countries. The total number of freight cars built in 1929 was 93,965 comparing with 52,156 built in 1928.

The total number of passenger cars ordered in 1929 was 2458 comparing with 2293 ordered in 1928, and the number of passenger cars built in 1929 was 4318 as against 1008 in 1928.

It is rather . . . note that there were 160 motor cars . . . ordered for use on steam railroads in 1929 as against 194 in 1928 and 201 in 1927.

DIVIDEND CHANGES. No story of a ragged out-cast who fought his way to prosperity and respectability is more romantic than the history of 20 years of the New York, New Haven & Hartford R. R. In 1917 and 1918 the New Haven was on the brink of bankruptcy. In 1929 the dividend rate on the common stock of this company was increased twice during the year, from \$4 to \$5 in August, from \$5 to \$6 in November. As a mere dividend increase of a railroad stock the increase in the common stock rate of the New Haven was encouraging to investors in railroad common stocks, but as a practical example of what skill in management can do it gave hope for the whole railroad situation of the United States that was particularly encouraging because the New Haven situation was particularly desperate; conditions were bad in New England industries, freight rates within New England could not be raised without running the danger of killing the goose that laid the golden egg. New England was in competition with the South on cotton manufacture, with the Middle West on all classes of manufacture—for instance, with St. Louis on shoes. It was at a physical disadvantage in that labor conditions were bad. It had to import most of its fuel—there was some water power in New England but comparatively little—and New England manufacturers were dependent on Virginia and Kentucky coal to a large extent. Machinery in the New England cotton mills was obsolete as compared with machinery in the newly-built cotton mills of the Carolinas; raw cotton had to be shipped into New England as well as the shipment of the finished product. Above all, years of experiment and the best thought of such a man as the older J. P. Morgan had demonstrated that transportation conditions made profitable railroad operation an impossibility.

No more sincere man has ever undertaken a difficult railroad problem than the late Howard Elliott. He had been trained by the very best of teachers in railroad operation, James J. Hill. He came to the presidency of the New York, New Haven & Hartford with the confidence and co-operation of J. P. Morgan and he found the problem of profitable operation of the New York, New Haven impossible. He was succeeded as president of the New Haven by another man who had learned railroading in the West, but this time in the Southwest instead of the Northwest. E. J. Pearson came to the presidency of the New Haven from the presidency of the Texas & Pacific but he came without the tradition that the New England railroad problem was an impossibility.

He had found that profitable railroad operation on the Texas & Pacific consisted in getting freight into long, heavy trains and he undertook to make New England railroad conditions fit into some such scheme of transportation. He ordered heavy, slow, powerful locomotives against the bitter opposition of his own superintendent of motive power. He built a big yard at the west end of the New York, New Haven near New Haven, Connecticut, and another big yard at the east end of the system just outside of Providence, R. I. He gathered the freight into one or the other of these yards and moved it in heavy train loads between the yards. The result was that from a company whose bonds were considered rather too highly speculative for a conservative investor the New Haven has gone to a credit position where its common stock is paying 6 per cent dividends.

This seems a rather long digression to make

about the change of a single company in its dividend rate, but it is believed that what the New Haven has demonstrated is of far wider importance than the tremendously important fact that the New Haven itself, with its stock and bonds held by private investors and institutions throughout New England, has gloriously come back. It is a practical example of what can be done by management even under adverse conditions and in the face of government interference.

Another illuminating example of a dividend change is that of the Chicago, Rock Island & Pacific. The dividend on this company's common stock was placed on a \$7 per year basis, increased from \$6 per year in 1928. The Chicago, Rock Island & Pacific had had a varied experience. Twenty years before, it was a gilt-edged railroad company, then speculators who had made their money in steel mills built up a financial structure consisting of a complicated system of two holding companies superimposed on the operating company which gave them control with a minimum investment. The stock of the topmost holding company was the medium of speculation on the New York Stock Exchange and the top-heavy financial structure made a conservative development of the railroad property itself almost an impossibility. A receivership of the holding companies took place and J. E. Hoeman was elected to operate the property with his chief concern profitable operation of railroad extending from St. Louis to Texas and from St. Louis to Denver in highly competitive territory. He has made a success of the task assigned to him and he has done it without the aid of financial cleverness. The Rock Island, as it was still called (that was the name of the second holding company, the operating company being called the Chicago, Rock Island & Pacific Company) earned and paid an increased dividend on its common stock because, like the New Haven, it was operated as a railroad to furnish transportation for freight and passengers and not as a financial scheme with the object of stimulating the demand of investors for certain pieces of stock certificates.

One of the companies' stocks which for more than 20 years ranked as a sound investment was that of the Pennsylvania Railroad. During the World War in Europe, the Pennsylvania having to bear the brunt of the transportation of war materials from Pittsburgh to the Atlantic seaboard had to cut its dividend rate. On Apr. 24, 1929, the directors raised the quarterly dividend rate making the annual rate \$4 for a \$50 share, or 8 per cent. The fact that the stock of the Pennsylvania was so very widely held as an investment by widows, orphans, and people dependent on their income from investments made the change to an 8 per cent rate of great importance.

RECEIVERSHIPS AND FORECLOSURES There were no important roads put in the hands of receivership in 1929 and the total mileage of the few roads for which receivers were appointed was only 634 miles. The longest road going into receivership was the Georgia & Florida, 446 miles, with \$13,379,441 funded debt outstanding, and \$6,492,000 stock outstanding. The road runs from Augusta, Ga., to Madison, Fla. It probably should never have been built. An extension from Augusta, Ga., to Greenwood, S. C. delayed in construction failed to bring enough new business to compensate for the strain put on the company's credit.

At the end of 1929 there were 31 railroads with

a total mileage of 5261 miles in the hands of receivers. By far the most important of these was the Chicago & Alton operating 1029 miles between Chicago, St. Louis, and Kansas City, and the Minneapolis & St. Louis, operating 1628 miles of line. There were no important roads sold during 1929 under foreclosure—that is, reorganized, and the reason that the two large properties, the Chicago & Alton and the Minneapolis & St. Louis were not reorganized and put on a solvent basis was quite different. The Chicago & Alton as a physical property was immensely valuable and it was believed it was capable of quite profitable operation. Two banking houses espoused the causes of two different classes of bondholders. Neither put forward any constructive plan of reorganization, neither would give its consent to a reorganization sponsored by the other.

In the case of the Minneapolis & St. Louis the physical facts were just the opposite. A very careful painstaking report was made on the property by a disinterested engineering firm and a very careful study of this report did not leave the impression that the property was capable of profitable operation even if present security holders were to accept a drastic cut in their nominal values.

NEW SECURITIES ISSUED The year 1929 stood out from all recent years in the history of American finance as a period during which investors preferred to buy stocks rather than bonds. It was well to bear in mind the distinction. A common stockholder is not promised any income on his investment. He becomes a partner in the business, the owner of what is left after expenses, taxes, and interest on borrowed money have been paid. But he is given no promise that there will be anything left. The bondholder, on the other hand, loans his money to a corporation with the corporation's definite promise that a certain interest rate will be paid and, failing payment of its specified interest, the corporation is placed in bankruptcy. Up till within a few years ago the conservative American investor preferred to put his money into bonds, railroad, public utility or industrial, or government securities rather than into stock.

The phenomenal success of industrial companies gave the investing public a realization that while a common stockholder suffered loss if the operation was not financially profitable enough to pay expenses, taxes, and interest and leave a margin for common-stock dividends, on the other hand, if the operations of the corporation were successful it was the stockholder, the common stockholder, who profited and the result was that bonds with a fixed rate of interest but without any provision for a participation in profits became very difficult to sell to life-insurance companies, saving banks, or individual investors in 1929.

It had long been recognized by students, railroad executives, and railroad bankers that raising new money for railroad companies through the sale of bonds rather than stock was unsound, that obligating the company to pay a fixed interest rate during times of depression gave an inflexibility that was dangerous. During 1929, therefore, railroad companies availed themselves of the market for stocks. The Pennsylvania Railroad offered to its own stockholders \$71,836,050 common stock at par. The New York Central offered its stockholders \$35,669,900 par value stock, the Baltimore & Ohio offered \$41,107,700 of its stock, the Canadian Pacific and the Chesapeake & Ohio

each offered \$30,000,000 of stock to stock-holders, and the Southern Pacific offered \$19,549,800 stock at a premium.

The outstanding bond issues of the year were \$65,160,000 4½ per cent bonds of the Southern Pacific, offered with the right to subscribe in the future at a fixed price to common stock, and \$72,335,000 4½ per cent bonds of the Chicago & North-western convertible into common stock; and, of more importance than the amount would indicate, \$46,392,000 5½ per cent bonds of the Missouri Pacific convertible at par for par into common stock. The importance of the Missouri-Pacific bond offering lies in the fact that the company had maturing obligations and a comparatively poor credit which seemed to offer difficulties in the way of continued solvency. The sale of convertible bonds, however, was a success, the obligations were taken care of, and there had been no panic on the New York Stock Exchange. It is generally believed that the Missouri Pacific would have been in a position to pay off through common stock the accumulations of dividends on its preferred stock.

The panic on the Stock Exchange should be mentioned in any account of the year, although the effect on railroad security prices was indirect. The lure of increasing prices of stock had been such that the whole country, not only New York City alone but the smaller cities and towns, had developed a demand for stocks. Earning power of the corporations of which the stocks were publicly bought and sold was lost sight of. The law of supply and demand became paramount. There was less of this wild speculation in railroad stocks than in industrial stocks, but when suddenly the demand ceased industrial-company stocks became salable only at ridiculously low prices and holders of railroad stocks and bonds offered their securities for sale in an effort to make good their margins on industrial stocks. The result was that railroad stocks sold for a time below their intrinsic appraisal of their earning power would have justified. As a matter of fact, the greater the earning power of the railroad company and consequent higher price and greater salability of the stock made the percentage drop, in prices greater than the drop in railroad companies' stock, where the earning power, prices, and salability were less.

It was true that the earning power of railroads of the United States beginning in October compared unfavorably with the earning power shown by these railroads in October, 1928, and just as the panic in industrial stock prices indirectly caused an abnormally low price for railroad stocks, so an industrial depression, a falling off in manufacture, sales, and consumption of iron, steel, automobiles, and luxuries would cause a falling off in railroad earnings. One thing may be said, however, that the ability of railroad companies to sell stock in 1929 put them in a considerably sounder position to face the depression than they were at the beginning of the year. The improvement in economies in operation, the change in attitude of public regulating authorities and, most important probably of all, the change in attitude of railroad men themselves, may well be of far greater importance in the future of the railroads of this country than the temporary loss in credit and temporary loss in earning power due to the Stock Exchange panic and an industrial depression. See **ELECTRIC RAILROADS, FINANCIAL REVIEW.**

RÁKOSI, rákó-sé, JENŐ Hungarian journalist and author, died Feb 8, 1929. He was born in Acsád, Eisenburg, Hungary, Nov 12, 1842, and was largely self-educated. At 21, he went to Budapest, became a contributor to the *Napló*, when that journal was under the charge of Kemény, the famous Hungarian novelist and political writer, and in 1866 scored a great success with his comedy, *Ásop*. From 1875 to 1881, he was manager of the Hungarian popular theatre in Budapest and then founded the *Buda-pesti Hírlap*, a radical paper which he edited until 1925. His success with *Ásop* made him a leader of the younger literary circle. Among his later works are the tragedy, *Andrew and Joanna*, dealing with the murder of Andrew of Anjou by Joanna I of Naples (1885), a study of the nature of tragedy (1886); a Zolaesque drama entitled *Magdalene*; a novel, *The Greatest Fool*, and other dramas, comedies, and farces. His collected works in 20 volumes were published in 1905. At the time of his death, Rákosi was on the editorial staff of *Pesti Hírlap*, and he was president of the Hungarian Pen Club.

RAMAN EFFECT. See **PHYSICS.**
RANDOLPH-MACON WOMAN'S COLLEGE. An institution for the higher education of women in Lynchburg, Va., under the auspices of the Methodist Episcopal Church, South, founded in 1893. The enrollment for 1928-30 was 827, distributed as follows: Seniors, 128, juniors, 142, sophomores, 202; freshmen, 309, irregulars, 21, specials, 9; and graduate students, 16. The faculty numbered 65. The endowment amounted to \$1,202,935, while the income for the year 1928-29 was \$502,307. The library contained 35,000 volumes and was housed in the new building erected during 1928-29 at a cost of \$150,000. Presser Hall, the new music building, named in honor of the Presser Foundation of Philadelphia, was also under construction at a cost of \$130,000, half of which sum had been met by the foundation. The General Education Board had pledged \$50,000 toward the construction of a new science building on condition that an additional \$150,000 be raised. President, Dice Robins Anderson, Ph.D., LL.D.

RAPID TRANSIT. While satisfactory progress was made during the year on subway projects under construction, at least two important undertakings were voted down. The need for modern transit facilities in many cities, other than the few great urban centres now possessing rapid transit subways, was, however, obvious, and subway construction although not very active in 1929 certainly would be more widespread in the future.

NEW YORK CITY. Construction work on the first 57 miles of the so-called municipal subway system (see 1928 YEAR BOOK), progressed satisfactorily, and it was expected that parts of the system would be in operation in 1931. Plans were announced on September 15 by the Board of Transportation for new lines, totaling 100 12 miles and comprising the second step in the development. It was estimated that this work would cost over \$438,000,000. Running from outlying districts in the Bronx, the line would pass down Manhattan Island along Second Avenue. Two new tunnels under the East River were proposed, at Houston and at Grand Streets, and the road was to extend across Brooklyn to branch out into several lines serving wide areas of Queens including the Rockaway Beaches.

BUENOS AIRES. A concession was granted to the Anglo-Argentine Tramway Company for the construction of a new line to connect the Retiro and Plaza Constitution railway stations. This line would cross the city from north to south. Construction on the east and west line was progressing rapidly, and it was expected that it would be in service by March, 1930.

DETROIT. A plan, apparently well conceived, for a beginning of rapid-transit construction in Detroit, was defeated by a popular vote. The blame was placed on a failure properly to inform the voters of the value of the plan and the fairness of the proposed method of financing. It was to be resubmitted.

CLEVELAND. The city council voted down a proposal of the Peoples Subway Company to build 75 miles of subway. It was said that the failure of the promoters to disclose the names of those backing the plan led to this action. See MUNICIPAL OWNERSHIP.

RARE EARTHS. See CHEMISTRY

RAYON. Throughout the world the production of rayon in 1929 showed a marked increase and exceeded expectations. The *Drapers' Organizer* (London) estimated the world's production at 412,350,000 pounds, as compared with 266,868,000 pounds in 1927 and 141,000,000 pounds in 1924, the 1929 figure being in excess of the

of which the viscose process accounted for about 86 per cent of the world's production and about 85 per cent of the United States production during 1929. The cellulose acetate and cuprammonium processes were next in order of importance, Great Britain and Germany being the chief producers by these processes. The accompanying table, also from the annual review number of the *Textile World*, indicates the distribution of rayon by countries and processes in 1929.

The record for 1929 in the United States did not, however, indicate that a limit had been reached to production, and at the end of the year trade forecasts seemed to indicate that the production might reach a total of 160,000,000 pounds. The most significant event of the year was the broadening of consuming markets which included increased production of all rayon broad goods and rayon mixtures as well as a development in the knitting industry.

The total rayon capacity of the United States in 1929 was estimated at 160,800,000 pounds, and this was distributed by States and regions according to the accompanying table from *Commerce Reports*.

RAYON PRODUCTIVE CAPACITY ESTIMATED BY STATES FOR 1929

	Pounds
New England	4,500,000
Massachusetts	1,500,000
Rhode Island	1,500,000
Connecticut	1,500,000
Middle Atlantic	40,800,000
Pennsylvania	31,000,000
New York	9,500,000
New Jersey	300,000
East North Central	
Ohio	5,000,000
South Atlantic	88,500,000
Virginia	41,500,000
West Virginia	24,500,000
North Carolina	11,000,000
Georgia	6,000,000
Maryland	4,500,000
Delaware	1,500,000
East South Central	
Tennessee	22,000,000

ESTIMATED PRODUCTION OF RAYON BY COUNTRIES AND PROCESSES—1929

From *Textile World* (New York)
[In 1000 lb.]

Country	Viscose	Acetate	Cupra	Cellulose	Total
Austria	3,620				3,620
Belgium	10,700	1,500		2,800	15,000
Brazil	950				950
Britain	40,920	11,360	820		53,100
Canada	2,813	937			3,750
Czechoslovakia	4,250				4,250
France	32,730	3,500	700	70	37,000
Germany	33,200	800	11,000		45,000
Greece	580				580
Holland	20,000				20,000
Hungary				670	670
Italy	56,900	1,000	1,100		59,000
Japan	18,000				18,000
Poland	1,635			1,800	5,435
Spain	2,000				2,000
Sweden	420				420
Switzerland	12,250				12,250
United States	104,330	7,000	2,300	9,500	123,130
Total	347,298	26,097	15,920	14,840	404,155

Textile World's estimate of 404,155,000 pounds. The United States output in 1929 was 26 per cent over 1928, and 100 per cent over the 1926 output, the increase being due to the enlarged output of various European countries where it was anticipated that the overproduction prevailing at the end of 1928 would act to slow down production. The United States stood as the leading producer with a production over twice as large as that of Italy and nearly 10 per cent greater than the combined output of Italy and Great Britain, the latter country, as the table indicates, being the third largest producer. In addition to the domestic production of rayon yarns during 1929 amounting to 123,200,000 pounds, there was imported 15,950,456 pounds valued at \$12,148,926, making available for consumption in the United States about 139,000,000 pounds or nearly 35 per cent of the world's production.

Rayon is produced by four leading processes,

In 1928 the leading European and British companies formed the Bureau International pour le Standardization des Fibres Artificielles, and there was prepared during the following year the first set of rules for 1930 in which a number of leading European producers cooperated. The aim was to develop among the members of the bureau a system of rules for the standardization, classification, and denomination of the different categories of artificial textile fabrics.

REYS, RADIATION. See PHYSICS

REA, 1A, SAMUEL. An American engineer and railroad official, died Mar. 24, 1929, in Gladwyne, a suburb of Philadelphia, Pa. He was born Sept. 21, 1853, in Hollidaysburg, Pa. In 1871 he began work with the Pennsylvania Railroad as locating and constructing engineer on various branches, becoming president of the road in 1913. He retired in 1925. During his years with the Pennsylvania Railroad, Mr. Rea had charge of the building of the New York tunnel and of the Pennsylvania Station in New York City. Before undertaking the supervision of this difficult engineering project, he spent some time in London studying the tunneling systems there. His book *Railways Terminating in London* (1888) is a product of that study. The New York Connecting Railroad, including Hell Gate Bridge over the East River, was also constructed under his direc-

tion He was appointed a member of the special commission on national defense of the Railroads War Board in 1917.

READ, SIR (CHARLES) HERCULES An English archaeologist and art connoisseur, died Feb. 11, 1929, in Rapallo, Italy. He was born July 6, 1857, and was privately educated. He became an assistant in the British Museum (1880) and, from 1890 to retirement in 1921, was keeper of British and medieval antiquities and ethnography. He was knighted in 1912, was a fellow of the British Academy, and held membership in many foreign societies and academies.

RECLAMATION Time was when irrigation, particularly in the United States, was hailed as a new gift which would make available thousands of acres for agriculture. Like many other movements, it would appear that by 1929 this wave of irrigation construction had exceeded any possible immediate economic justification or future requirements that could reasonably be anticipated. Obviously, a calmer and saner programme having due regard to actual economic necessities must ultimately prevail. It was natural, therefore, that a lull in widespread irrigation work in the United States should be expected, while such works as those in Egypt and India continued to grow slowly as economic needs justify their construction. Mexico, on the other hand, apparently failing to read the full story of reclamation in the United States, had embarked on an extensive programme of irrigation that would seem to offer little hope of immediate financial or economic return. It was an interesting situation.

UNITED STATES Dissatisfaction with the Federal reclamation policy in the United States was noted in the 1928 YEAR BOOK. At the biennial conference of the U. S. Bureau of Reclamation in Denver, Colorado, the chief engineer of the Bureau pointed out that no money had been appropriated for new projects for two years and that during the ensuing eight years the annual reclamation fund receipts would be fully used up in completing the ten-year programme that was under way. Criticism had centred on the use of Federal funds to construct projects for irrigating areas which were largely privately owned, whereas the Act of 1902 was planned primarily for the improvement of public lands. Also, it was claimed that projects had been built for areas from which there was no hope of securing even the low interest return contemplated in the Reclamation Act. It was also suggested that some of these works had been overbuilt and that long-lived, practically permanent, construction had been used at great cost where conditions could have been met much better by works of a temporary and less costly character.

President Hoover appointed a special commission to investigate and report on both the status of the public lands and reclamation work. Further constructions doubtless would depend upon the findings and advice of this commission.

MEXICO In January, 1926, a law was enacted in Mexico creating a National Irrigation Commission with functions similar to those of the U. S. Reclamation Service. A large number of projects were studied and work was under way for some time on several of these, notably the Mezquital, the Calles, the Nueva España, and the Mate, which were nearing completion. Some of these works involved dam constructions which would have been of the first rank a few years previously.

The Calles project, for example, involves a curved concrete main dam, 217 feet high, and an important multiple-arch diversion dam, 142 3 feet high. Several projects offered opportunity for considerable hydro-power development in addition to their use for irrigation.

SUDAN Further progress was noted during the year on the extensive irrigation work begun some four or five years previously and known as the Gezira development, on the Blue Nile. At that time the Semai Dam and regulators were built to furnish irrigation to this area, which ultimately might cover some three million feddans but had been completed for only one-tenth of this area. The second stage of this project was under construction and involves the extension of the main and lateral canals to cover additional areas. The main canal as built in 1929 would carry 84 cubic meters of water per second and, with this high capacity, large size regulator gates were required at the main points of distribution. See DAMS.

RED CROSS, AMERICAN An organization chartered by Act of Congress in June, 1900, and incorporated in January, 1905. Its purpose is to supply relief to sufferers from war, from disaster, or from any widespread pestilence or famine. It also engages in public-health work, trains in first aid and life saving, and maintains an enrollment of nurses as a reserve for the Army and Navy or for disaster. The society is a member of the League of Red Cross Societies, made up of similar organizations in 54 nations, and of the International Red Cross Committee of Geneva, Switzerland, composed of Red Cross societies of 58 nations, who are signers of the Treaty of Geneva. All powers of control, management, and administration of the American Red Cross are vested in a central committee of 18 persons, 6 of whom are appointed by the President of the United States, 6 elected by the chapters, and 6 by the board of incorporators.

On June 30, 1929, there were 3553 chapters of the American Red Cross. Service work for disabled veterans and their dependent families was carried on by 2821 chapters, which spent \$1,963,000 while the national organization spent an additional \$737,871 for the same purpose. Service to ex-service men and their families included assistance in filing death and disability claims for Federal and State benefits, such as compensation, bonus, etc., and social or financial and while adjustment of claims was pending. Recreation and other service was conducted in 65 government hospitals, including those of the Veterans' Bureau, Army, Navy, Department of the Interior, and also in two contract hospitals.

The year brought many opportunities to the Red Cross for rendering service, as there were 131 disasters, 120 of which were in the United States and its insular possessions. Contributions of funds were made to 11 foreign Red Cross societies for the relief of victims of major disasters.

For domestic disaster relief, the national organization spent \$4,863,570 and the chapters spent \$463,000, making a total of \$5,326,570. For insular and foreign operations in disaster relief \$3,343,037 was expended. The only nation-wide appeal for a relief fund was for the sufferers of the West Indies hurricane, and the public contributed \$5,883,726. Total expenditures of the national organization and chapters for the year ending June 30, 1929, were \$15,963,679, this sum

including the \$8,609,627 spent in disaster relief. The membership of the Red Cross was 4,127,946 adults, 6,878,423 children were enrolled in the American Junior Red Cross.

Enrollment of Red Cross nurses, acting as a reserve for the Army and Navy and other governmental nursing services and for call during emergency, totaled 49,153. The Red Cross employed 766 nurses in public-health work. Home hygiene and care of the sick certificates were issued to 42,234 graduates of this course, 4793 nutrition classes for children and adults were conducted, 52,596 first-aid certificates were issued, a total of 350,491 to date, and 46,898 life-saving members were enrolled, making a total of 220,404. The Red Cross furnished 210,088 garments for disaster victims, etc., and 2,959,304 surgical dressings, it also transcribed 1849 volumes into braille for the blind. Welfare service was provided for an average of 10,742 families each month in communities where no other agency existed for such work.

The President of the United States is the president of the American Red Cross. Other officers in 1929 were vice presidents, Calvin Coolidge, William Howard Taft, and Robert W. DeForest, treasurer, Ogden L. Mills, counselor, Charles Evans Hughes, Jr., secretary, Miss Mabel T. Boardman, chairman of the central committee. John Barton Payne, vice chairman in charge of domestic operations, James L. Fieser, vice chairman in charge of foreign operations, Ernest P. Bicknell, vice chairman in charge of finance, James K. McClintock.

REED COLLEGE A non-sectarian, liberal college of arts and sciences for men and women in Portland, Oreg., founded in 1911. The enrollment for the autumn term of 1929 totaled 462, of whom 182 were men and 180 women. These were distributed as follows: Freshmen, 132, sophomores, 126, juniors, 57, seniors, 35, special students, 6, graduate students, 6. The faculty numbered 30, with 10 graduate assistants. The productive funds for 1928-29 amounted to \$1,848,748, while the income for the year was \$94,515. Among important gifts was a bequest of \$100,000 from the late Eric A. Hauser, with which a memorial library was to be erected. The present library contained 40,000 volumes. President, Norman Frank Coleman, LL. D.

REFINING OF METALS See METALLURGY.
REFORMED CHURCHES THROUGHOUT THE WORLD HOLDING THE PRESBYTERIAN SYSTEM, ALLIANCE OF. An organization formed in London, England, in 1875, with the one great purpose, to encourage comity, cooperation, and efficiency in the accomplishment of Christian work. In 1929

there were 106 churches connected with the alliance. The members and adherents of the Presbyterian and Reformed churches throughout the world numbered about 50,000,000, including 113,000 members of the Evangelical Church in Germany. The Thirteenth Quadriennial General Council of the alliance met in Boston, Mass., June 20-27, 1929, with a representation of 400 delegates from Great Britain, Ireland, Belgium, Czechoslovakia, France, Germany, Hungary, Italy, Jugoslavia, Rumania, Switzerland, India, South Africa, Canada, and the United States. Topics of special interest included: Foreign missions, home missions in all lands, problems of higher education, reconstruction on the continent of Europe, church union, and international peace.

Officers elected for 1929-1933 were: President, the Rev. George W. Richards, LL. D., of Lancaster, Pa., vice presidents, the Rev. J. M. Wells, D. D., of Sumter, S. C., and the Rev. W. A. Curtis, D. D., of Edinburgh, general secretary, the Rev. W. H. Hamilton of Edinburgh, and American secretary, the Rev. Henry B. Macfar, D. D., whose offices are at 912 Witherspoon Building, Philadelphia. The next general council of the alliance was to be held in Belfast, North Ireland, in 1933.

REFORMED CHURCH IN AMERICA Composed originally of settlers from Holland and known until 1867 as the Reformed Protestant Dutch Church in North America, the denomination has since become largely intermixed with elements from many other nationalities. It adheres to the doctrines of the Belgic Confession and the Heidelberg Catechism, in 1837 it endorsed the Westminster Catechism. The form of government is of the Presbyterian type, with four classes of officers: Ministers, teachers (or professors), elders, and deacons. Administratively, the church is divided into consistories, classes, provincial synods, and the general synod, the latter operating through a board of direction. In 1929 the Reformed Church in America reported 739 churches, 846 ministers, 87,132 families, 158,662 communicants, and approximately 200 foreign and 200 domestic missionaries. The church maintained foreign missions in Japan, China, India, Arabia, and Mesopotamia, the latter jointly with the Presbyterian Church in the United States and the Reformed Church in the United States. The value of property used for purposes of worship was placed at more than \$38,000,000 in the Federal census of religious bodies of 1926. The church maintains seminaries in New Brunswick, N. J., and Holland, Mich., and also Hope College in Holland, Mich., and Central College in Pella, Iowa. The official periodical of the denomination is the *Christian Intelligencer*. At the session of the general synod in June 1929 the Rev. Daniel A. Poling, D. D., LL. D., Litt. D., S. T. D., of New York City was elected president.

REFORMED EPISCOPAL CHURCH. A denomination formed in December, 1873, by clergymen and laymen who had withdrawn from the Protestant Episcopal Church. It was the outcome of an intense discussion over ritualistic tendencies. As indicated in its name, the denomination held that it supported the principles of the Anglican Church of the time of the Reformation, and of the Protestant Episcopal Church as organized after the American Revolution. Doctrine and polity, otherwise in general accord with those of the Protestant Episcopal Church, were anti-sacerdotal. A general council of the denomination

WORLD-WIDE PRESBYTERIANISM, 1929
[From the Office of the Alliance, Edinburgh]

Churches	Number of Congre- gations	Ministers	Communi- cants or Church members
European Continent	6,123	7,201	4,411,364
The British Isles	5,902	5,414	1,700,758
Asia	5,513	1,851	461,921
Africa	1,709	1,190	587,464
North America	27,621	21,060	4,093,184
South America	259	179	38,171
West Indies	211	117	23,022
Australasia	1,669	944	117,201
Totals	49,229	37,959	11,451,000
Totals for 1925	42,241	35,485	10,020,644
Totals for 1921	39,620	33,538	7,879,811
Totals for 1913	35,110	29,929	6,629,938

meets triennially. The denomination maintains a theological seminary in Philadelphia, Pa., and from that city issues a periodical, the *Episcopal Recorder*. Statistics for 1929 were: Churches, 86; ministers, 91; church members, 25,300; and Sunday-school enrollment, 26,000. Bishop Robert L. Rudolph, of Philadelphia, was presiding bishop of the general council.

REFUSE DISPOSAL. See GARBAGE AND REFUSE DISPOSAL.

REGIONAL PLANNING. See CITY AND REGIONAL PLANNING.

REID, ROBERT. An American painter, died Dec. 2, 1929, at Clifton Springs Sanatorium, N. Y. He was born in Stockbridge, Mass., July 29, 1862, and studied in the Museum of Fine Arts in Boston, the Art Students' League in New York, and at the Académie Julian under Boulanger and Lefebvre. He exhibited in the Paris Exposition of 1889. Returning that year to New York, he began his decorative work as one of the eight New York artists painting frescoes for the domes of the Liberal Arts Building of the Chicago Exposition (1892). His mural decorations are also found in the Massachusetts State House, Boston, Library of Congress, Washington Appellate Court, New York, Paulist Father's Church, New York, and 20 stained glass windows for the Rogers Memorial Church, Fairhaven, Mass. His easel subjects are in many public galleries, including the Metropolitan Museum of Art in New York and the Corcoran and National galleries of Washington.

RELATIVITY. See ASTRONOMY, PHYSICS.
RELIGION, LITERATURE OF. See LITERATURE, ENGLISH AND AMERICAN.

RELIGIOUS DENOMINATIONS. See ARTICLES on the respective denominations.

RENAISSANCE LITERATURE. See PHILology, MODERN.

RENARDITE. See CHEMISTRY, under *Mineralogical Chemistry*, MINERALOGY.

RENSSELAER POLYTECHNIC INSTITUTE. A nonsectarian institution for the technical training of men in Troy, N. Y., founded in 1824. In 1929 there were 1578 students enrolled for the autumn term, distributed as follows: Civil engineering, 469; mechanical engineering, 291; electrical engineering, 433; chemical engineering, 185; business administration, 78; biology, 29; physics, 23; chemistry, 19; architecture, 16; specials, 6; graduate students, 19. The teaching staff numbered 119, an increase of four over 1928. The productive funds amounted to \$4,500,000, and the income for the year to \$649,000. The total value of the property of the institute, including market value of securities and gifts for endowment during the year amounted to \$360,000. The library contained 20,174 bound volumes and 21,482 pamphlets. President, Palmer C. Ricketts, ED., LL.D.

REORGANIZED CHURCH OF JESUS CHRIST. See LATITUDINARIAN SAINTS, REORGANIZED CHURCH OF JESUS CHRIST OF.

REPARATIONS. The formulation of the Young Plan, fixing for the first time the total World War reparations Germany was expected to pay, and the agreement in principle upon the plan, with some modifications, reached by the 12 principal nations concerned at The Hague Reparations Conference in August, made the

year 1929 a momentous one in the history of the reparations problem. At the end of the year only minor adjustments in the settlement remained to be made at a second Hague Conference scheduled to meet in January, 1930, as a preliminary to the signing and ratification of the Young Plan by all the nations involved. Pending ratification, the creditor Powers agreed to lend to Germany the surplus paid over and above the Young annuities in connection with Dawes Plan payments made after Sept. 1, 1929.

THE YOUNG PLAN. The Geneva Resolution of Sept. 16, 1928, paved the way for the meeting of the so-called Young Committee of experts in Paris early in 1929. Issued by representatives of Belgium, France, Germany, Great Britain, Italy, and Japan in conference at Geneva, it announced that the conference had decided upon "the necessity for a complete and definite settlement of the reparation problem, and for the constitution for this purpose of a committee of financial experts to be nominated by the six governments." The committee of experts included Emile Francqui and Camille Gutt of Belgium, Emile Moreau and Jean Parmentier of France, Dr. Hjalmar Schacht and Dr. A. Vögler of Germany, Sir Josiah Stamp and Lord Revelstoke of Great Britain, Dr. Albert Pirelli and Fulvio Suvich of Italy, Kengo Mori and Takashi Aoki of Japan, and Owen D. Young and J. P. Morgan of the United States. The American experts were nominally appointed by the Reparations Commission conjointly with the German government. Mr. Young, who wrote much of the Dawes Report forming the basis of the Dawes Plan adopted in 1924, was elected chairman when the committee met in Paris on February 11. His name was attached to the report issued June 7 after some 17 weeks of deliberation. During this time the disruption of the conference was repeatedly threatened and the final agreement reached by the experts was largely credited to the chairman's leadership. Lord Revelstoke, who died April 19, and Dr. Vögler, who resigned, were replaced by Sir Charles Addis and Dr. Ludwig Kastl, respectively. The outstanding points in the Young Plan may be summarized as follows:

1. The indeterminate annuities payable by Germany under the Dawes Plan were fixed at 50 and the annual payments of 2,500,000,000 gold marks provided by the Dawes Plan were reduced to an annuity commencing at 1,707,900,000 Reichsmarks in 1929 and increasing toward a maximum of 2,500,000,000 Reichsmarks in 1936. The cash value of the total annuities aggregated about 37,000,000,000 gold marks, or approximately \$9,000,000,000. It was agreed that in the event of a reduction of Allied war-debt payments to America, 60% per cent of such reduction would be allocated to Germany and 33½ per cent to her chief creditors. The experts calculated that 65 per cent of the reparation to be paid by Germany would go to the United States in payment of Allied war debts and that 35 per cent would be applied to the repair of war damage, mostly in France.

2. The division of receipts among the creditor nations provided in the Dawes Plan was not greatly modified. For the first 37 years the German annuities were to be distributed annually as follows: France, 1,046,500,000 Reichsmarks

(\$249,067,000); Great Britain, 409,000,000 (\$97,342,000), Italy, 213,700,000 (\$50,860,000), Belgium, 115,500,000 (\$27,489,000), Yugoslavia, 84,000,000 (\$19,992,000), Rumania, 20,100,000 (\$4,783,800), Greece, 7,000,000 (\$1,666,000); Portugal, 13,200,000 (\$3,141,600), Japan, 13,200,000 (\$3,141,600), Poland, 500,000 (\$119,000); United States, 66,500,000 (\$15,827,000), service of the Dawes Loan, 61,800,000 (\$14,708,400). The American share consisted of 40,000,000 Reichsmarks for mixed claims and 26,500,000 Reichsmarks for meeting the costs of the Army of Occupation. A 10 per cent reduction in the actual costs of the Army of Occupation was agreed to by Washington May 19, as an aid to the conference.

3 Reparation payments in the form of goods shipped direct to the creditor countries were to be reduced gradually from 750,000,000 Reichsmarks annually to 300,000,000 and were to cease at the end of 10 years.

4 Mortgages created under the Dawes Plan on the German Railway system amounting to \$2,500,000,000, and on German industry, amounting to over \$1,000,000,000, as security for reparation payments, were to be wholly lifted and there was substituted an annual tax upon the railway system for 37 years.

5 The post of Agent General for Reparation Payments and other foreign "controls" over German finances were abolished and their functions and the task of receiving and distributing German annuities were to be taken over by a Bank for International Settlements, upon the board of directors of which Germany was to have representation.

6 Not only was the responsibility for making transfers to the International Bank placed solely upon Germany, but the debtor nation was entitled to declare a partial moratorium of transfer for a period of two years in case of a financial crisis.

7 The new annuity was divided into two portions, one consisting of the sum of 660,000,000 Reichsmarks payable each year under all conditions. The other, consisting of the balance of the annuity, was subject to a moratorium for two years as regards its payment in foreign currencies and at the expiration of the first year of the moratorium even the internal Reichsmark payments might be arrested. The stipulation that 660,000,000 Reichsmarks (about \$150,000,000) should be unconditionally paid in foreign currencies for 37 years provided a safe basis for the issuance of reparation bonds and thus for the mobilization of some portion of Germany's debt for the immediate repair of war damage.

8 Within a year, there should be a general liquidation of the other financial problems raised by the War and the Versailles Treaty, such as German claims against the successor states to the Austro-Hungarian Empire.

The signatures of the Belgian experts were affixed to the Young Report with the understanding, agreed to by the German delegates, that Belgium's claims for compensation for the worthless paper marks with which the country was flooded during the German occupation, would be settled by direct negotiation. It was further agreed that the Young Plan, to become valid, would require the approval of the governments of at least 11 of the nations concerned.

THE HAGUE CONFERENCE. The plan had been drawn up by financial experts, primarily with

financial and economic factors in view. The political phase of the negotiations commenced with the convening at The Hague on August 6 of a conference of representatives of 12 interested nations to consider the Young Report. The conference, which lasted until the end of the month, was marked principally by emphatic protests against features of the plan voiced by Philip Snowden, the British Chancellor of the Exchequer, and the difficulty of reconciling the British view with those of the other Allied nations, and particularly with those of France. Mr Snowden demanded 22 per cent of the total annuities for the British Empire, the percentage fixed at the Spa Conference of 1920, instead of 20.6 per cent, as allotted by the Young Plan. The difference amounted to about \$11,520,000 annually. He also demanded a revision of the Young Plan's allocation of conditional and unconditional payments, which he termed unfair to Great Britain, and of the stipulation that German deliveries in kind might continue for ten years. Under the compromise finally effected, the other governments agreed that the British share should be increased by 40,000,000 Reichsmarks annually, of which 36,000,000 (about \$8,640,000) was to be in annuities guaranteed by the other creditor nations. The amount of the unconditional annual payment to be made to Great Britain under the Young Plan was increased by about \$22,000,000. Finally, to offset the adverse effect on British industries of the continuance of German deliveries in kind, Italy agreed to purchase 1,000,000 tons of British coal annually.

The conference further agreed that the cost of the occupation of the Rhineland after Sept. 1, 1929, for which no provision had been made in the Young Plan, was to be assessed 50 per cent against Germany, 35 per cent against France, 12 per cent against Great Britain, and 3 per cent against Belgium. The claims of German citizens for damages sustained as a result of the occupation were to be settled by the German government. A major factor in securing the German delegates' assent was the Allied promise to evacuate the Rhineland within eight months after the ratification of the Young Plan by France and Germany. See FRANCE, under *History*.

BANK OF INTERNATIONAL SETTLEMENTS. Probably the most original and noteworthy feature of the Young Report was the plan outlined for the establishment of the Bank of International Settlements. The suggested outline for the organization of the bank, included in Annex I of the report, stated that, "The purpose of the bank is to provide additional facilities for the international movement of funds and to afford a ready instrument for promoting international financial relations. In connection with the German reparation annuities, it shall perform as trustee for the creditor countries the entire work of external administration of this plan, shall act as the agency for the receipt and distribution of funds, and shall supervise and assist in the commercialization and mobilization of certain portions of the annuities." Authorized capital was fixed at \$100,000,000, but only 25 per cent of each share was to be paid in at the formation of the bank. Administrative control was to be vested in a board of directors consisting of the governor of the central bank of each of the seven countries represented on the Young Committee, or his nominee. An additional director was to be appointed by each of the seven governors, and the

Governor of the Bank of France and the President of the Reichsbank also might each appoint one additional director of his own nationality if he so desired, during the period of the annuities These 14 or 16 directors were in turn to elect not more than nine additional directors from a list of candidates, four of whom were to be nominated by the governor of the central bank of each of the countries not represented on the Young Committee but which participated in the share ownership of the bank

The functions of the bank, as outlined in the Young Plan, were to buy and sell gold coin, bullion, bills of exchange, and other short-term obligations of prime liquidity, to open and maintain deposit accounts with central banks, to rediscount bills for and make loans to the central banks, to buy and sell intermediate or long-term securities, to invest in Germany funds of the international bank held in the Reichsbank and not transferable due to a declaration of transfer postponement, and to issue its own obligations in order to lend to any central bank

The temporary organization committee, the selection of which was also provided for in the Young Report, met at Baden-Baden October 4 under the chairmanship of an American banker, Jackson E. Reynolds, to draw up the charter, statutes, and deed of trust of the bank Basel, Switzerland, was tentatively selected as the site of the bank and the charter and statutes were drawn up and unanimously adopted by the organization committee on October 30 Owing to the refusal of the Government of the United States to permit the Federal Reserve Bank to participate officially in the international bank, it was provided that the two American members of the board of directors should be elected by the representatives of the six other nations The American share of the capital stock of the bank, it was indicated, would be held by an independent trust company Elaborate safeguards were adopted to insure the bank's independence of the country in which it was located Difficulty was experienced in agreeing upon the terms of the trust deed, but on November 16 the organization committee ended its labors and submitted a report, which required ratification by the nations concerned to become effective

EASTERN REPARATIONS In the meantime the Committee on Eastern Reparations was in session in Paris in an effort to arrive at a satisfactory adjustment of the reparations due the countries of the Little Entente (Jugoslavia, Czechoslovakia, and Rumania) and Poland and Greece from Austria, Hungary, and Bulgaria The committee was appointed at The Hague Reparations Conference in August After working on the problem for two months, the committee announced on October 28 that the negotiations had reached a deadlock, principally over Hungarian reparation payments and the settlement of the Hungarian optants' claims The whole problem of eastern reparations was then referred to the second Hague Reparations Conference for final settlement

REPTILES. See **ZOOLOGY**

REPUBLICAN PARTY. ANNIVERSARY OF FOUNDED OF See **CELEBRATIONS**

RESEARCH. NATIONAL. See **NATIONAL RESEARCH COUNCIL.**

RESERVE BANKS. See **BANKS AND BANKING, FINANCIAL REVIEW**

RESERVE OFFICERS' TRAINING CORPS. See **MILITARY PROGRESS**

REUNION, rē'u'nyōn'. An island belonging to France, about 420 miles east of Madagascar Area, 970 square miles, population, according to the census of 1926, 186,637, of whom 180,694 were Europeans, mainly of French origin The chief towns with their population in 1926 were St Pierre, 20,479; St. Denis, 23,390, St Paul, 21,643, and St Louis, 15,867 The chief port is Pointe-des-Galets The principal products are rum, sugar, manioc, coffee, tapioca, vanilla, spices, etc Imports in 1928 were valued at 152,906,000 francs, or 12 per cent less than in 1927, while exports declined 19 6 per cent to 118,107,000 francs France furnished 86 per cent of the imports and took 99 per cent of the exports There are 80 miles of railways The budget for 1927 showed revenues of 51,790,290 francs and expenditures of 48,759,085 francs The government of the island is administered by a governor, aided by a privy council and an elected council of 15 members, of whom 11 are represented in the assembly by one senator and two deputies

REVELSTOKE, JOHN BARING, SECOND BARON of An English banker, died Apr 19, 1923, in Paris, where he had gone as one of the British delegates to the Committee of Experts on Reparations He was born Sept 7, 1863 He went up to Trinity College, Cambridge, in 1883, but did not take a degree, leaving to travel in various parts of the world In 1897 he succeeded to the title Lord Revelstoke was created a Privy Councillor in 1902, a Knight of the Grand Cross of the Royal Victorian Order in 1911, and was appointed a member of the Council of the Prince of Wales in 1907 After 1908 he was Receiver-General of the Duchy of Cornwall, and in 1926 he was appointed Lord-Lieutenant of the County of Middlesex He was Lieutenant of the City of London, a director in the Bank of England, and a partner in Baring Brothers & Co, Limited

REVOLUTION, AMERICAN, ANNIVERSARIES OF THE See **CELEBRATIONS**

RHETORIC. See **PHILLOLOGY, MODERN**

RHODE ISLAND. POPULATION According to a State census made in 1925, the population was 679,260, as compared with 604,397 at the United States Fourteenth Census in 1920, and 595,986 at the census of 1915 The estimated population on July 1, 1928, was 716,000 The capital is Providence

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929

Crop	Year	Acreage	Prod Bu	Value
Hay	1929	45,000	64,000 *	\$1,394,000
	1928	45,000	69,000 *	1,503,000
Corn	1929	10,000	420,000	588,000
	1928	10,000	390,000	526,000
Potatoes	1929	2,000	250,000	450,000
	1928	2,000	244,000	220,000

* Tons

MINERAL PRODUCTION The total value of the mineral product of the State, \$1,310,756 for 1927 as against \$1,339,398 for 1926 remained little changed and of minor importance in the State's economy Its leading component was the yield of stone, which attained 153,400 short tons for 1927 and 252,280 tons for 1926; in value,

\$734,164 for 1927 and \$895,718 for 1926. There was a small production of lime, of graphite, and of clay products.

FINANCE State expenditures in the year ended Nov 30, 1928, as reported by the U S Department of Commerce, were for maintaining and operating governmental departments, \$6,538,951 (of which \$470,472 was for local education), for conducting public-service enterprises, \$17,036, for interest on debt, \$861,985; for improvements, \$5,615,826, total, \$13,033,798 (of which \$4,099,746 was for highways, \$850,535 being for maintenance, and \$3,249,211 for construction). Revenues were \$11,573,300. Of these, property and special taxes formed 43.3 per cent, departmental earnings and compensation to the State for officers' services, 5.1, sale of licenses, 38.0 (including a portion of taxation of \$1,152,373). The funded debt on Nov 30, 1928, \$21,874,000 outstanding or \$17,987,785 net of sinking fund payments included \$6,503,000 for highways. The assessed valuation of \$1,344,544,741 were levied State taxes of \$1,013,454.

TRANSPORTATION The total number of miles of railroad line under operation on Jan 1, 1929, was 196.28. There was no reported construction of additional line in 1929.

MANUFACTURES According to the biennial Census of Manufactures, published by the U S Department of Commerce in 1929, there were in the State, in 1927, 1497 manufacturing establishments. These employed 120,009 wage earners, whose wages for the year totaled \$138,895,884. Materials and supplies used in manufacture cost \$313,107,075. The manufactured products attained the total value of \$592,232,047.

EDUCATION The attention of the school authorities in the course of the year was directed especially to improving the constancy of attendance on the part of pupils in cities and towns where the attendance record was weak, and to a study of the adverse influences affecting the problem. The population of ages from 5 to 15 years was estimated at 140,834. There were enrolled in the public schools of the State, in the academic year 1928-29, 111,391 pupils, in parochial schools, 28,930, in private schools, 4078, in all schools, 144,399. Of the school pupils 90,943 were in public elementary and 17,517 in high-school grades. The expenditures for public-school education for the year totaled \$14,069,929. Salaries of teachers averaged annually \$1623.

CHARITIES AND CORRECTIONS. The central State authority in administrative matters relating to institutions of care or of custody resided in 1929 with the State Public Welfare Commission, a body of 3 appointive members, one of them a woman. The Commission had general supervision of the institutions of this character conducted by the State. The commission was created in 1920, and replaced a previous commission of nine members. The State institutions, with their inmate populations of Dec 1, 1929, were State Hospital for Mental Diseases, 1880, State Infirmary (a home for the old and infirm), 765, State Prison and Providence County Jail, 651, Reformatory for Women, 27, Sockanossett School (Reformatory for boys), 172, Oaklawn School (Reformatory for girls), 46, State Home and School (neglected and dependent children), 1297, Kewster School (feeble-minded), 505. The State Home and School included a children's bureau. The Commission maintained also a mothers' aid department, which gave outside aid to

337 mothers in 1929, and a probation department, which handled during the year, 1879 cases.

LEGISLATION The State Legislature held its regular annual session, convening in January. There were passed a number of measures affecting the political and administrative structure of the State. Primarily in order to carry out the redistricting of the city of Providence so as to comply with the nineteenth amendment of the State Constitution, allowing the city four State Senators, an act was passed creating a commission of seven members charged with an extensive relocation of senatorial district lines within Rhode Island, outside the city as well as within it. The bounds of the State's fiscal year were changed by act to correspond with those of the Federal fiscal year, the same act placed the auditing of the State's accounts in the hands of the State Comptroller, himself an appointee of the Finance Commissioner, and revoked the Finance Commissioner's power under previous statute to expend State funds without immediate legislative authority in the event of the Legislature's failure to pass an annual appropriation bill. The office of State Auditor was abolished. The comptroller, made to take up the duty of audit, was relieved of his concurring post of Insurance Commissioner and a salary of \$4000 was voted for the separate Insurance Commissioner'ship. The small State police force was increased to the strength of 40 members. Retirement of the Chief Justice of the Supreme Court on his full pay of \$11,000 was provided for by statute.

POLITICAL AND OTHER EVENTS The two sections of the State, the original Providence Plantations and Rhode Island proper, were united by the opening on October 24 of the Mount Hope Bridge. The bridge, which cost approximately \$4,000,000, was built by a private company. Unsatisfactory cables had necessitated extensive rebuilding before the structure was put to use. It replaced a ferry said to have operated since 1680 (See BRIDGES). In Providence was completed a produce terminal and market built by the city, the New Haven system and the dealers in co-operation at a cost of \$1,000,000.

OFFICERS Governor, Norman S. Case, Lieutenant-Governor, James G. Connolly, Secretary of State, Ernest L. Spagnue, Treasurer, George C. Clark, Comptroller, Albert E. Godfrey, Attorney-General, Charles P. Sisson who resigned and was succeeded by Oscar Helzen.

JUDICIARY Supreme Court Chief Justice Charles F. Stearns, Associate Justices, Chester W. Barrows, John S. Muddock, Elmer J. Rathbun, John W. Sweeney.

RHODESIA, 10-deh-zi-a or -/i-a. A British territory in south central Africa, extending northward from the Transvaal to the borders of the Belgian Congo and Tanganyika Territory, and bounded on the east by Portuguese East Africa, Nyasaland, and the Tanganyika Territory, and on the west by the Belgian Congo, Portuguese West Africa, and Bechuanaland. It is divided into Northern Rhodesia and Southern Rhodesia by the Zambezi River, Southern Rhodesia comprises Matabeleland and Mashonaland.

NORTHERN RHODESIA In 1911 this region was formed from the former provinces of Northeast and Northwest Rhodesia. A legislature and the office of governor were created by an Order in

Council on Feb. 20, 1924 Area, 287,950 square miles The permanent European population in December, 1925, was 4624 and the native population, 1,140,642, estimated population in 1928, 1,269,700 of whom 7536 were Europeans In 1929 it was announced that the seat of government would be moved from Livingstone to a more central location in Northern Rhodesia, probably Chilanga The chief crops are corn, cotton, wheat, tobacco, fruits, and rubber, and the minerals include gold, copper, zinc, and lead The total value of all minerals mined in 1927 was £360,337, including copper, £197,231 and lead, £143,127 In 1929 it was established that Northern Rhodesia is one of the great copper belts of the world Imports in 1928 totaled \$11,516,000 and exports, \$4,122,000 The chief exports are live animals, lead, copper, corn, flour, hides and skins, and tobacco The government's financial operations in 1928-29 resulted in a deficit of £11,350 In 1927-28 receipts totaled £475,000 and expenditures £519,000 Expenditures for 1928-30 were estimated at about £547,000 The administration consists of a governor and executive council and a legislative council, partly official and partly elected, the official members having the majority Governor in 1929, Sir J C Maxwell, appointed Aug 31, 1927

SOUTHERN RHODESIA The area of Southern Rhodesia is estimated at 149,000 square miles The population at the census of May, 1926, totaled 87,647 (39,174 Europeans and 834,473 natives); estimated in 1928, 1,013,500 Capital, Salisbury

The principal crops are maize, tobacco, groundnuts, legumes, and fodders Rice cultivation is expanding and the livestock industry is of major importance For the season 1928-29 the yield from 18,300 acres planted to tobacco was estimated at about 7,000,000 pounds, the maize yield from 337,600 acres at 1,970,000 bags, or 55 per cent more than in the preceding year, and the groundnut crops from 11,600 acres at 89,400 bags, or 75 per cent more than in 1927-28 The cotton acreage of 2528 acres was expected to yield 474,000 pounds of cotton seed The value of the total mineral output in 1927 was £4,238,300, including gold valued at £2,458,862 Imports in 1928 amounted to £8,179,000 (\$39,805,000) and exports to £6,509,000 (\$31,678,000)

For the fiscal year ending Mar 31, 1928, revenues totaled £2,165,000 and expenditures £2,761,200 In 1928-29 there was a budget surplus of £50,000 The public debt Mar 31, 1928, was £4,095,000 There were 2467 miles of railway at the end of 1927

Executive power is vested in a governor aided by an executive council, legislative power in an elected legislative assembly Governor and Commander-in-chief in 1929, Sir Cecil H Rodwell, appointed August, 1928, Premier and Secretary for Native Affairs, H U Moffat See SOUTH AFRICA, UNION OF

RICCI, RUGGERO See MUSIC, under Artists

RICE The total yield for the crop year 1929-30 of seven rice producing countries reporting to the International Institute of Agriculture, Rome, was estimated at 973,075,000 bushels Both yield and acreage were nearly the same for this year, the preceding season, and the average for the five preceding years The estimated yields of some of the principal producing countries, not including the United States, were reported as follows Japan, 536,622,000 bushels,

Java and Madura, 239,984,000 bushels; and Korea, 124,003,000 bushels India in the crop year 1928-29 produced 2,428,785,000 bushels. The annual production of Brazil is about 22,000,000 bushels

The rice production of the United States in 1929 was estimated by the Department of Agriculture at 40,217,000 bushels compared with 43,240,000 bushels in 1928 and the five-year average of 37,200,000 bushels The area harvested was reduced from 977,000 acres in 1928 to 893,000 acres in 1929, a decrease of nearly 9 per cent The average yield per acre was 45 bushels as against 44.3 bushels in 1928 The indicated total farm value was \$39,346,000 in 1929 and \$38,277,000 in 1928, on the basis of an average farm price of 97.8 cents per bushel on Dec 1, 1929, and 88.5 cents on Dec 1, 1928 The yields of the five States included in the estimates for 1929 were as follows Louisiana, 19,352,000 bushels, Texas, 7,524,000 bushels, Arkansas, 7,084,000 bushels, California, 6,222,000 bushels, and Missouri, 35,000 bushels The production of Missouri was 400,000 bushels in the preceding year This reduction was due mostly to a smaller acreage The average yield per acre in these States ranged from 35 bushels in Missouri to 65.5 bushels in California

In the year ended June 30, 1929, the United States exported 313,404,000 pounds of rice valued at \$11,582,000 an increase of about 70 per cent over the quantity exported in the previous fiscal year During the same period, 7,000,000 pounds of rice flour, rice meal, and broken rice were shipped abroad, or practically the same quantity shipped the year before Preliminary reports recorded the following imports during the fiscal year 1929, cleaned rice, 25,166,000 pounds, uncleaned rice, 8,060,000 pounds, paddy rice, for use in canned goods, 2,329,000 pounds, and rice meal, rice flour, and similar products, 1,239,000 pounds The principal exporting countries are British India, Siam, and French Indo-China and the principal importing countries, China, British Malaya, Japan, Ceylon, Germany, France, United Kingdom, and the Netherlands

RICE INSTITUTE. A coeducational institution for higher education in Houston, Texas, opened in 1921 The enrollment in the autumn of 1929 was 1334, and the faculty numbered 92 The plant equipment and productive funds of the institution were estimated at \$14,500,000, and the income from endowment for the fiscal year 1928-29 was in excess of \$600,000 The library contained approximately 75,000 volumes President, Edgar Odell Lovett, Ph D, Sc D, LL D

RICKETS. The remarkable success of recent years in the prevention and cure of rickets by the use of irradiated foods, the direct action of natural and artificial sunlight, etc., should not blind us to the fact that failures occur, in so much that a few physicians do not believe that the rickets problem has been entirely solved In the *Munchener medizinische Wochenschrift* for August 20, a number of articles are contributed from the pediatric clinic of Prof. M Pfandlner, one of which deals with failures of treatment These not only occur in human rickets but are also seen in the artificial rickets of animals The inference was that under the general designation "rickets," an entire group of bone deformities was comprised which differ among themselves and in which a number of causal factors may be combined We may say of the most available of our remedies—

irradiated ergosterin—that it is a powerful antirachitic, that it can prevent and arrest the disease, but we cannot claim that it is a true specific for all which goes by the name of rickets.

RIDGWAY, ROBERT. An American ornithologist died Mar. 25, 1929, in Olney, Ill. He was born July 2, 1850, in Mt. Carmel, Ill. He was appointed in 1880 curator of the division of birds in the United States National Museum. He was one of the founders, and in 1898-1900 was president, of the American Ornithologists' Union. Mr. Ridgway wrote *A History of North American Birds*, 5 vols. (1875), with Spencer P. Baird and Thomas M. Brewer, *A Nomenclature of Colors for Naturalists* (1886), *A Manual of North American Birds* (1887, 2d ed., 1896), *The Birds of North and Middle America*, 5 vols. (1901-11), *Color Standard and Color Nomenclature* (1912).

RISLER, EDOUARD. A famous French pianist died in Paris, Aug. 22, 1929. He was born at Baden-Baden, Feb. 23, 1873. A year after his birth, his parents settled permanently in Paris, where the boy attended the Conservatoire from 1886 to 1892, studying the piano under Diemer and composition under Chabrier, winning several prizes in piano, solfège, and harmony. He then continued his pianistic training under Klindworth, Stavenhagen, and d'Albert, and made a most successful debut in Paris, in 1894. During the summers of 1896 and 1897, he was one of the assistant conductors at Bayreuth. After that, he made extended tours of all European countries, recognized as one of the very greatest of contemporary pianists. His only tour of the United States (1923-24) was a series of triumphs.

ROADS AND PAVEMENTS. Expenditures for county highways and city pavements reached an estimated total of between \$2,000,000,000 and \$2,500,000,000 in 1929 and was estimated to run between \$2,500,000,000 and \$3,000,000,000 in 1930. More than half these outlays are expended by States and counties and the remainder by cities.

The mileage of officially opened and accepted streets in incorporated places in the United States is wholly unknown. The highway mileage outside municipalities totaled 2,886,000 in 1921, according to returns made by State highway departments sent to the U. S. Bureau of Public Roads for use as a basis for further Federal aid to State road construction. Later estimates of the Bureau indicate a mileage in excess of 3,000,000. Of this immense total, about 189,000 miles had been designated as Federal-aid roads on June 30, 1929, under the classification, "Main Interstate and Intercounty Highways," and of this, about 79,000 miles had been at least "initially improved" on that date, but due to a reclassification, the Federal-aid mileage was about 78,097, according to the report of the U. S. Bureau of Public Roads for June 30, 1929, in which full details are given.

The total extent of improved roads was divided as follows: 11,668 miles graded and drained earth roads, 7033, sand-clay surfacing, 1616, water-bound macadam, 4845, bituminous macadam, 2194, bituminous concrete, 20,618, Portland-cement concrete, 866, brick, and 277, of bridges of more than 20-foot span with their approaches. About 7000 miles were improved in 1928-29, not counting work under way but not yet completed. Of which, with other con-

nections, brings the total mileage on which Federal-aid money was expended during the year to about 9390 miles. The total cost of the work thus represented was \$195,298,000, of which the Federal government paid \$82,737,000, or 42 per cent, and the States the balance, but it should be understood that not all this outlay was made in one year. The actual disbursement of Federal-aid money in 1928-29 was a little over \$82,000,000, the excess over congressional authorization of expenditures of \$75,000,000 a year having been met from unexpended balances.

A highway construction programme in Alaska has been carried on since 1913 by the Alaskan Road Commission under the immediate direction of representatives of the Corps of Engineers, U. S. Army. Part of this programme fits into a project for an international highway extending from Fairbanks, Alaska, to and through British Columbia to Vancouver, where it will connect with a highway already improved to Seattle. The total length of the route from Fairbanks to Seattle is 2000 miles, of which about 1250 have been improved. In Alaska, 100 miles have been constructed and 200 miles remain.

Mexico. Work on a national highway system was prosecuted under the direction of a national highway commission organized in March, 1925. Construction costs were being met in part from the general national Treasury and in part from a gasoline tax. The latter was increased in 1929 from 3 to 4 cents per liter Mexican currency, or 5½ to 7½ cents per gallon, American currency. See MEXICO.

Great Britain. Of the 179,095 miles of public highways in Great Britain early in 1929, 153,851 miles were in England and Wales and 25,244 in Scotland. (Report on Administration of Road Fund for year ended Mar. 31, 1929, summarized in *The Surveyor*, Dec. 6, 1929 (London).) This was an average of a little over 2 miles of highway per square mile and 1 mile for each 250 population. Of the 179,095 miles, about 41,300, or 23 per cent, was described as "classified", 25,500 as main traffic routes (Class I), and 15,800 as feeders (Class II). Since the first classification in 1921, the total mileage has increased by about 2000 and the classified mileage about 4700. The 137,820 miles of unclassified roads is made up of 29,300 in urban, and 108,500 in rural areas, the latter including some 40,000 miles of "grass lanes and moorland tracks." Receipts of the national road fund for the year 1928-29 totaled £21,298,300 (over \$100,000,000), of which considerably more than half was contributed toward repair and maintenance work conducted by local authorities, while various sums were similarly distributed to help meet the cost of road improvements, including "manning" schemes, or the raising of "district" roads to Classes I and II grades. Under the Local Government Act, 1929 (see MUNICIPAL GOVERNMENT), all "district" roads in administrative counties will come under county jurisdiction on Apr. 1, 1930. Bridges are included in contributions from the national road fund, 408 schemes for widening, reconstructing, and strengthening bridges being included in the 1928-29 grants. See GREAT BRITAIN.

BIBLIOGRAPHY. New American, Russian, and German books on highways and pavements include: Agg, *Construction of Roads and Pavements* (New York), Bennett, *Roadside Development* (New York), Crosby and Goodwin, *Highway Location and Surveying* (Chicago), James,

Highway Construction, Administration and Finance (Washington), Krynnie, *Highway Engineering*, in Russian (Moscow), Reimer, *Handbuch der neuen Strassenbauweisen* (Berlin).

See also BRIDGES, AGRICULTURE, U. S. DEPARTMENT OF.

ROBINSON, SIR JOSEPH BENJAMIN A South African miner and capitalist, died Oct. 30, 1929, in Cape Town, Union of South Africa. He was born at Claddock in the Eastern Province of Cape Colony, South Africa, Aug. 3, 1840. Until 1867 he was engaged in wool buying and farming. In that year he bought 20,000 acres on the Vaal River, finding there diamonds of rare purity. He was active in the life of the settlement, becoming in 1880 mayor of the town of Kimberley. He represented Griqualand West for four years in the Cape Parliament, at which time he secured the passage of the Diamond Trade Act. When gold was discovered on the Witwatersrand in 1886, he was one of the first to go there, buying the Randfontein fields.

ROCHESTER, UNIVERSITY OF A nonsectarian institution of higher education for men and women in Rochester, N. Y., founded in 1850. It consists of three schools—the college of arts and sciences, composed of a college for men and a college for women, the Eastman School of Music, and the school of medicine and dentistry. A school of nursing is also maintained in conjunction with the Strong Memorial Hospital, the property of the university. The enrollment for the autumn session of 1929, exclusive of extension division and special music students, totaled 1,578, distributed as follows: Arts and sciences, 1,040, of whom 567 were men and 482 were women, bachelor of music course, 396, medicine and dentistry, 133. For the summer session, 909 were enrolled in the arts college and 363, in the music school. There were 1,644 in the extension division. The faculty had 337 members, distributed as follows: College of arts and sciences, 120, school of music, 74, and school of medicine and dentistry, 143, of whom 69 were on full time. The productive funds as of June 30, 1929, amounted to \$28,486,903, and the total resources, including land, buildings, equipment, and endowment, were approximately \$50,000,000. The main library contained 121,313 volumes, the Sibley musical library, 21,212 volumes, and the school of medicine library, 29,998 volumes. President, Rush Rhees, DD, LL, D.

ROCHESTER MUSEUM. See ART MUSEUMS.

ROCKEFELLER FOUNDATION. An institution chartered in 1913 "to promote the well-being of mankind throughout the world." On Jan. 3, 1929, there was incorporated under the laws of the State of New York a new Rockefeller Foundation, formed by the merging of the former Rockefeller Foundation and the Laura Spelman Rockefeller Memorial. The new organization received from the two consolidating corporations all their assets, and it assumed all of their obligations. The plan of work adopted provided for cooperation toward the advancement of knowledge in the fields of public health, the medical sciences, the natural sciences (taking over the foreign programme of the International Education Board), the social sciences (formerly the province of the Laura Spelman Rockefeller Memorial), and the humanities. For the administration of the programme in public health an international health division was created, with a group of seven scientific directors. For each of the other fields of activity a director was ap-

pointed. During the year 1929 approximately \$20,000,000 was expended by the foundation for work in the five fields in which its interests lie.

INTERNATIONAL HEALTH DIVISION. The governments of 30 States of the United States and 46 foreign countries were assisted in projects for improving public-health conditions. This aid included participation in studies of yellow fever, malaria, and hookworm disease, in the reduction of yellow fever in Brazil, in demonstrations of malaria and hookworm control and of local health work, and in the development of essential services of State and national health departments.

THE MEDICAL SCIENCES. Aid for the advancement of medical education was given to the following institutions: Albany Medical College, Albany, N. Y., the Medical Faculty of the American University of Beirut, Syria, the Faculty of Medicine of the University of Cambridge, England, the Faculty of Medicine of Chulalongkorn University, Bangkok, Siam, the Faculty of Medicine of the University of Peking, Peking, China, the College of Medicine of Keio University, Tokyo, Japan, the Faculty of Medicine of the University of Lyons, France, the Faculty of Medicine of the University of Montreal, Canada, the National School of Medicine and Pharmacy, Port au Prince, Haiti, Peking Union Medical College, China, Faculty of Medicine São Paulo, Brazil, Shanghai Union Medical College, China, the Medical School of National Central University, Shanghai, the School of Medicine of Shantung Christian University, Tsinan, China, and the Medical Faculty of the University of Utrecht, the Netherlands.

Aid also was given to schools or university departments of public health to further the teaching of hygiene and public health. Six grants for special research projects were made in accordance with the policy of giving assistance in medical schools to individuals, groups, or departments engaged in research important to the advancement of medical knowledge.

The foundation granted and itself administered 105 fellowships in medicine for graduate students to enable them to study in countries other than their own. Four volumes of *Methods and Problems of Medical Education, Series A to D*, were published. The foundation continued its aid to nursing education, and to many other phases of medical and public-health work.

THE NATURAL SCIENCES. In the field of the natural sciences aid was given for the furtherance of research in physics, chemistry, geology, the biological sciences, and physical anthropology. Grants were made to 12 colleges and universities in the Orient to enable them to improve the teaching facilities of their departments of physics, chemistry, and biology. Seventy-nine fellowships for graduate study were supported and administered. Funds were contributed to the Australian National Research Council for the support of fellowships in the biological sciences, and to the National Research Council for the development of its research-aid programme for the support of fellowships in physics, chemistry, mathematics, the biological sciences, agriculture, forestry, and anthropology.

THE SOCIAL SCIENCES. The year's programme in the social sciences included aid to universities and other institutions or organizations for research in the fields of economic, political science, international law, sociology, psychology, and anthropology.

THE HUMANITIES In the humanities division a grant was made to the Bibliothèque Nationale, Paris, toward the cost of completing the publication of its general catalogue, and in cooperation with the American Bibliographical Society the foundation entered upon a project to aid the Library of the British Museum in the publication of a new edition of its catalogue. Funds were contributed to the American School of Classical Studies in Athens for the support of fellowships in archeology, and aid was given to the American Council of Learned Societies for the provision of fellowships and grants for the furtherance of research in humanistic studies.

At a meeting of the board of trustees of the foundation, held June 13, 1929, Thomas B. Appleget was elected vice president, for work immediately related to the New York office. At a meeting of the board on November 13, Dr. Max Mason was elected president to succeed Dr. George E. Vincent who had reached the specified age of retirement. Dr. Mason was to assume his office on Jan. 1, 1930.

ROCKS See GEOLOGY

RODIN MUSEUM. See ART MUSEUMS

ROGERS, J (AMES) HARRIS An American inventor, died in Hyattsville, Md., Dec. 12, 1929. He was born in Franklin, Tenn., July 13, 1850, and was educated under private tutors and at St. Charles College in London. He lived in Hyattsville, Md., where he carried on electrical researches. His 50 or more patents were for inventions relating to multiplex and rapid-painting telegraphy, the electric light, telephone, and radio telegraphy. He discovered, and in 1893 perfected a method of synchronized telegraphic printing. His most important invention was a device for secret radio communications under ground and under water, used by the United States during the World War.

ROLLINS COLLEGE A nonsectarian, co-educational institution of higher learning in Winter Park, Fla., founded in 1885. The enrollment for the fall term of 1929 totaled 339, of whom 57 were seniors, 60 juniors, 70 sophomores, 117 freshmen, and 35 graduate, foreign exchange, and unclassified students. The faculty numbered 64. The productive funds of the college amounted to approximately \$750,000, the income from endowment, to approximately \$40,000, and the income from other sources, to about \$140,000. The library contained 25,000 volumes. President, Hamilton Holt, LL.D., Litt D., LL.D.

ROMAN CATHOLIC CHURCH The year was the most eventful in the modern history of the Church, as it marked the treaty of conciliation settling the 60-year-old controversy with the Italian Government. This was signed in the Lateran Palace on February 11 and recognized the Pope as the sovereign of a new state, the City of the Vatican, a territory of 100 acres with 518 subjects. This treaty, signed by Cardinal Gasparri and Premier Mussolini and formally ratified by the Pope and the King on June 1, also regulated the conditions of the Church and of religion in Italy in a concordat. On December 20 the Pope went unexpectedly to the Basilica of St. John Lateran and said mass, where 50 years before he had been ordained priest. It was the first time a Pope had been in the streets of Rome since 1870, although Pius XI had appeared in the Piazza of St. Peter's in a Eucharistic procession on July 25. The King and Queen of Italy paid their first visit to the Pope on December 5.

The first Consistory of the year was held on July 15, when Archbishop Schuster of Milan was created a cardinal. The second Consistory was held on December 16, when six other cardinals, Cerejeira, Lavitiano, Minoretto, MacRory, Veidier, and Pacelli, were added to the Sacred College. The Pope issued two encyclicals, one early in the year on Gregorian chants and sacred music and the other on December 19, urging the Church's activity in apostolic work and its interest in the arts as a practical and most valuable aid to a Christian life. This was also the theme of his discourses on other occasions. He proclaimed an extra jubilee for the year early in January to mark his fiftieth year in the priesthood and at the end extended it to July, 1930. During 1929 over 200 jubilee pilgrimages came from all parts of the world, 11 from the United States.

The Pope spoke at length on December 8 to representatives of mission organizations and warned them of the danger of nationalistic propaganda, which he styled "a real evil and a malediction in the mission field." On December 15 he presided at the beatification of 136 English martyrs who suffered death between 1594 and 1697, and on December 22, of Father John Ogilvie, a Scotch Jesuit. Other beatifications were of Don Bosco the Salesian, on June 2, and of Father Claude Columbière, S. J., on June 16, at which 21 nations were represented, including 150 pilgrims from the United States.

OTHER SIGNIFICANT EVENTS Concordats between Prussia and Rumania and the Vatican were ratified July 9. In Mexico announcement was made on June 21 that an agreement had been reached in settlement of the religious question between the Church authorities and President Portes Gil. The Apostolic Delegate of the Pope was Archbishop Leopoldo Ruiz y Flores, and Bishop Pascual Diaz of Tabasco was named Archbishop of Mexico City and Primate. Services were resumed in the churches June 27 for the first time in three years.

THE CARDINALS The total number of the Sacred College, with the creations of the year, was 63. Of this total, the non-Italians numbered 33 and the Pope's creations, 32. The cardinals created during the year were: the Benedictine Abbot of the Basilica of St. Paul Outside the Walls, and later Archbishop of Milan, Ildefonso Schuster, at the Consistory of July 15 and, at the Consistory of December 16, Archbishops Emanuel Gonçalves Cerejeira, Patriarch of Lisbon, Luigi Lavitiano of Palermo, Carlo Dalmazio Minoretto of Genoa, Jean Veidier of Paris, Joseph MacRory of Armagh, and Mgr. Eugenio Pacelli, Nuncio to Germany. Eight cardinals died during the year, making 34 deaths since Pius XI began his reign. These included Eugenio Tosi, Archbishop of Milan, January 7, Antonio Vico, Bishop of Porto and Santa Rufina, February 25, Aurelio Galli, March 26, Evaristo Lucidi, March 31, Francis Aidan Gasquet, Archivist of the Library of the Church, April 5, Antonio Mendes Bello, Patriarch of Lisbon, August 5, Louis Ernest Dubois, Archbishop of Paris, September 23, and Giuseppe Gamba, Archbishop of Turin, December 26.

Cardinals Hayes of New York and Dougherty of Philadelphia were present at the Consistory of December 16 and at the celebration of the Pope's Golden Jubilee. At the close of the year the resignation of Cardinal Gasparri as Secretary of State was announced, with Cardinal Pacelli as his successor.

THE Hierarchy Mgr Francis O'Hern was appointed Bishop of Rochester, N. Y., January 4, in succession to Bishop Thomas F. Hickey, resigned, and named Titular Archbishop of Viminacium, the Rev. Robert J. McElroy was appointed Bishop of Sacramento, Calif., January 9, Mgr Gerald P. O'Hara, Auxiliary Bishop of Philadelphia, May 7, Mgr Joseph H. Albers, Auxiliary Bishop of Cincinnati, December 4, the Rev. Aloysius J. Willinger, C.S.S.R., Bishop of Ponce, Porto Rico, May 3. In Canada on May 30, Bishop M. J. O'Brien of Peterborough was appointed coadjutor to Archbishop M. J. Spratt of Kingston and Bishop Thomas O'Donnell of Victoria, coadjutor to Archbishop E. J. McCarthy of Halifax. Archbishop Paschal Robinson, O.S.F., a former resident of New York, was appointed Nuncio to the Irish Free State November 27. The see city of Lead, S. Dak., was transferred to Rapid City. The deaths of the year were Bishops Owen B. Corrigan of Baltimore, April 8, John Ward of Leavenworth, April 21, Edmund M. Dunne of Peoria, October 17, and Archbishop James J. Keane of Dubuque, August 2.

At the annual meeting of the hierarchy in Washington November 5 and 6, there were 60 prelates present. They were cabled to the Pope on his offering of \$50,000 was voted to him from donations by all the dioceses of the United States, and he was felicitated on the settlement of the Italian ques-

tion. All departments of the National Catholic Welfare Conference showed development and progress in their reports.

STATISTICS. The official lists in the *Annuario Pontificio* for 1929 show the whole Church, numbering 400,000,000 souls, divided into 1555 jurisdictions, administered by 14 patriarchs, 245 archbishops, 908 bishops, 57 abbacies, and 331 apostolic vicariates. The Holy See had 11 embassies and 18 ministers in its diplomatic corps and 24 nuncios, 4 internuncios, 1 chargé d'affaires, and 21 apostolic delegates. In the foreign representation were 11 embassies and 18 ministers. There were 37 monastic orders, 17 mendicant orders, 8 orders of clerics regular, 66 ecclesiastical congregations, and 10 religious institutes. In Rome there were 30 seminaries and ecclesiastical colleges of different nationalities and 23 colleges belonging to religious orders.

In the United States, the *Official Catholic Directory* for 1929 gave the total Catholic population at 20,112,758, a gain of 423,709 over the previous year. The converts reported number 36,370, a gain of 2,385. The administration of the Church included 17 archbishops, four of them cardinals, 104 bishops, a gain of five, 25,773 priests, a gain of 580 (7403 are of the religious orders). There were 11,903 churches with resident priests, a gain of 204, and 136 theological seminaries in which 14,686 students were enrolled, a gain of 254.

The Department of Commerce, in March made public its religious census of 1926, showing a total of 18,040 Roman Catholic churches with a membership of 18,605,003. Of these, 11,070 were rural, with 3,797,708 members, and 7800 urban, with 14,809,295 members. New York leads with 1781 churches and 3,115,424 members, Pennsylvania, 1730 churches and 2,124,382 members, Illinois, 1064 churches and 1,352,719 members, Massachusetts, 705 churches and 1,629,424 members. Sunday schools with 1,201,330 pupils and 19,498 teachers were reported by 8239 churches. The value of 16,254 churches reporting was placed at \$837,271,053. The debt figures are incomplete, more than 2000 churches not reporting, 5361 gave a total of \$129,937,504.

There were 26 Roman Catholic chaplains in the U. S. Army, and during the year they said Mass in the military reservations 1923 times with a total attendance of 275,582. There were seven Catholics in the U. S. Senate. The colored Catholics in the United States numbered about 130,000 with 150 local church congregations, 117 of them in urban territory. In 1916 the churches numbered only 83 and the members 51,688.

In England and Wales the Catholic population was 2,156,146, an increase for the year of 12,841. In Australia and New Zealand the total is 1,378,991.

EDUCATION. The twenty-sixth annual meeting of the National Catholic Educational Association was held in Toledo June 24-27, and all the reports showed marked progress. There were 237 colleges for boys, an increase of 12, and 734 academics for girls, an increase of five. Since 1920, 39 women's colleges had been established, and the students in all the Catholic colleges totaled close to 100,000. The total of instructors in the institutions of higher learning is 6800, and of these 2990 were of the religious orders and 3810 laymen and laywomen. In the 7063 parish schools there were 2,488,682 pupils, an increase of 53 schools and 206,846 pupils. The normal rate of increase is

State	Number of Churches		Number of Members	
	1926	1916	1926	1916
United States	18,940	17,375	18,605,003	15,721,815
Maine	179	146	173,893	148,530
New Hampshire	134	135	146,646	136,020
Vermont	109	109	89,424	78,178
Massachusetts	705	599	1,629,424	1,410,308
Rhode Island	135	105	323,375	261,312
Connecticut	302	261	557,717	483,814
New York	1,781	1,496	3,115,424	2,745,552
New Jersey	569	513	1,055,998	790,764
Pennsylvania	1,730	1,411	2,124,382	1,830,532
Ohio	862	687	972,109	843,856
Indiana	605	469	812,194	672,288
Illinois	1,064	955	1,352,719	1,171,381
Michigan	714	579	844,106	572,117
Wisconsin	984	908	657,511	594,836
Minnesota	747	713	475,809	415,661
Iowa	612	648	287,066	262,513
Missouri	534	520	517,466	445,352
North Dakota	459	152	104,195	95,859
South Dakota	409	339	97,077	72,113
Nebraska	413	381	154,889	135,537
Kansas	399	377	171,178	128,948
Delaware	30	44	36,696	30,181
Maryland	240	221	231,949	219,510
Dist. of Columbia	28	28	67,348	51,423
Virginia	110	141	48,605	36,671
West Virginia	177	161	71,265	60,317
North Carolina	66	77	6,900	4,989
South Carolina	61	48	9,036	9,514
Georgia	71	97	17,871	18,214
Florida	115	153	39,379	24,850
Kentucky	281	255	177,048	160,185
Tennessee	87	142	24,876	21,015
Alabama	119	174	36,019	37,482
Mississippi	112	140	32,705	32,160
Arkansas	144	204	24,741	21,120
Louisiana	414	350	587,846	509,910
Oklahoma	182	260	46,753	47,427
Texas	742	609	555,899	408,874
Montana	328	398	74,224	78,113
Idaho	141	169	23,141	17,947
Wyoming	79	69	18,772	12,801
Colorado	263	230	125,757	104,982
New Mexico	518	486	174,287	177,727
Arizona	171	157	96,471	84,742
Utah	48	15	14,595	10,000
Nevada	17	30	8,447	8,742
Washington	287	345	121,249	97,418
Oregon	207	244	55,574	49,728
California	717	620	520,808	494,539

2 per cent a year. In 116 colleges, of the students entering 57.2 per cent came from Catholic high schools.

MISSIONS. A total of \$1,278,257, an increase of \$139,360, was contributed in the United States to the mission funds of the Congregation for the Propagation of the Faith during the year, or virtually half the contribution of the entire world. Between March, 1922, and March, 1929, there were 78 new fields of action created, making 435 in all, 10 of these are under native clergy—seven in China, one in Japan, and two in India.

There were 94 missions in China, and on March 4 the Rev. Evariste Tehang was appointed Bishop of the new Vicariate of Sievantsé and the Rev. John Tehang, Vicar Apostolic of the new Prefecture of Chaousen. On November 25 the Rev. Quang Uon Cien was appointed first Vicar Apostolic of Shunking and the Rev. Francis Wang, first Vicar Apostolic of Wanhsien. The Rev. Edward Sheehan was named Vicar Apostolic of Yukiang January 29 and the Rev. F. X. Ochs, a former U. S. Army chaplain, Prefect Apostolic of Kweitch, Honan Province.

ASSEMBLAGES. To celebrate the centenary of Catholic Emancipation, 300,000 persons attended the Mass in Phoenix Park, Dublin, June 23. The service was broadcast all over Ireland. All the hierarchy were present and with 1000 priests and the Irish Free State officials formed an imposing Eucharistic procession after the ceremony. The largest gathering of Catholics ever seen in modern England held a similar celebration in Liverpool September 8 at a Mass in Thringwall Park. The National Catholic Congress was held in London September 13-17 with immense success.

Notable conventions of the year were: The Catholic Press Association in Cincinnati, May 16-18, Catholic Students' Mission Crusade, Washington, June 20-23, Catholic Central Verem, Salem, Ore., July 13-18, Knights of Columbus, Milwaukee, August 19-22. The date for the next (thirtieth) International Eucharistic Congress was fixed to open in Carthage, Africa, May 7 and to close May 11, 1930. The following Congress was to be held in Ireland. There were 100,000 attendants at the Central American Eucharistic Congress which opened in Leon, Nicaragua, December 31.

ROMANCE LANGUAGES AND LITERATURE. See PHILOLOGICAL, MODERN, SPANISH LITERATURE.

ROMAN EXCAVATIONS. See ARCHAEOLOGY.

ROME. See ARCHAEOLOGY.

ROSEBERRY, ARTHUR ALPHRED PHILIP PRIMMROSE. First Earl of An English statesman died May 21, 1929, at his country home in Epsom, Surrey. He was born May 7, 1847, in London, and in 1866 entered Christ Church College, Oxford University. He left Oxford in 1868 without taking a degree, and in that same year, at the death of his grandfather, succeeded to the Earldom of Rosebery. Lord Rosebery's first office was that of Under-Secretary for the Home Office, held during 1881-82. For short periods in 1885, he was Lord of the Privy Seal and Chief Commissioner of Works. In 1886 and again in 1892-94, during the ministries of Gladstone, he was Secretary of Foreign Affairs, where as a Liberal Imperialist, he was an advocate of the policy of Imperial Federation. When the London County Council was established in 1889, he became its first chairman, serving in 1889-90, and for a few months in 1892.

On the retirement of Mr. Gladstone as Premier in 1894, Lord Rosebery succeeded him, remaining in office until 1895. The failure of his premiership was due both to the opposition of the Radical party and to divisions within the Liberal party itself. For three years longer, Lord Rosebery remained in name leader of the Liberal party, but, when even Gladstone showed disapproval of his views, he withdrew from political life. His writings, chiefly historical, include *Life of William Pitt* (1891), *Appreciations and Addresses* (1899), *Sir Robert Peel* (1899), *Napoleon: The Last Phase* (1900), *Oliver Cromwell* (1900), *Lord Randolph Churchill* (1906), *Chatham: His Early Life and Connections* (1910), *Miscellaneous Literary and Historical* (1921).

ROSENWALD FUND. See EDUCATION IN THE UNITED STATES, UNIVERSITIES AND COLLEGES.

ROSSITER, WILLIAM SUNNEY. An American printer, census official, and statistician, died in Concord, N. H., Jan. 23, 1929. Born in Westfield, Mass., Sept. 9, 1861, he was graduated from Amherst in 1884. After being in the business office of the *New York Tribune*, he went to the *New York Press* in 1888, where he remained for a year. He was then made treasurer of the *New York Printing Company*. Mr. Rossiter was selected as the printer and publishing expert to aid in the preparation of the 1900 United States Census, and in 1904 he was appointed chief clerk of the department. While he was still holding that position, in 1908, President Roosevelt commissioned him to investigate the government printing office. Elected vice president of the Rumford Press, a noted magazine-printing organization in 1909, Mr. Rossiter moved to Concord, N. H., and in 1916 he became president of the company, retaining that position until his death.

ROTARY CLUBS. Organizations established for the purposes of developing the highest ideal of unselfish service, of making practical application of that ideal to the business and professional life of the individual members, to organizations of which they may be members, and to the communities and nations in which they may live, and of promoting international peace and good will through a fellowship of business and professional men of all nations united in the ideal of service. Membership in the clubs is limited to one representative of each business, profession, or institution in a community.

The 1929 convention of Rotary International was held May 27 to 31 in Dallas, Texas, with an attendance of 9326 delegates, representing Rotary clubs in 30 countries. The convention acknowledged the recognition indicated by President Doumergue in accepting the honorary district governorship of the Rotary clubs of France. Previous conventions had similarly honored the action of Albert, King of the Belgians and Victor Emmanuel, King of Italy. To further the development of international friendship and goodwill the convention voted to hold the annual convention outside the United States at least once every four years. The 1930 convention will be held in Chicago, the home of the first Rotary Club, in honor of the 25th anniversary of this club. The 1931 convention will be held in Vienna, Austria.

On Nov. 8, 1929, Rotary International consisted of 3231 clubs with an approximate membership of 150,000 in 61 countries. There were 2370 clubs in the United States, 102 in Canada, 324 in Great Britain and Ireland, and 435 in Europe and in various other parts of the world.

Officers for 1929-30 were: President, M Eugene Newson, Durham, N C; first vice president, Dr Otto Böhler, Vienna, Austria, second vice president, Dr Edouard Willems, Brussels, Belgium, third vice president, Charles W. Ackley, Vineland, N. J., directors: Vizeconde de Casa Aguiar, Madrid, Spain; David Clark, Charlotte, N C, Clyde L. Hulsizer, Des Moines, Iowa; D W Oherm, Oklahoma City, Okla.; Sydney W Pascall, London, England; Roy Ronald, Mitchell, S D., I B Sutton, Tampico, Mexico; D M Wright, Stratford, Ont., Canada, secretary, Chesley R Perry, Chicago, treasurer, Rufus F Chapin, Chicago Headquarters of Rotary International are at 211 West Wacker Drive, Chicago, with a branch office at 2 Peltkinstasse, Zurich, Switzerland

ROUMANIA. See RUMANIA

BOWING. The accomplishments of the Columbia University crews stood out in the list of 1929 rowing achievements. The Blue and White won the intercollegiate regatta at Poughkeepsie in June in a great victory in the roughest water the event has ever known. The Hudson was so turbulent that four of the crews—California, Olympic champion and 1928 Poughkeepsie winner, Cornell, Syracuse, and Massachusetts Institute of Technology—were swamped before the finish line was reached. Columbia beat out Washington, with Pennsylvania third, Navy fourth, and Wisconsin fifth. Cornell triumphed in the Junior Varsity race and the Syracuse freshman eight won the first-year event.

Earlier in the year Columbia made a clean sweep of the Housatonic, winning the Blackwell Cup from Yale and Pennsylvania, as the Freshman, Junior Varsity, and 150-pound crews also scored impressive victories. The four New York eights also swept Carnegie Lake at Princeton in search of the Childs Cup. Princeton was second with Pennsylvania third. The Yale eight led Harvard home by more than six lengths in the regatta at New London in June. Edward Brown, coach of Harvard, resigned in September, and Charles Whiteside of Syracuse was added to the Crimson coaching staff.

One of the most noteworthy events of the year was the victory of the Brown and Nichols School of Boston crew in the Henley in England in July. The Columbia University 150-pound eight also scored in foreign waters, winning the Marlow Cup, only to be defeated later in the Henley by the Trinity College crew. The Boston schoolboys led the Trinity eight to the finish in the Henley final. The Diamond Sculls at Henley was won by L. H. F. Gunther of Holland, who defeated the holder of the trophy, Joe Wright, Jr., of Canada.

Kenneth Myers, the Philadelphia sculler, won the national singles event from Wright in the annual regatta of the National Association of Amateur Oarsmen, on the Connecticut River at Springfield in August. The Penn Athletic Club crew won the national eight-oared shell crown, defeating the Springfield Rowing Association crew in the final.

Cambridge won the annual eight-oared race with Oxford on the Thames in March.

RUBBER. During the year the world's production of rubber was estimated at 858,500 long tons, or an increase over the 1928 production of 680,000 tons. The distribution of production is shown in the accompanying table, prepared by the Rubber Division of the U S Bureau of Foreign and Domestic Commerce.

WORLD RUBBER PRODUCTION

	1928 Long tons	1929* Long tons
British Malaya	299,652	445,000
Netherland East Indies	225,983	260,000
Ceylon	57,267	80,000
India and Burma	10,790	12,000
Sarawak (Malayan imports from)	10,087	11,000
British North Borneo	6,698	7,000
Siang (Malayan imports from)	4,817	5,000
Indo China	9,616	9,000
Brunei (Malayan imports from)	484	500
Philippine Islands	709	800
Papua, Samoa, and Fiji	482	100
Amazon Valley	21,129	21,000
Other America, except Guayule	1,490	900
Guayule (United States imports of)	3,076	1,500
Africa	6,124	5,000
Total	658,000	858,000

* Estimated

While there was increased consumption during the year, 1929, nevertheless the production, particularly in Malaya and the native areas, so greatly exceeded expectations that the year was considered disappointing. Prices receded so that at the close of the year the rubber market was quiet and many producers believed them to be near the cost of production. Conditions of production were such that toward the end of the year Dutch growers proposed controlling the rubber producing industry through a modified form of restriction, while some British leaders suggested coordinated selling, though neither plan appealed particularly in view of the lack of success which previously had attended the Stevenson plan of crop restriction.

Closely related with the production of rubber is the consumption, which the U S Bureau of Foreign and Domestic Commerce estimated for 1929 at 785,000 long tons, as compared with 680,700 tons in 1928. This is given in the accompanying table.

WORLD RUBBER CONSUMPTION

	1928 Long tons	1929* Long tons
United States, consumption	437,000	475,000
United Kingdom, deliveries to manufacturers	48,500	65,000
Germany, net imports	37,800	49,000
France, net imports	36,500	54,000
Canada, net imports	30,400	35,000
Japan, net imports	25,600	30,000
Italy, net imports	12,400	17,000
Russia, net imports	15,100	11,000
Australia, net imports	8,400	15,000
Belgium, net imports	8,000	9,000
Other countries	21,000	25,000
Total	680,700	785,000

* Estimated

The total consumption of crude rubber and reclaimed rubber in the United States during 1929, as determined by the Rubber Division of the Department of Commerce with the cooperation of manufacturers who submitted reports, compared as follows with preceding years:

UNITED STATES RUBBER CONSUMPTION

	Crude Rubber Long tons	Reclaimed Rubber Long tons	Ratio of Reclaimed to Crude Per cent
1925	388,000	137,000	35.3
1926	366,000	164,500	45.0
1927	373,000	189,500	50.8
1928	437,000	223,000	51.0
1929	467,400	212,700	45.5

The accompanying figures indicate an increased use of crude rubber, though a decline in reclaimed rubber. The percentage use of reclaimed rubber declined 5.5 per cent from 1928 to 1929 and amounted to about the ratio for 1926. The Rubber Division states that in arriving at the 1929 consumption figures for crude rubber and reclaimed rubber certain estimates, in addition to the actually reported consumption, were necessary. The consumption actually reported was 460,321 tons of crude rubber and 206,722 tons of reclaimed rubber.

According to the Rubber Manufacturers Association the imports of crude rubber of all grades into the United States during 1929 totaled 561,454 long tons, being distributed as follows: Plantations, 548,997 tons; Paras, 10,405 tons; African, 445 tons; Central, 343 tons; Guayule, 1251 tons; Manicoba and Matto Grosso, 13 tons. This production for the year compared with 446,421 tons in 1928.

In 1929, according to the statistics of the Rubber Manufacturers Association, the total sales value of manufactured rubber products shipments, representing 92 per cent of the industry, aggregated \$1,055,165,000 as compared with \$1,099,790,000 in 1928 and \$1,206,022,000 in 1926, the year of maximum production. The leading rubber products are tires and tire sundries, and these in 1929 had a total value of \$703,027,000, as against \$771,066,000 in 1928 and a maximum of \$866,795,000 in 1926.

In New York the market for spot rubber, ribbed smoked sheets opened in January, 1929, at 18 cents and closed at the end of the month at 22½ cents, advancing through February and closing at 26½ cents, a high point for the year. From this point there was a decline, with minor advances during the year, with a closing price on July 31 of 21½ cents and on August 30 of 19½ cents. Prices reported for October were about 20 cents until the end of the month when the closing price was 18½ cents. November showed a further decline, with 16½ cents quoted on November 30, while in December the record low price of the year, 15½ cents, was reached, recovering, however, to 16½ cents on December 31. The total transactions on the New York Rubber Exchange during 1929 involved 196,486 contracts representing 491,215 tons, as against a total of 176,369 contracts for 418,422½ tons in 1928.

The total value of rubber and manufactures exported in 1929 was \$76,963,395, as compared with \$69,544,611 in 1928.

Imports of rubber and manufactures in 1929 were valued at \$247,420,893 as compared with \$253,020,242 in 1928. These included in 1929, 1,262,938,846 pounds of crude rubber and milk of rubber valued at \$240,966,780, and manufactures of rubber valued at \$2,319,837.

RUBBER, SYNTHETIC See CHEMISTRY, INDUSTRIAL.

RUBIO, ORTIZ See MEXICO, under *History*.

RUINS See ARCHAEOLOGY.

RUMANIA. A constitutional monarchy forming the largest and northernmost of the Balkan States, bounded on the south by the Danube River and Bulgaria, on the east by Russia and the Black Sea; on the north by Poland, Czechoslovakia, and Hungary and on the west by Yugoslavia. Capital, Bucharest, reigning sovereign in 1929, Mihai (Michael) I.

Rumania is divided administratively into the

two old principalities of Wallachia and Moldavia (united in 1861), the Dobruja; Bessarabia, ceded in March, 1918; Bukovina, ceded in November, 1918, and Transylvania, ceded in December, 1918. Area before the World War, including territory taken from Bulgaria by the Treaty of Bucharest, Aug. 7, 1913, 114,490 square miles, population, estimated in 1915, 7,904,104. Area after the War, 122,282 square miles, population, 17,393,149. The estimated population in 1928 was 17,900,000. The population of the chief cities in 1927 was Bucharest, 875,000, Chisinau (Kishinev), 175,000, Cernowitz, 175,000, Galati, 130,000; Ploesti, 115,000; Timisoara, 110,000, Jassy, 100,000, and Klausenburg (Cluj), 100,000, and Oradea Mare, 90,000.

Production. Agriculture is the main occupation of the great bulk of the Rumanian population.

In 1928 an unusually poor crop of corn, the principal food of the people and also the chief grain export crop, resulted in unsatisfactory agricultural conditions, although the aggregate yield of wheat, rye, barley, and oats was 20 per cent larger than the average for the five years from 1921 through 1927. The total value of farm crops in 1928 was \$409,220,000, as compared with \$410,019,000 in 1927. Lumbering and mining are other important industries. There are about 16,918,964 acres of forests in the country. The value of mineral production in 1927 was \$64,098,000, including petroleum, \$36,884,000, coal and lignite, \$16,537,000, salt, \$4,281,000, natural gas, \$1,462,000, and gold, \$1,357,000. Production of petroleum in 1929 was estimated at 4,860,000 tons as compared with 4,192,882 in 1928. Iron ore, silver, copper, and antimony are other minerals produced. The output of beer in 1927 totaled 24,528,000 gallons. Manufacturing is confined largely to the metallurgical industry, which produced 63,498,000 tons of pig iron in 1927.

COMMERCE. A \$60,000,000 decrease in cereal exports in 1928 resulted in a 28 per cent drop in the value of the total exports, which amounted to \$165,096,000 as compared with \$227,801,000 in 1927. Imports decreased by only 2 per cent, the value for 1928 being \$197,146,000, as against \$201,975,000 in the preceding year. The adverse balance of trade was \$32,000,000 as compared with a favorable balance of \$25,800,000 in 1927. The adverse balance in foreign trade continued in 1929, according to preliminary reports, due to the decline in cereal shipments resulting from the poor corn crop of 1928. Imports totaled 29,896,504,000 lei (about \$179,379,024) and exports 28,914,934,000 lei (about \$173,489,604), leaving an excess of imports of \$5,890,000. As compared with 1928, the imports declined 10 per cent and the exports increased 7.4 per cent.

FINANCE. There was a deficit of \$15,200,000 as a result of financial operations in 1928, the total revenues being \$202,500,000 and the expenditures \$217,700,000. The budget estimates for the year balanced at \$235,086,000, as compared with the budget estimate of \$209,226,000 in 1927. The budget for 1929 was estimated to balance at 37,700,000,000 lei (about \$226,200,000), the preliminary reports showed a 6 per cent increase in revenue collections as compared with 1928. The 1930 budget provided for the payment of all the old state debts by the end of that year and for the reduction of expenditures by the dismissal of some 5500 state officials. The total public debt in 1929 was reported to be about \$716,300,000, of

which \$65,661,000 was due the United States government. An additional \$101,000,000 loan was contracted in February, 1929, for use in stabilizing the currency and for the rehabilitation of the state railroads and other economic reconstruction purposes. The unit of currency is the leu (plural, lei), stabilized at \$0.00598 in February, 1929.

COMMUNICATIONS The railways of Rumania, as well as the telegraph and telephone systems, are state owned. In 1928 the 7102 miles of railways in operation carried 39,359,000 passengers and 17,035,000 metric tons of freight. Receipts totaling 11,006,000 lei (\$1,861,000).

GOVERNMENT Under the constitution of Mar. 28, 1923, which nationalized all forests and subsoil, executive power is vested in the King and a council of ministers, the King having a suspensive veto over the laws passed by Parliament, and legislative power is vested in the Senate of 170 members and the Chamber of 347 members. Michael I, born Oct. 25, 1921, was proclaimed King on July 21, 1927, after the death of his grandfather, Ferdinand I. (See YEAR BOOK for 1927.) The King, being a minor, ruled through a Regency Council composed of his uncle Prince Nicholas, the Patriarch Mgr. Miron I. Cristea of the Orthodox Church, and George Buzdugan, former president of the Court of Appeal. The Maniu Cabinet representing the National Peasants' party, appointed Nov. 11, 1928, included Prime Minister, Dr. Julius Maniu. Foreign Affairs, George Mironescu, Interior, Dr. Alexander Vayda-Voevod, Agriculture, M. M. Mihalache, Education, Dr. Constantin I. Brucan, Finance, Dr. Mihai Popovici.

HISTORY

The history of Rumania during 1929 was marked by noteworthy internal progress and increasing stability under the enlightened leadership of Premier Maniu. Other important developments were the repeated attempts of Queen Marie to regain her former political influence and the important steps taken toward a settlement of outstanding foreign problems.

INTERNAL REFORMS The programme of converting Rumania into a democracy on Western lines announced by the Maniu Cabinet soon after its accession to power, was pushed with vigor and a remarkable degree of success. To achieve this end the government sought to decentralize the administration of the country, reform the police and gendarmerie system, and reconstruct the country economically, partially by encouraging foreign investments. Liberal treatment of the Hungarian and other minorities and the cultivation of friendly relations abroad were other items in Premier Maniu's programme. The cabinet's plan for administrative reform proposed to divide the country into six provinces, create a larger type of rural commune, and give a scope to local elective bodies. The provinces would exercise much of the authority hitherto concentrated in the Ministry of the Interior.

The personnel of the gendarmerie was reduced by more than 10,000 and the system of attaching a gendarme to each village was revised to promote better discipline and more efficient patrolling. Of outstanding importance were the laws adopted by Parliament governing mining and the administration of state enterprises, which permitted foreign interests to secure leases on the same terms as those obtaining for Rumanian citizens.

While these reforms were highly popular among the masses of peasants and townspeople, they were equally objectionable to the adherents of the former Premier and virtual dictator of Rumania, Vintila Bratianu. The latter bitterly attacked the government on the ground that it was allowing foreign capital to gain control of the petroleum industry. A military conspiracy to overthrow the cabinet was discovered by the government early in July and 14 leaders arrested, while for a time a stringent censorship of the press was imposed. The 14 offenders were convicted of high treason a month later, but extremely light sentences were imposed.

REGENCY COUNCIL DISPUTE The Dowager Queen Marie's aspirations for political power appeared nearer realization following the death on October 7 of George Buzdugan, one of the three members forming the Regency Council. Her candidacy for election to the vacant post was supported by high court officials and by members of former Premier Bratianu's Liberal party, but owing to the firm opposition of Premier Maniu her name was not presented before Parliament. Constantin Saratzanu, counselor in the Rumanian High Court of Cassation, was elected as the new member at a special session of Parliament on October 9, receiving 455 votes. Former Crown Prince Carol received nine votes and General Presan, the candidate of the military and a section of the Liberals received 22. Shortly thereafter the Queen in an interview published in the newspaper *Universal* sharply criticized Premier Maniu and the policies of his government. The furor aroused was stilled when on October 17 the Court Chamberlain denied the authenticity of the interview on behalf of the Queen. In December the newspaper *Cuventus* reported that Prince Nicholas, uncle of King Michael and son of Queen Marie, had decided to resign from the Regency Council to allow his mother to succeed him.

FOREIGN RELATIONS The progress which had been made earlier in the year toward a settlement of the Optants disputes with Hungary and Bulgaria received a setback late in November when the Rumanian government ordered the immediate liquidation of estates in Rumania owned by Hungarian and Bulgarian nationals. The order, which was apparently in violation of the Treaty of Trianon, was regarded as a maneuver to attain a strategic position for Rumania at the Reparations Conference scheduled for the following January. Both Bulgaria and Hungary had consistently refused Rumania's request that the indemnification of Hungarian and Bulgarian optants for properties confiscated by Rumania should be set off against reparation payments due Rumania by the other two powers.

In other directions more progress was made. The long-standing dispute with Soviet Russia over Bessarabia was at least temporarily resolved by the signing during the year of the Litvinov Protocol. Relations with Jugoslavia improved as a result of an agreement reached on minor differences, and in May a concordat with the Vatican, giving the Roman Catholic Church official status in Rumania, was ratified by both branches of the Rumanian Parliament. See HUNGARY and RUSSIA, under *History* for details of Optants question and Litvinov Protocol, respectively. See JEWS.

RUMANIAN LITERATURE. See *LITERATURE*, *MODERN*.
RUM BOW, RUM RUNNING, ETC. See *PROHIBITION*.

RURAL SOCIOLOGY. See AGRICULTURAL EXPERIMENT STATIONS

RUSSELL SAGE FOUNDATION. An institution established by Mrs Russell Sage as a memorial to her husband. The initial endowment was \$10,000,000, to which \$5,000,000 was added by her will. It was incorporated by the Legislature of the State of New York in April, 1907, "for the improvement of social and living conditions in the United States of America." The members of the staff of the foundation study social conditions and methods of social work, interpret the findings, make the information available by publications, conferences, and other means of public education, and in various ways stimulate action for social betterment. The departments and their directors in 1929 were as follows: Charity organization, Joanna C Colcord, industrial studies, Mary van Kleeck, library, Bertha M Hulseman, recreation, Lee F. Hammer, remedial loans, Leon Henderson, statistics, Ralph G Hurlin, surveys and exhibits, Shelby M Harrison. A consultation service on problems relating to delinquency and penology was conducted by Hastings H. Hart, and the *Year Book of Social Work* was prepared by Fred S. Hall as editor. Although the foundation makes a few grants to other agencies with kindred purposes, it carries out its programme chiefly through its own departments.

CHARITY ORGANIZATION. The charity organization department studies and publishes in the field of social case work and family welfare. The results of its most recent studies were published in two volumes, one entitled *Marriage and the State*, by Mary E. Richmond and Fred S. Hall and the other entitled *Marriage Laws and Decisions in the United States*, by Geoffrey May.

INDUSTRIAL STUDIES. The department of industrial studies is engaged in investigations of human relations and conditions of employment in industry. Its study of employees' participation in a large retail store (William L. & Co., Boston) was published in 1929, and its study of conditions arising under the agreement between operators and miners in the bituminous coal industry in Illinois was nearing completion.

LIBRARY. The library of the Russell Sage Foundation contained, in 1929, 29,008 bound volumes and 100,841 pamphlets and reports and subscribed to nearly 300 periodicals dealing with social problems and kindred subjects.

RECREATION. The department of recreation assists in the social organization of leisure time and in bringing about adequate provisions for all forms of wholesome recreation. It encourages the best methods of promotion, organization, and administration of recreation facilities.

REMEDIAL LOANS. The object of the department of remedial loans is to protect small borrowers from extortion, to urge the passage and enforcement of adequate laws for the regulation of the small-loan business, and to encourage the formation of credit unions. The department assisted in the preparation of briefs in cases where, during 1929, either the uniform law or some portion of it was held to be valid by the Supreme Courts of Virginia, Louisiana, Kansas, and Nebraska.

STATISTICS. The department of statistics makes statistical investigations relating to social condition and advises members of the staff of the foundation and others engaged in social work concerning sources of statistical information, the planning of inquiries, and methods of collect-

ing, analyzing, and presenting statistical data. During 1929 cooperative studies were carried on with groups of agencies in several fields of social work, directed toward the production of comparable statistics of their current operations, these statistics being published and distributed each month.

SURVEYS AND EXHIBITS. The department of surveys and exhibits studies and occasionally engages in community projects involving the collection, interpretation, and educational use of facts, advises with those facing practical problems in these fields, and spreads, chiefly through its publications, the information and experience thus gained.

DELINQUENCY AND PENOLOGY. As consultant in delinquency and penology, Dr. Hastings H. Hart responds to requests for advice and service. His chief efforts have been directed to securing more decent, humane, and intelligent treatment for Federal convicts in Federal and local prisons.

PUBLICATIONS. The foundation publishes in book and pamphlet form the results of studies made by its staff. During 1929 it published, in addition to *Marriage and the State*, *Marriage Laws and Decisions in the United States*, and *Training Schools for Delinquent Girls*, the following pamphlets: *Mothers' Assistance, Economic and Social Aspects of Epilepsy, Indeterminate Sentence, Influence of Machinery on the Worker's Mind; Newspapers and Crimes, Older Workers in Industry, Model Jails of the Olden Time, Directory of Training Courses for Recreational Leaders, New York State Marriage Laws, Southern Mountain Schools, and Some Results of Two Years Study of Family Case Work Statistics*. The following volumes were issued as part of the studies for the Regional Plan of New York and Environs: *Population, Land Values, and Government; Physical Conditions and Public Services, and Neighborhood and Community Planning*. Of two volumes containing details of the plan with recommendations, one entitled *The Graphic Regional Plan* was published.

The trustees of the foundation in 1929 were Robert W. De Forest, president, Lawson Purdy, vice president and treasurer, Frederic A. Delano, John H. Finley, Mrs. Fredette S. Lee, Dwight W. Morrow, Mrs. Finley J. Shepard, Harold T. White, and John M. Glenn, who was secretary and general director of the foundation. Shelby M. Harrison was vice general director. Headquarters are at 130 East Twenty-second Street, New York City.

RUSSIA. A republic comprising the greater part of the former Russian Empire, officially entitled the Union of Soviet Socialist Republics. Capital, Moscow.

AREA AND POPULATION. According to the Soviet Union Information Bureau, which supplied much of the material used in this article, the area of the Union of Soviet Socialist Republics is 8,144,228 square miles. The population as of Jan. 1, 1929, was estimated by the Central Statistical Board at 153,800,000. The population, according to the census of 1926-27 was 147,013,600, including 71,024,300 males and 75,989,300 females. In 1914 the population of the same territory was 138,200,000. On May 1, 1929, the figure for unemployment was 1,428,000.

The Union of Soviet Socialist Republics is composed of seven constituent republics with their respective populations as follows: Russian Socialist Federated Soviet Republic, 100,858,000, White

Russian Soviet Socialist Republic, 4,983,900, Transcaucasian Federation, 5,850,700, Turkoman Soviet Socialist Republic, 1,030,500, Ukrainian Soviet Socialist Republic, 20,020,300, Uzbek Soviet Socialist Republic, 4,447,600, Tadzhik Soviet Socialist Republic, 822,600. The Tadzhik Republic (see TADJIKISTAN) was established in October, 1929, out of territory formerly included in the Uzbekistan Soviet Socialist Republic. The Russian Soviet Federated Soviet Republic contains 76 per cent of the population and 94 per cent of the area of the Union. It contains eleven autonomous republics, twelve autonomous areas, with further subdivisions into provinces, counties, districts, and townships. The other constituent republics embrace similar subdivisions of autonomous republics and areas, along racial or national lines.

Population of the principal cities at the census of 1926-27: Moscow, 2,025,947, Leningrad, 1,614,008, Kiev, 513,789, Baku, 452,808, Odessa, 420,888, Kharkov, 417,184, Rostov-on-Don, 308,284, Tashkent, 324,613, and Tiflis, 292,973.

Education. Public education in the Soviet Union is a charge against the seven constituent republics and against the localities concerned. Local appropriations are in the aggregate several times those of the republican governments. Total appropriations for education were about \$500,000,000 in 1928-29, as compared with \$425,330,000 in 1927-28 and \$317,200,000 in 1926-27. In the autumn of 1928, the Central Statistical Board reported that 11,372,507 children were in primary and secondary schools (excluding kindergartens), 46 per cent more than before the World War. There were 118,184 schools, as compared with 106,400 in 1913. The teaching staff numbered 337,435. In the cities, 98.4 per cent of the children of school age were in school, and in the villages 66.4 per cent.

There were 137 universities in 1927-28 with an enrollment of 143,100 students, as compared with 168,000 students the previous year. The workers' faculties (higher training institutes for workers) numbered 105 in 1927-28, with 54,700 students, as compared with 45,700 students the previous year. Upward of 500,000 pupils were in trade schools of various grades. Schools for adult illiterates numbered nearly 50,000, with 1,500,000 pupils. The campaign to abolish adult illiteracy is conducted largely under voluntary auspices, particularly by the labor organizations. Among the general population (above seven years) illiteracy decreased by one-third in the six years preceding the census of 1926-27, which revealed that 65.4 per cent of the males were literate and 36.7 per cent of the females. In the last pre-war census (1897) the figures were, respectively, 37.9 and 12.5 per cent.

NATURAL RESOURCES. The natural resources of Russia have never been adequately surveyed. During recent years an inventory of these resources was in progress under the auspices of the Soviet Academy of Sciences and allied scientific bodies. Undeveloped water-power resources were estimated at 62,380,000 horse power, of which nearly two-thirds are in Asiatic territory. Coal reserves were placed at 474,673,000,000 tons, oil reserves at 2,884,000,000 tons, peat, 265,000,000,000 tons, iron, 2,782,000,000 tons, exclusive of the recently surveyed area in the Kursk district, where deposits were estimated at from 20,000,000,000 to 30,000,000,000 tons. Copper reserves in the Urals are estimated at 85,000,000 tons. Reserves of

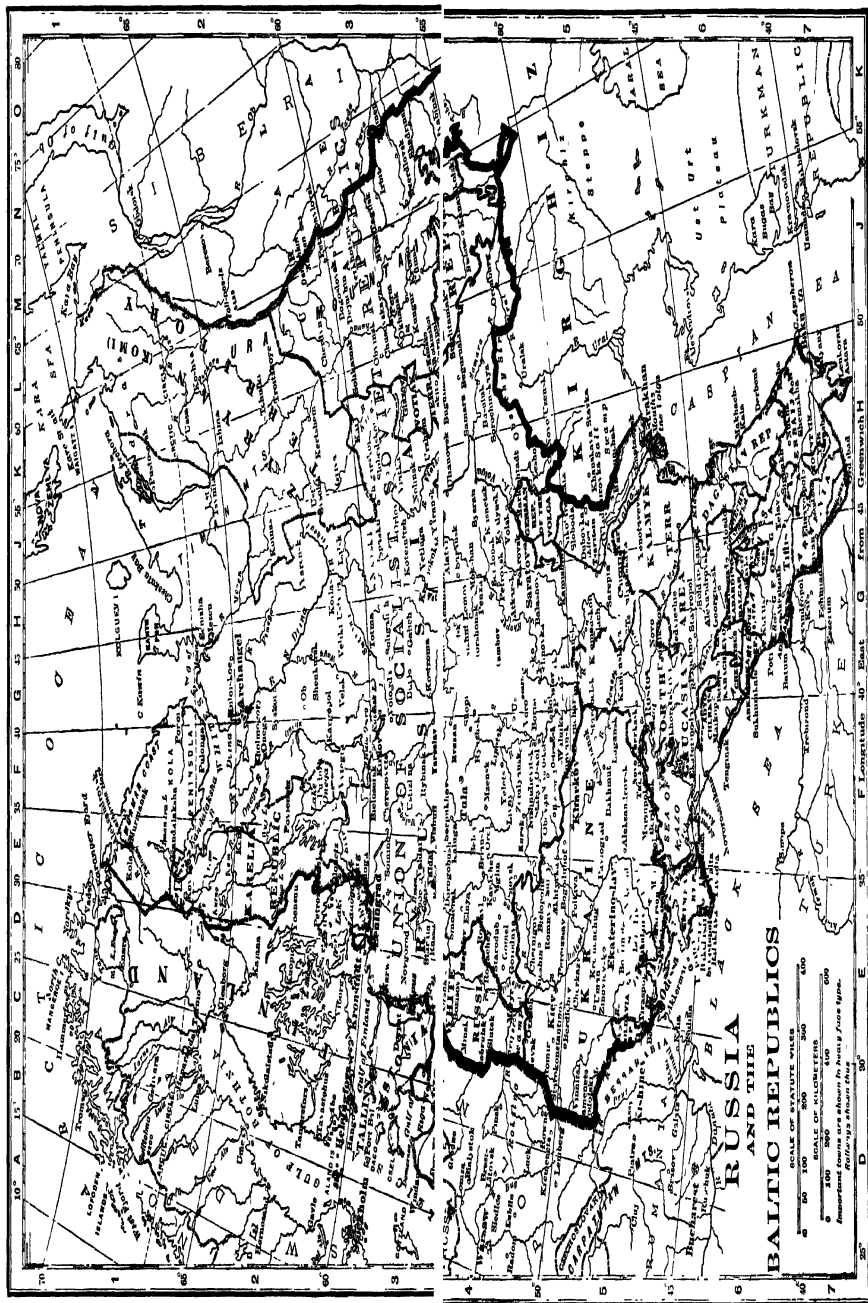
bauxite are 8,000,000 tons. Deposits of sulphur aggregating several million tons were recently discovered in the Kara-Kum Desert in Central Asia, supplementing the former reserves of 500,000 tons in the Keich Peninsula. Potash deposits estimated at over 1,500,000,000 tons were discovered in the West Ural region in 1927. Large fields of gold and platinum are situated in Siberia. Other minerals include silver and lead ores, pyrites, graphite, phosphate rock, chromic ores, salt, asphalt, asbestos, mica, zinc, uraninite. The forest area covers upward of two billion acres. Resources of fish and furs are enormous.

Production, etc. Land and natural resources are held in trust by the government for the general population, and may not be acquired by private title. Every citizen is entitled to secure land for cultivation, the form of tenure being that of perpetual leasehold. Natural resources are exploited by State trusts, by mixed companies, under concession, in which the State has a participating interest, or by private companies under concession.

The adoption by the Soviet Congress in May, 1929, of an ambitious five-year plan for economic development was considered the most important constructive step since the revolution. The plan had been in tentative operation since Oct. 1, 1928, the beginning of the fiscal year 1928-29 and prior to final adoption was subjected to several revisions upward. The plan, as adopted, provided for an increase of 133 per cent in industrial production during the period and an increase of 55 per cent in agriculture. It envisaged total new investments of \$33,400,000,000 during the period, including \$8,500,000,000 for industry and \$12,000,000,000 for agriculture, with large sums for transport electrification, and housing. Imports for the period were set at \$3,200,000,000, mostly machinery and raw materials and exports about \$400,000,000 higher. Under the plan, production of key products in industry were expected to increase between 1927-28 and 1932-33 as follows (in metric tons): Coal, 35,400,000 in 1927-28 and 75,000,000 in 1932-33, oil, 11,600,000 and 21,700,000, iron ore, 5,900,000 and 19,000,000, pig iron, 3,300,000 and 10,000,000. Production of electrical energy was scheduled to expand from 5,050,000,000 kw-h in 1927-28 to 22,000,000,000 kw-h in 1932-33, railway mileage from 77,000 to 90,000 kilometers. In agriculture, the plans involved a great expansion of highly mechanized State grain farms, some of over 100,000 acres, and of collective farms, so that at the end of the period, 20 per cent of the grain crops would be produced in the "socialized sector." This area will include 21,000,000 hectares in collective farms and 5,000,000 hectares in State farms.

At the close of the fiscal year 1928-29 it was announced that the plan scheduled for the year had been exceeded. Industrial production, as compared with the previous year, had increased 24 per cent, as against 21.5 per cent in the plan. Collective and state farms, with a sown area of 5,080,000 hectares, were well above the programme, and as compared with the individual peasant farms, they produced appreciably more grain per acre at less cost. A revised programme for 1929-30 called for an increase in the output of industry of 31.5 per cent, an expansion of the collective farms to 15,200,000 hectares and of the state farms to 3,280,000 hectares.

In October, 1929, the Central Statistical Board estimated a total grain crop of 76,250,000 metric



tons (preliminary figures) from 95,700,000 hectares, compared with 73,580,000 metric tons from 92,300,000 hectares in 1928. The pre-war sowings to grain were 102,700,000 hectares, with a crop estimated at from 75,000,000 to 80,000,000 tons. The grain crop of 1929 showed a great expansion of the production of state and collective farms, which reached 4,190,000 metric tons. Grain reached the market more rapidly than in previous years, and by the end of October the estimated procurements had been virtually fulfilled in the Ukraine and other sections, and a surplus reserve of 1,500,000 tons was anticipated.

Crops, for 1928, in metric tons, were: Raw cotton, 801,000, sugar beets, 9,698,000, flax, 346,000, hemp, 489,000, sunflower seed, 2,160,000. Livestock estimate for 1928: Horses, 31,978,000, cattle, 66,671,800, sheep and goats, 136,190,200, hogs, 25,233,500.

In the autumn of 1929 it was announced that \$1,580,771,900 had been allotted for capital improvements in state industry (inclusive of electrification) during 1929-30, as compared with \$855,440,750 expended the previous year. The funds were derived from profits, depreciation account, and governmental budget appropriations. The average number of workers employed in large-scale state industry for the first 9 months of 1928-29 was 2,309,000, as compared with 2,150,000 for the same period of the previous year.

Three large-scale development projects had been inaugurated in the Soviet Union, which were expected to accelerate materially the advances in productivity. These were: (1) The Dnieper River hydro-electric development, with attendant waterway and irrigation projects. (2) The Siberian-Turkestan Railway, 920 miles long, was to connect the cotton belt in Central Asia with the grain and timber districts of Siberia, cutting the present railway distance between the two sections by 65 per cent. Construction was begun in 1927 and the total cost was to be \$100,000,000. (3) The Volga-Don Canal, connecting the two rivers, was to give the Volga, the chief waterway of the Soviet Union, which empties into the landlocked Caspian Sea, an outlet on the Black Sea.

A number of industrial enterprises and the greater part of the retail trade organizations are run by the cooperatives. These organizations increased their membership from 10,000,000 in the fall of 1924 to upward of 38,000,000 on Oct. 1, 1928. In 1927-28 they conducted 62.4 per cent of the retail trade and about 10 per cent of the foreign trade.

Production of coal by State Trusts in 1928-29 was 41,300,000 metric tons, as compared with 35,400,000 in 1927-28 and 28,356,000 in 1913. Production of oil was 13,700,000 metric tons in 1928-29, as compared with 11,502,000 in 1927-28 and 9,215,911 in 1913. Exports of oil were 3,618,500 metric tons in 1928-29, 2,683,700 in 1927-28, and 947,700 in 1913.

The production of iron ore reached 7,100,000 metric tons in 1928-29, as compared with 6,000,000 in 1927-28. Statistics for iron and steel production are as follows, in thousands of metric tons:

	1928-29	1927-28	1913
Pig Iron	4,100	3,281	4,206
Steel	4,800	4,156	4,247
Rolled Iron	3,700	3,277	3,509

COMMERCE. The foreign trade turnover for recent years is shown in the accompanying table:

RUSSIAN FOREIGN TRADE, 1925-29			
	Exports	Imports	Total
1924-25	\$296,125,000	\$376,800,000	\$666,925,000
1925-26	348,447,000	389,546,000	737,993,000
1926-27	396,807,500	366,989,000	763,796,500
1927-28	398,564,000	486,523,000	885,087,000
1928-29	441,620,000	424,201,000	865,821,000

Foreign trade turnover in 1913 was \$1,490,495,000. The country then included Poland, Finland, and the border states.

The trade total for 1928-29 showed a falling off of about \$19,000,000 from the previous year, due to a decrease of \$62,000,000 in imports. Exports increased \$43,000,000. The favorable balance of trade for the year was \$17,417,000, as compared with an unfavorable balance of \$87,959,000 the previous year.

The principal exports in 1928-29 in order of their value, were oil products, timber, furs, butter, flax, eggs, manganese, sheep casings. The oil exports of 3,618,500 metric tons represented an increase of 30 per cent over those for the previous year and were nearly four times those of 1913. Exports to England nearly doubled in comparison with those of the preceding year. Early in 1929 an agreement for the sale of oil in England was concluded between the Anglo-American Company and the Russian Oil Products, Ltd. Three-fourths of the 1928-29 oil exports went to European countries, and about 25.5 per cent to Eastern countries. Grain, which before the war was the principal factor on the export list, has not been exported in quantity for the past two years, as the crops have not shown an advance commensurate with the steady increase in the population.

The principal countries taking Soviet exports in 1928-29 were Germany, 23.8 per cent, England, 20.8 per cent, Latvia, 9 per cent, Persia, 8.9 per cent, France, 5.1 per cent. The principal countries furnishing Soviet imports were Germany, 23.3 per cent, United States, 15.8 per cent, Persia, 8 per cent, and the United Kingdom, 5.3 per cent.

The principal Soviet imports from the United States were raw cotton, industrial equipment, agricultural machinery, metals, chemical products, binder twine, automotive equipment, office supplies. According to the figures of Soviet trade organizations in the United States, purchases of American products for shipment to the Soviet Union in 1928-29 were \$109,000,000, as against \$91,230,000 for 1927-28. Purchases of industrial and electrical equipment were \$30,000,000, two and a half times the figure for the preceding year; purchases of agricultural equipment were \$30,000,000, double those of the preceding year, and purchases of automotive equipment were \$8,000,000, or triple the expenditures for this purpose in 1927-28.

The principal Soviet exports to the United States are furs, manganese, precious metals, sheep casings, flax and tow, hides and skins, bristles, and licence root.

FINANCE. By the end of June, 1924, Soviet currency was established on a gold basis and since that time there have been no unsecured paper issues. The budgets of Soviet fiscal years, ending September 30, for 1925-29, in millions of rubles (1 ruble equals \$0.515) are given on page 738.

	1928-29 (actual)	1926-27 (actual)	1927-28 (actual)	1928-29 (actual)
Revenues . . .	3,800 7	5,201 3	6 761 1	7,910 0
Expenditures .	3,867 8	5,151 3	6,239 1	7,755 6

Figures made public by the U S Department of Commerce placed actual revenues in 1927-28 at \$2,943,500,000 and actual expenditures at \$3,240,600,000, leaving a deficit of \$297,100,000. Of the total receipts, \$1,513,400,000 came from taxation and monopolies, \$118,600,000, from income taxes, and \$363,500,000, from import and export duties. Expenditure items included \$153,800,000 for the service of the debt, \$393,400,000 for defense; \$88,200,000, for education (Commissariat of Education only), and \$11,500,000, for social services. The total public debt was placed at \$1,060,400,000.

According to the Soviet Union Information Bureau, federal revenues for 1928-29 increased 17 per cent over the previous year and revenues from railways, posts, and telegraphs increased 19 per cent. The federal budget for 1929-30 was approved at 11,390,000,000 rubles (about \$5,700,000,000), an increase of about 44 per cent over the budget for 1928-29. Of this sum, about 2,000,000,000 rubles represented the anticipated revenue and expenditure in connection with railroads, posts, and telegraphs. Another 7,000,000,000 rubles was assigned for "Socialist construction," which included urban and agrarian industrialization, transport, electrification, and housing. Early in October, 1929, it was announced that the third industrialization loan of 750,000,000 rubles, opened September 1, had been oversubscribed.

Currency circulation on Nov. 21, 1929, was 2,912,000,000 rubles, as compared with 1,740,000,000 rubles on Oct. 1, 1928. Paper money in circulation has far outstripped the gold reserve, but while production of all kinds was increasing more rapidly than the currency, Soviet economists contended the inflation would not be harmful.

TRANSPORT In 1929 the railway mileage of the Soviet Union was 77,128 kilometers, an increase of about 30 per cent over the figure for 1913. Eleven new main and branch railway lines were under construction in 1928-29, including the Turkestan-Siberian Railway, which, it was announced, would be completed in May, 1930. New trackage scheduled for construction in 1929-30 amounted to 11,039 kilometers, and approximately a billion dollars was to be expended for new construction during the period of the five-year plan. There were 17,423 kilometers of airplane lines in regular operation in 1929, and 13,590 kilometers of new lines were to be opened in 1929-30.

The length of inland waterways in 1927 totaled 228,572 miles, of which 54,501 were navigated by steamers. In 1928 the mercantile marine consisted of 697 vessels of 437,000 tons, including inland waters.

GOVERNMENT A description of the constitution of the Union of Soviet Socialist Republics will be found in the YEAR BOOK for 1923. At the close of 1929, the Council of People's Commissars, the executive cabinet of the Soviet Government, was composed as follows: Chairman of the Council of People's Commissars, Alexi I. Rykov; vice chairmen of the council, J. E. Rudzutak, V. V. Schmidt, and K. G. Ordjonikidze; Commissar for Army and Navy, K. E. Voroshilov, for Trade, A. I.

Mikoyan; for Foreign Affairs, Maxim Litvinov (acting); for Transportation, J. E. Rudzutak; for Posts and Telegraphs, N. K. Antipov; for Finance, N. P. Brinkhianov; for Labor, N. A. Uglanov, for Peasants and Workers' Inspection, G. K. Orjonikidze, Chairman of the Supreme Economic Council, V. V. Kuybyshev, Director of Central Statistical Administration, V. P. Miliutin. Chairmen of the Central Executive Committee of the Soviet Union, M. I. Kalinin, G. I. Petrovsky, A. G. Cherviakov, Gazanfar Mussabekov, Netyrbay Aitakov, Faizulla Khodzhaev. These chairmen of the Central Executive Committee are the presidents of the constituent republics. Josef Stalin, General Secretary of the Executive Committee of the Communist party, was the unofficial head of the Soviet Government.

HISTORY

FOREIGN RELATIONS During 1929 the Soviet Government continued its policy of establishing a *modus vivendi* for peaceful cooperation with other countries. Having signed and ratified the Kellogg Pact, Aug. 18, 1928, the Soviet Government at the beginning of 1929 invited its neighbors to a conference for the purpose of making the pact immediately effective as among them. A protocol to this effect was signed in Moscow February 9 by representatives of the governments of Estonia, Latvia, Poland, Rumania, and the U S S R and was subsequently ratified by all five governments. The Soviet government did not renounce its claim to Bessarabia. The protocol was adhered to later also by Turkey (February 27), Persia (April 3), and Lithuania (April 5). Despite the conclusion of the non-aggression pact with Poland, that country on September 1 renewed its treaty of alliance with France. The Franco-Polish pact was one of a series through which France established its hegemony in the states bounding Russia on the west, and had always been viewed with suspicion by the Soviet government. In December, however, Soviet diplomacy achieved a counter-acting triumph in the conclusion of a pact with Turkey which was similar in many respects to the entente cordiale existing between France and Great Britain previous to the World War.

Relations between Germany and Russia became somewhat strained toward the end of the year. The ostensible cause was the criticism leveled at Germany by high Russian officials in connection with the Manchurian dispute. Russia entrusted the care of her nationals in Manchuria to the German Embassy following the break with China and the German Foreign Office was then assailed for alleged laxity in these duties. The heavy hand with which the German police repressed Communist demonstrations in Berlin on May Day and on August 1, when a general strike was called, also embittered Communist feeling in Russia. German resentment at Russia criticism in connection with the Manchurian incident, was heightened by the memory of the Shkatta trial in 1928, when German engineers in Russia were tried on charges of sabotage and criminal conspiracy. The Soviet government's apparent neglect and mistreatment of several thousand Mennonite peasants of German descent colonized in Siberia, who sought to remove to Canada rather than enter the collectives, also aroused German indignation. (See GERMANY, under *History*.) There was much feeling in Ger-

many over the encouragement openly extended by Soviet officials to the revolutionary activities of German Communists.

On October 3 Valerian Dvoglevsky, representing the Soviet government, signed a protocol with the British Secretary of State for Foreign Affairs providing for the resumption of diplomatic relations between the two countries, which had been broken off by the Baldwin government in 1927. The protocol provided for conferences to settle the matters in dispute between the two governments, after the exchange of ambassadors. It also repeated the text of that article of the treaty of 1924 binding both parties to refrain from subversive propaganda and to use restraint upon all persons or organizations within their jurisdiction. Grigori Sokolnikov, chairman of the Soviet Oil Syndicate and former Commissar for Finances, was appointed Ambassador to Great Britain and assumed his duties there December 20 (See GREAT BRITAIN, under *History*.)

A disturbing feature of the year was the rupture with the Nanking (Nationalist) government of China over the seizure of the Chinese Eastern Railway by Chinese authorities on July 10 (See CHINA, under *History*.) Guerrilla warfare prevailed along the Manchurian border until the signing of the Khabarovsk protocol terminating it on December 22. The Soviet advance into Manchuria commencing November 17 induced the American Secretary of State, Henry L. Stimson, to dispatch notes to both Russia and China on November 30 reminding them of their obligations under the Kellogg-Briand Peace Pact. The note was delivered through the French Embassy at Moscow. At the suggestion of Secretary Stimson, Great Britain, France, and a number of smaller powers sent similar reminders. In Russia, the notes were generally considered to have been inspired by a desire to hamper direct negotiations between the Soviet government and Mukden Acting Foreign Minister Litvinov replied tartly to the American note, declaring that it was "not friendly" to Russia and an attempt to exert "unjustifiable pressure."

One of the significant events of the year was the retirement of Georges Tchitcherine as head of the Foreign Office, a post which he had filled with recognized ability since the establishment of the Communist régime.

INTERNAL AFFAIRS. The inauguration of the five-year plan, described above, with its attendant developments, was the conspicuous event of the year in internal affairs. In connection with the working out of the plan, a continuous working week was devised, for industrial and other institutions, by which the machinery of production would be employed continuously, while the rest-days of the workers would be arranged on a staggered system. In August, the Council of Commissars issued a decree for the continuous working week, each worker to have one and a half day's rest in seven. In September, however, a new decree provided for the introduction of a five-day week, according to a plan sponsored by the Academy of Sciences. Under this plan, each month is to consist of six weeks of five days each. The worker has one day of rest each week under a staggered system, so that production is continuous. The five extra days during the year are to be national holidays. The plan entails a revision of the calendar and is applicable to industrial enterprises and offices. In tentative trials in various plants the new scheme was reported to have in-

creased production from 15 to 25 per cent and reduced production costs.

In the agricultural field the government's programme of rural "socialization" brought sporadic opposition in some sections from the peasants, particularly the "kulaks," or well-to-do farmers, who at times resorted to arson and the murder of officials—methods traditional in Russia's rural history—to oppose the extension of collective farms. During the harvest season, the execution of numerous peasants was reported. The reported success of the grain-marketing programme, however, indicated that this opposition was not widespread. The programme for grain procurements by state and cooperative agencies for the agricultural year ending June 30, 1930, was fixed at 50 per cent higher than the procurement of the previous year. By November 6, the government announced that 85 per cent of the programme for the entire agricultural year had been realized, and a large reserve store of grain was assured.

Observers in Russia were generally of the opinion that the Communist régime would stand or fall according to the success or failure of its effort to "socialize" agriculture and all aspects of rural life. Paul Scheffer, Moscow correspondent of the *Berliner Tageblatt*, reported in December, 1929, that the food shortage in Russia was more acute than during the 1928 shortage and that despite optimistic reports of progress by the government, the agrarian programme was in reality ruining the country. He pointed out that in the cities women waited hours before the ration stores for the simplest necessities, and that the government had introduced ration books for virtually all the necessities of life. His views were similar to those of the so-called "Right heretics" of the Communist party—Bukharin, Rykov, and Tomsky—who were disciplined for their opposition to the five-year plan. Bukharin was dismissed from the Political Bureau, or executive body of the Soviet Communist party, in November. Subsequently, he and his lieutenants announced that they had ceased their opposition.

These criticisms, the government contended, were disproved by the fact that the total area sown to winter grain in 1929 was 4½ per cent larger than in 1928, that even on collectives formed in the spring of the year there had been a bigger harvest than on the individual units they replaced, and that new collectives and state farms were scheduled to cultivate more than 25 per cent of the land in 1930. The rationing system, it was said, was not due to a food shortage but to the necessity of "pegging" prices in order to prevent a rise in the cost of living which would otherwise naturally result from the currency inflation. The inflation, according to Soviet economists, was temporary. Russia's enormous natural resources being relied upon to "take in the slack."

Leon Trotsky, leader of the Left Wing opposition to the Stalin majority, was officially banished from the Soviet Union on January 21 and went to Constantinople. He had previously been exiled to Alma Ata, a remote corner of the Soviet Union in Turkestan. In Constantinople, Trotsky revealed that the chief issue in his struggle with the Stalin faction had been the government's agrarian policy. The Trotsky faction demanded the rigorous suppression of peasant individualism in the economic structure and the dominance of

the industrial worker in politics. On January 23, the government arrested 150 of Trotsky's followers on conspiracy charges.

During the summer, the first American trade delegation to visit Soviet Russia made a four-weeks' tour of the country.

The Communist effort to eliminate organized religion was renewed in 1929 due to the rapid growth of the nonconformist churches, which the Government had formerly encouraged to counteract the strength of the Orthodox Church. By January, 1929, it was estimated by Soviet officials that 20,000,000 people had become affiliated with the nonconformist churches—Baptist, Methodist, and Lutheran. The welfare, recreational, and social work carried on by these churches was considered their chief source of strength and in April the Government promulgated a new code which forbade such activities by religious groups. The Communist Youth Organization was also launched to counteract the churches and similar non-Communist influences.

In November, it was announced that the Academy of Sciences was working on plans to substitute the Latin alphabet for the old Russian alphabet.

For Social Insurance in Russia, see WORKMEN'S COMPENSATION.

See CHINA, GREAT BRITAIN, and GERMANY, under *History*.

RUTGERS UNIVERSITY. A nonsectarian institution of higher learning in New Brunswick, N. J., founded under the name of Queen's College in 1766. The registration for the autumn of 1929 was 2958, of whom 1157 were registered at the college for women. Enrollment in the 1929 summer session was 1842. Of the 290 members on the faculty, 174 were professors and 116, instructors. The endowment funds amounted to \$3,885,719, and the income for the year, exclusive of the State Agricultural Experiment Station, amounted to \$2,042,077. Lands, buildings, and endowments had a total valuation of more than \$12,000,000. The library contained 172,100 volumes. President, John Thomas, D.D., Litt D., LL.D.

RYBNER, CORNELIUS. An American composer and pianist, died in New York, Jan. 21, 1929. He was born in Copenhagen, Oct. 26, 1855. After studying at the Copenhagen Conservatory under Gade and Hartmann, he attended the Leipzig Conservatory, where his teachers were F. David (violin) and K. Reinecke (piano). In 1892 he succeeded Motil as conductor of the Philharmonischer Verein, which post he filled till 1904, when he was called to New York to succeed MacDowell as professor of music at Columbia University. This position he resigned in 1919. With his daughter, Dagmar, he frequently gave piano recitals for four hands. His compositions include a symphonic poem, *Friede, Kampf, und Sieg*, *Festouvertüre*, *Huldigungsmarsch*, *Marche heroïque*, *Nordischer Hochzeitsmarsch*; chamber music, piano pieces, and songs.

RYE. The 1929 production of rye in 23 countries reporting to the International Institute of Agriculture, Rome, was estimated at 934,990,000 bushels, which was slightly under the production in 1928 but 9 per cent above the average yield of the five years 1923-27. The area in rye in these countries, 45,753,000 acres as estimated, was 4.5 per cent higher than the average in 1928 but slightly below the average of the 5 years

1923-27. The world's rye production has decreased during recent years. The area harvested in 1928 was less than the pre-war average for the five years 1909-13 and less than the area of 1925. The leading countries in 1929, exclusive of the United States, reported the following yields of rye: Germany, 319,301,000 bushels; Poland, 246,447,000 bushels; Czechoslovakia, 63,590,000 bushels; France, 39,434,000 bushels; and Hungary, 32,990,000 bushels. The Soviet Republics have an annual production of about 850,000,000 bushels. Argentina, leading South American country in rye production, reported a yield of 7,066,000 bushels for the crop year 1928-29. The Canadian production in 1928 was estimated at 41,000,000 bushels, which was 1.6 per cent below the yield of the preceding season and over 25 per cent below the average yield of the five years 1923-27.

As estimated by the Department of Agriculture, the United States in 1929 produced 40,629,000 bushels compared with 43,366,000 bushels in 1928 and 54,793,000 bushels, the average of the preceding five years. The area for grain production dropped from 3,480,000 acres in 1928 to 3,225,000 acres in 1929, a decrease of over 7 per cent. The average yields per acre were 12.5 bushels and 12.6 bushels for the two years, respectively. The average farm price on Dec. 1, 1929, was 87.1 cents per bushel as against 86 cents the year before, indicating a total farm value for the United States of \$35,371,000 in 1929 and of \$37,290,000 in 1928.

During the year ended June 30, 1929, the United States exported 9,346,000 bushels of rye as compared with 26,004,000 bushels in the preceding fiscal year. About 24,000 barrels of rye flour were exported during the same period, or 23,000 barrels less than in the fiscal year 1928. In the fall of 1929, as reported by the Department of Agriculture, 3,466,000 acres of rye were sown for the 1930 grain crop.

SAAE BASIN. A section of the German Rhineland, which, under Article 45 of the Versailles Treaty, was awarded to France for exploitation of its coal fields, as compensation for the destruction of the coal fields in northern France by the German armies. Coal production in 1928 totaled 13,106,718 metric tons, as compared with 13,216,309 in 1913 and 9,410,433 in 1920. Area, 751 square miles; population, about 657,870. See FRANCE, GERMANY, and PRUSSIA, under *History*.

SAEGER, OSCAR. An American baritone and vocal teacher, died in Washington, D. C., Apr. 20, 1929. He was born in Brooklyn, N. Y., Jan. 5, 1868. After winning a scholarship and completing his musical studies under Bouhy at the National Conservatory in New York, he made his debut in 1891, with the Himmels Opera Company in Philadelphia. After a short time, he gave up an operatic career and devoted himself to teaching, at first at the National Conservatory, but after 1895 as a private teacher. In this field, he achieved unusual success, several of his pupils becoming principal artists at the Metropolitan Opera House.

SAFETY, INDUSTRIAL. See NATIONAL SAFETY COUNCIL.

SAFETY AT SEA. The outstanding event of the year was the International Conference on Safety of Life at Sea which was held in London April 16 to May 31. It was called by the British Board of Trade to conclude a convention pertaining to international standards for ocean-going

steamers that had been agreed to at a similar conference in January, 1914, but that on account of the outbreak of the World War had not been put into operation. The nations represented at this conference were Australia, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain and Northern Ireland, India, the Irish Free State, Italy, Japan, the Netherlands, Norway, Spain, Sweden, the Union of Soviet Socialist Republics, and the United States. The delegates numbered 85 and the experts, 69.

The main problems under consideration at this conference were delegated to five committees. They dealt with ship construction and the adoption of rules which would make vessels as nearly unsinkable as practically possible, guarding them against fire and against dangers of storm, derelicts, and ice, life-saving appliances such as adequate lifeboats, rafts, and belts, radiotelegraphy by which the use of this device would be extended as a protection of life and as an aid to navigation, safety of navigation, by which the rules of navigation would be made responsive to the use of modern ships and changed conditions, and certificates of inspection and safety. Two sub-committees on general provisions and drafting were subsequently added. Radiotelegraphy was especially stressed in these discussions, and as a result there was embodied in the final act the rules that all passenger and cargo ships of 1600 tons or over, when employed in international service, must be equipped with radio apparatus and that all passenger ships of 5000 tons or over must be equipped with the radio compass. The convention, which was signed on May 31, will come into force July 1, 1931, provided that at least five parties have deposited their ratifications.

The Steamboat Inspection Service of the U. S. Department of Commerce reported for the fiscal year ending June 30, 1929, the following statistics. Total number of accidents resulting in loss of life, 260, an increase of 28 over the previous year, total number of lives lost from all causes, passenger and crew, 341, an increase of 66 over the previous year. Of the lives lost, 272 were from suicide, accidental drowning, and other causes beyond the power of the service to prevent, leaving a loss of 69 fairly chargeable to accidents, collisions, and foundering. The number of lives saved during the year by means of life-saving appliances required by law was 741. The number of passengers carried during the fiscal year on steam vessels that were required by law to report the number of passengers carried was 328,465,552, of whom 86 were lost, making 3,819,460 passengers carried for each passenger lost. The total loss in property from such causes as explosion, wreck or foundering collision between vessels, fire, snags, and miscellaneous causes amounted to \$13,374,284.

The report of Dickinson N. Hoover, Supervising Inspector General of the Steamboat Inspection Service, showed further that 7086 vessels with a total gross tonnage of 15,708,824, including 6766 domestic vessels with a gross tonnage of 12,353,631 and 320 foreign passenger steamer and motor vessels with a gross tonnage of 3,355,193, were inspected during the fiscal year. A report was delivered on July 20 by the British Board of Trade tribunal in the case of the Lamport and Holt liner *Centuria* which sank on Nov. 12, 1928, off Virginia Capes with a loss of 112 lives. The contributory causes were found

to be overloading and the "lender" condition of the ship.

According to Lloyd's Register of Shipping, 288 vessels of a gross tonnage of 484,620 were lost at sea during the year, Great Britain and Ireland suffering the greatest loss. The following is a list of notable marine casualties and important rescues during 1929:

January 2 The French steamship *Malakoff* sank off Minorca in the Mediterranean with a loss of 27 lives.

January 10 The steam trawler *Seiner* which left New York for the fishing grounds off Georges Banks, with a crew of 21, was lost.

January 15 The Chinese steamer *Hsun Wah* struck a rock near Hong Kong and foundered with a loss of more than 370 lives.

January 21 The Chinese steamer *Hongchong* sank in the vicinity of Shanghai with a loss of 40 lives.

January 21 The West Harlepool freighter *Tres* bridge with a crew of 32, sank off Newfoundland.

January 23 Capt. George Fried, in command of the United States liner *America*, saved 32 persons aboard the Italian freighter *Florida*, 700 miles off the Virginia coast.

February 3 The German steamer *Deuter* sank in the Douro River, 26 of the crew being drowned.

April 22 The Japanese steamer *Touyukins Maru* crashed on a rock off Cape Ermo and 103 persons were drowned.

July 9 The British submarine *H 47* sank after collision with the submarine *L-12* in the Irish Sea, 21 of the crew being lost.

July 16 The Chilean transport *Abato* sank off the coast near Topolimala with a loss of 48 lives.

July 26 The gun turret on the British cruiser *Deronshire* was blown away by explosion during firing practice at Skathos in the Aegean Sea, 17 officers and men being killed.

August 18 The Spanish steamer *Osama* was rammed and sunk by a U. S. tug off the mouth of the Humboldt River, 15 of the crew being drowned.

August 30 The coasting steamer *San Juan* collided with the oil tanker *S. C. T. Dodd* off Santa Cruz, Calif., 70 lives being lost.

September 6 The Finnish steamer *Kuru* was upset in a gale on Lake Nauyasjärvi and 100 lives were lost, mostly children.

September 9 Fire occurred on the British oil tanker *Vineira* at Rotterdam, ten persons being killed.

September 9 The Nelson liner *Hughland Frigate* struck rock and foundered near Vigo, Spain, all the 63 passengers and crew being rescued.

October 6 The Norwegian steamer *Haakon VII* foundered off the west coast of Norway, 35 lives being lost.

October 13 The Canadian Pacific Railway Company's transatlantic liner *Empress of Canada* ran on the rocks at Homer Bay, British Columbia, all the 100 passengers being safely removed.

October 22 The car ferry *Melawakee* sank in Lake Michigan with a loss of 57 lives.

November 16 The freighter *Villa Hermana* sank off Montana, Mexico, 12 passengers and six of the crew being drowned.

December 12 The fishing boat *Pennaton* capsized off Cape Roca, Portugal, with a loss of 12 lives.

December 18 The steamer *Fort Victoria* collided with the *Algonquin* in Ambrose Channel, New York, 336 persons being rescued.

December 21 The Chinese steamer *Leo Cheong* sank near Hong Kong, more than 250 lives being lost.

December 25 The Norwegian steamer *Adang*, with its entire crew of 24, was lost off Faronles, Spain.

December 28 The schooner *Beatriz Adela* was wrecked near Puerto Castilla, Honduras, 20 passengers and the entire crew being drowned.

SAFETY COUNCIL, NATIONAL See NATIONAL SAFETY COUNCIL
SAGHALIEN. See SAKHALIN
ST. CHRISTOPHER or **ST. KITTS.** See LEEWARD ISLANDS

ST. HELENA. An island of volcanic origin in the South Atlantic, about 1200 miles from the west coast of Africa, and belonging to Great Britain. Area, 47 square miles; population, according to the census of 1921, 3747, estimated civil population, Dec. 31, 1927, 3754. Capital and seaport, Jamestown. The chief occupation is the

fibre industry, and fibre and tow are the principal exports. In 1927 the exports were valued at £34,274 and the imports at £49,678; revenue £20,486, expenditure, £16,740. There is no public debt. A detachment of the Royal Marine Artillery is stationed on the island, which is also a coaling station for the British Navy Governor in 1929, C. H. Harper.

ST. JOHN'S COLLEGE. A college of liberal arts and sciences for men in Annapolis, Md., founded as King William's School in 1696. The enrollment for the autumn term of 1929 was 270. There were 26 faculty members. The income for 1928-29, exclusive of gifts, was \$193,853, the value of gifts received during the year was \$70,000. The library contained 20,005 volumes. Acting President, Robert E. Bacon, dean of the college, who was appointed on the resignation of Enoch B. Garey in 1929.

ST. LAWRENCE UNIVERSITY. An institution for the higher education of men and women in Canton, N. Y., founded in 1856. The registration for the autumn term of 1929 was 3640. The faculty numbered 124 members. The endowment funds amounted to \$3,602,127 and the income for the year, to \$185,893. The library contained 52,600 volumes. Hepburn Hall of Chemistry was dedicated on Oct. 26, 1929, by Miss Curie President, Richard Eddy Sykes, D.D.

ST. LUCIA, ló'shi-lá. A British insular colony in the Windward group of the West Indies. Area, 233 square miles, population in 1927, 56,068. Castries, the chief port and capital, is a naval base and coaling station. The chief products are cacao, sugar, lime juice, lime oil, bay oil, honey, hides, logwood, rum, fuel, molasses, and sirup. Imports in 1927 were valued at £228,845, exports at £213,602. Of the imports the largest share came from the United States and of the exports the largest share went to Great Britain. The total shipping in the same year was 1,153,633 tons, of which 891,103 tons were British. Revenue in 1927, £82,491; expenditure, £84,219, public debt, £203,159. The island is under an administrator aided by a nominated executive and a partly nominated and partly elected Legislative Council. Administrator and Colonial Secretary in 1929, Charles William Doorly.

ST. PIERRE AND MIQUELON, mē-ke-lón'. Two small groups of islands in the Atlantic, close to the southern coast of France, and named from their two largest islands. Area of the St. Pierre group, 10 square miles, population in 1925, 3040, area of the Miquelon group, 83 square miles; population, 544. The islands are rocky and unsuited to agriculture, their main importance being as a centre for the codfishing industry. The chief town is St. Pierre, which has regular steamship communication with North Sydney and Halifax. In 1927, the imports totaled 166,801,030 francs, the exports, 127,409,172 francs. The imports consisted chiefly of textiles, salt, wines, foodstuffs, and meat, the exports, cod, dried and fresh, and fish products. The local budget for 1928 was Revenue, 10,011,500 francs, expenditure, 10,011,500 francs. The islands are under a governor aided by consultative and municipal councils. Governor in 1929, Audrien Juvanon.

ST. THOMAS. See SÃO THOMÉ AND PRINCE

ST. VINCENT. A British insular colony in the Windward group of the West Indies. Area, 150.3 square miles, population in 1927, 50,770.

Kingstown, with a population of 3836 in 1921, is the capital. The movement of population in 1927 was Births, 1891; deaths, 835; marriages, 133. In the same year there were 36 primary schools with an average attendance of 2936. The chief products are arrowroot, sugar, cotton, rum, cacao, and spice, cotton (Sea Island) being especially important and regarded as the best grown in the British Empire. In 1927 the imports were valued at £172,097, exports, £145,815, revenue, £56,469, expenditure, £61,564; public debt, £9170; total shipping, 554,918 tons. At the head of the administration is an administrator and colonial secretary, who is aided by a legislative council consisting of official, elected, and nominated members. Administrator of the colony in 1929, R. Walter.

SAJOUS, sa'zhoo', CHARLES EUCHARISTE DE' MEDICIN. An American physician and editor, an authority in the science of endocrinology, died in Philadelphia, Pa., Apr. 27, 1929. He was born at sea, off the coast of France, Dec. 13, 1852, and came to America in 1861. In 1878 he was graduated in medicine from the Jefferson Medical College in Philadelphia, where he lectured during 1881-90. He was professor of anatomy and physiology at Wagner Institute of Science during 1890-92 and dean and professor of larvngology at the Medical Chirurgical College in 1897-98. From 1909 to 1922, he was professor of therapeutics in the medical department of Temple University, and after 1921 professor of endocrinology at the University of Pennsylvania. He edited Sajous' *Analytical Cyclopaedia of Practical Medicine* (8 vols. and 10 editions, 1898-1925) and Sajous' *Annual of the Universal Medical Sciences* (5 vols. annually, 1888-96). From 1911 to 1919, he edited the *New York Medical Journal*. His son, Dr. Louis T. de' Medicin Sajous, died on Jan. 16, 1929. See NECROLOGY.

SAKHALIN, sa'ka-lvén'. An island off the eastern coast of Siberia, separated from Japan by the narrow Strait of Soya. The portion south of the 50th parallel of N. latitude belongs to Japan, north of that line lies the Province of Sakhalin, belonging to Russia. Japanese Sakhalin or Karafuto (see KARAFUTO), has an area of about 13,934 square miles and a residential population (1927) of 203,573. The area of the Russian province is 14,688 square miles, with a population estimated at 34,000 in 1915. Valuable forests cover 75 per cent of the entire island.

SALMON MEMORIAL. See PSYCHOLOGY.

SALUDA DAM. See DAMS.

SALVADOR, sal'vá-dör'. A Central American republic on the Pacific coast, bounded on the east by Honduras and on the north by Guatemala. Capital, San Salvador.

AREA, POPULATION, ETC. The area is estimated at 13,176 square miles, the population in 1928 was estimated at 1,688,000. The mestizos, or persons of mixed race, numbered 1,307,200 and the Indians 326,800. San Salvador had a population in 1927 of about 88,000. Other large towns with their populations at the same time were Santa Ana, 74,800, San Miguel, 37,800, Santa Tecla, 28,000; and San Vicente, 33,000. From 1923 to 1927, births averaged 59,204 annually and deaths, 31,728.

EDUCATION. Education is free and nominally obligatory from 7 to 14 years of age. During the 1928 school year there were 1036 primary teachers in 868 government schools, while the number

of pupils registered was 41,183 and the average attendance 22,832

PRODUCTION Coffee is the chief crop of this primarily agricultural country, the fertile mountain slopes being excellently adapted to its cultivation. The coffee crop is the major factor determining the economic condition of Salvador, as it normally constitutes about 90 per cent of the exports. In 1929 there was comparatively little foreign demand for the crop, prices were low, and general business conditions were unsatisfactory. Wages on some plantations were reduced, there was considerable unemployment, and the banks curtailed credit. The production of coffee in 1927-28 was the largest on record, totaling 119,489,000 pounds, of which 117,878,000 pounds valued at \$22,741,000 were exported. As a result of the heavy exports, conditions in Salvador were generally satisfactory in 1928. Sugar exports in 1928 totaled 21,500,000 pounds, or 26 per cent more than in 1927, while shipments of henequen fibre, balsam, and indigo also increased. Tobacco and cotton also are produced, although the acreage devoted to cotton has rapidly declined. Limited quantities of gold and silver are mined and manufacturing is confined to sugar grinding, coffee cleaning, and the production of local necessities.

COMMERCE The record coffee crop of 1927-28 resulted in a 73 per cent increase in exports to \$24,464,000 in 1928 from \$14,152,000 in 1927. The value of imports also increased to \$19,187,000 from \$14,864,000 in the preceding year.

In 1929 exports declined to \$18,370,676, or 26 per cent below the 1928 figure. This was due largely to the decrease in coffee exports, which were valued at \$17,000,225, as compared with \$22,741,065 in 1928, also sugar exports decreased to \$906,905. Total imports were estimated at \$11,570,000.

FINANCE Ordinary revenues during 1928 reached the largest yearly total on record, or 25,546,000 colones (\$12,773,000), as compared with 20,514,000 colones in 1927 (1 colon equals \$0.50 at par). The increase was largely attributable to increased import and export duties, and the liquor tax. Expenditures totaled 25,367,000 colones (\$12,684,000), or 179,000 colones less than the revenues, having increased from 21,800,000 colones in the preceding year. Results of the extraordinary budgetary operations were not available. Revenues and expenditures for the fiscal year 1928-29 were calculated at 23,132,000 colones and 24,202,000 colones, respectively, a slight deficit being anticipated. Another deficit was anticipated in framing the budget for 1929-30, which calculated receipts at 25,490,000 colones and expenditures at 25,775,398 colones, or a deficit of 285,398 colones (\$140,000). The public debt at the end of 1927 totaled about 48,512,000 colones (\$24,256,000), of which \$16,784,000 was floated in the United States and £975,000 in Great Britain.

COMMUNICATIONS A new \$12,000,000 line of the International Railway of Central America, linking the railways of Guatemala with those in Salvador, was opened to traffic in July, 1929. There were about 380 miles of railway line in Salvador in 1928, in addition to 2701 miles of telegraph wire and 4177 miles of telephone wire. In 1927, 609 vessels of 1,295,202 tons entered the ports of the Republic.

GOVERNMENT Executive power is vested by the constitution in the President elected for four years, who acts through a ministry of four mem-

bers; and legislative power in the Congress of 42 members elected for one year by universal suffrage. President in 1929, Dr. Pio Romero Bosque, who assumed office Mar. 1, 1927, Vice President, Gustavo Vides.

SALVATION ARMY. An international organization with headquarters in London, whose sole purpose is the "salvation of mankind from all forms of spiritual, moral, and temporal distress." The movement was first organized as a mission in the East End of London in 1865 by William Booth, a minister of the New Connection Methodists. It spread rapidly throughout England and in 1880, as the Salvation Army, was extended to the United States. Incorporation took place in New York City in 1899.

The government is military in character and in 1929 was under the command of Gen. Edward J. Higgins. The higher command is divided into territories, each territory usually being a separate country, or colony, led by a commissioner and subdivided into divisions of a number of corps or posts under a captain and lieutenant. The United States has four territories with headquarters in New York City, Chicago, San Francisco, and Atlanta. The Salvation Army is active in 84 countries and colonies, and its gospel is preached in 67 languages.

The outstanding international event of 1929 was the assembling for the first time of the high council, a body created under the foundation deed of the movement to meet certain contingencies on the succession of a new general, which convened in London on Jan. 8, 1929. The prolonged illness of Bramwell Booth and his consequent inability to fulfil the duties of his office led to the convening of this body. Nominated by his father, William Booth, he succeeded to the generalship on the death of the latter in 1912. Bramwell Booth died on June 16, 1929, after a lifelong career in the service of the Salvation Army. See BOOTH, BRAMWELL.

In 1929 there were in the service of the Salvation Army throughout the world 24,513 officers and cadets, 9124 persons without rank wholly employed, 147,981 local officers and bandmen, 61,265 songsters, 33,109 corps cadets, and 15,517 corps and outposts in operation. Social institutions and agencies numbered 1533 and day schools, 1086. Among the social institutions were 30 naval and military homes, 149 hotels for men and 53 hotels for women, accommodating 35,433 persons, 5 inmates' homes with 199 patients; 100 homes housing 5090 children, 10 crèches, 24 industrial schools with 1570 pupils, 112 women's industrial homes, accommodating 3622 women, and 79 maternity homes with 2801 patients. The Army also maintained 309 miscellaneous social services, as well as 12 farms, 176 almshouses, 210 homes, elevators, workshops, and woodyards, accommodating 7341 persons. In addition to 17 separate food depots there were 123 combined shelters and food depots for men and 18 shelters and food depots for women. Through the 140 labor bureaus, 456,669 men were supplied with work. The organization publishes 122 periodicals, with an average circulation of 1,008,650 copies per issue.

In the United States there were, in 1929, 1735 corps and outposts, 4814 officers and cadets, 12,331 local senior officers and bandmen, and 12,550 local junior officers and bandmen. Converts during the year numbered 109,296, 558,171 in-

door meetings and 208,158 open-air meetings having been held. Among the social institutions were 67 men's hotels, 2 women's hotels, and 7 residential hostels for young women, accommodating a total of 7048 persons. Men's industrial homes numbered 124 with accommodation for 4883 persons, children's homes, 10 with accommodation for 848 persons, women's homes and hospitals, 35 with accommodation for 2333 persons, and general hospitals and dispensaries, 16 with a total of 49,224 patients.

The national headquarters of the Salvation Army in the United States are at 122 West Fourteenth Street, New York City. Evangeline Booth, daughter of the founder, is the commander-in-chief. The territorial commissioners in 1929 were Richard E. Holz (eastern), John McMillan (central), Adam Gifford (western), and William McIntyre (southern).

SAMOA. A group of 14 islands in the Pacific Ocean between 13° and 15° S latitude and 168° and 173° W ' ' ' about 2000 miles south of Hawaii and ' ' ' southwest of San Francisco. Since Feb. 13, 1900, the islands east of 171° W longitude have belonged to the United States, and the islands west of that line belonged to Germany until the outbreak of the World War in 1914, when they were occupied by New Zealanders and later turned over to New Zealand for administration, under a mandate of the League of Nations.

WESTERN SAMOA. The official name applied to the former German Samoan Islands is the Territory of Western Samoa. This territory includes Savaii and Upolu, two of the largest islands, and Apolima and Manono. Area of Savaii, about 660 square miles, Upolu, 550 to 600 square miles. Population, Dec. 31, 1927, 42,865, of whom 2564 were Europeans and half-castes, and 939, coolie laborers. The principal port is Apia, on the island of Upolu. About 11,400 pupils are instructed in schools conducted by the government and various missionary groups. The products include copra (the chief product), cacao, bananas, rubber, sugar, and cardamoms. The imports for 1927 were valued at \$304,369 and exports at \$335,978. The principal source of imports was Australia and the chief destination of exports was Great Britain. In the same year 51 vessels of 91,417 tons entered and cleared at the port of Apia. The revenue collected for the year ended Mar. 31, 1928, was £126,038, expenditure, £143,421. The general control of the islands is under the New Zealand Ministry of External Affairs, and the local government is under an administrator. There is a Legislative Council, the membership of which is restricted to British subjects or persons born in Samoa of European descent, and a Native Council which advises the administrator in native affairs. Administrator in 1929, Colonel S. S. Allen, appointed March, 1928.

AMERICAN SAMOA. Tutuila, Tau, and the Manua group comprise the American Samoan group of islands. The total area of the islands is about 60 square miles, and the population on June 30, 1929, was 9172. The principal port is Pago Pago, at the extreme end of the bay of the same name on the island of Tutuila, the best and safest harbor in the South Seas. In 1929 there were 20 public schools with 1957 pupils and 54 teachers, 47 of whom were Samoans, and four missionary schools with 338 pupils. The sum of \$20,218, or one-fifth of the revenue, was allotted to education in 1929. Production of copra, the

sole export, totaled 1686 tons valued at \$167,911 in 1928. The fertile soil produces a variety of fruits. Imports in 1929 were valued at \$172,465 and the gross revenues for the year totaled \$108,522. The United States Navy has established a high-powered radio station on the island of Tutuila, which is in daily communication with the islands of the Pacific and the United States. The government is in the hands of the Governor of the United States Naval Station at Pago Pago. Governor in 1929, Captain Stephen V. Graham, U. S. N. He was relieved by Captain G. S. Lanchester, U. S. N., on Aug. 2, 1929.

HISTORY. Four years of unrest in Western Samoa, resulting from the mandate power's rejection of native demands for greater autonomy, culminated in rioting at Apia on December 28, 1929, in which a white constable, the Samoan chief, Tamasese, and seven of his followers were killed and many injured. The chief, Tamasese, was one of the leaders of the Mau, or league of Samoan natives, which conducted the agitation for autonomy. The cruiser *Dundee* with a strong marine force was rushed to Samoa by the New Zealand government following the rioting. See **NEW ZEALAND**, under *History*.

SAMOS. An island in the Aegean Sea belonging to Greece. Area, about 181 square miles, population, according to the census of 1928, 70,497. Capital, Lammí Vathy, with a population of 8636. The island was acquired from Turkey as a result of the Balkan War of 1912-13.

SANDERS, GENERAL OTTO LIMAN VON. A German soldier and a field marshal during the World War, died in Munich Aug. 23, 1929. He was born in 1855, Otto Liman, in the Province of Pomerania, Prussia, and in 1875 was given a commission in the Grand Ducal Hessian Footguards. In 1879 he was transferred to the Hessian Dragoon Guards, and in 1911 he was appointed to command the 22d Division in Cassel. At the occasion of the Kaiser's Jubilee in 1913, Liman was raised to the nobility with the title *von Sanders*. He was sent in 1913 to reorganize the Turkish Army, at that time in a state of disintegration. In the World War, he was placed in command of the Turkish Fifth army in the Dardanelles, where he served with distinction. When the campaign there was abandoned, von Sanders was sent to Palestine to command the Turkish Army there. On the defeat of this army, he attempted to organize a new resistance at Adana, Turkey. After the Armistice was signed, he gave up his command and went to Constantinople to aid in the transport of the German troops. Detained by the British at Malta for several months, he began the volume of reminiscences which he later published under the title, *Five Years in Turkey*.

SAN GABRIEL DAM. See **DAMS**.

SANITATION. See **GARRAGE AND REFUSE DISPOSAL**, **SEWERAGE AND SEWAGE TREATMENT**, **TYPHOID FEVER**, **WATERWORKS AND WATER PURIFICATION**.

SAN MARINO, ma-rē-nō. A republic of Europe, located in the peninsula of Italy. Area, 38 square miles, population, in December, 1928, 13,013. The chief exports are wine, cattle, and the building stone quarried on Mount Titano. The revenue and expenditure for 1927-28 balanced at 4,053,072 lire. Legislative power is exercised by a council of 60 elected members and executive power by two regents appointed every six months by the council.

SANTO DOMINGO. See DOMINICAN REPUBLIC.

SÃO THOMÉ, *soum tō-má',* AND **PRINCEIPE,** *prên'thê-pâ* Two islands in the Gulf of Guinea, about 125 miles from the coast of Africa, and belonging to Portugal. Area, 300 square miles, population in 1921, 52,150 for São Thomé and 6905 for Principe. Cacao, cinchona, coffee, and rubber are the chief exports. The revenue and expenditure for 1926-27 balanced at 10,573,347 escudos. Imports for 1927 were 36,271,746 escudos, and exports 91,770,486 escudos.

SARAWAK, *sa-n'wak* An independent state, comprising the northwestern part of the island of Borneo, under the protection of Great Britain. Area, about 42,000 square miles (coast line 400 miles). Population estimated at about 600,000, made up of Malays, Dyaks, Kavans, other Polynesian tribes, Chinese, etc. Kuching is the capital, with a population of about 25,000. There are large resources of coal, and an oil field has been opened up in the Baram region. The chief exports are petroleum products, plantation rubber, and sago flour. Imports in 1927 totaled 25,664,546 Straits dollars (1 Straits dollar equaled \$0.56 in 1927) and exports 49,786,143 dollars. In the same year revenues amounted to 6,243,065 dollars and expenditures to 5,764,318 dollars. Sir Charles Viner Brooke was rajah in 1929. British supervision is exercised by the British agent for Sarawak and British North Borneo.

SARRAIL, *sar'ail',* MATRIEX, PAUL EMMANUEL A French general died in Paris, May 23, 1929. He was born Apr. 6, 1856 at Carcassonne, and was educated at St. Cyr. Entering the army in 1877, he rose to the rank of general of a division in 1911. He early allied himself with the Radical-Socialist party, a fact which in part accounted for the tempestuous nature of his political career. At the opening of the World War, he was in charge of the infantry division in the 6th Army Corps. Appointed commander of the 3d Army in 1911, he was placed in command of troops in the Argonne, where he held the lines before Verdun against German attacks in spite of orders to retire, thus making possible Joffre's victorious counter-attack at the Marne. In 1915 he succeeded General Gouraud as commander-in-chief of the French forces at the Dardanelles, and in the same year commanded the expeditionary army landed at Salonika for service in Serbia. An account of these days he gave in *Mon Commandement en Orient*, written at the end of the War. In 1921 he was made High Commissioner in Syria, but was recalled in 1925 because of protests made at his severity in putting down an Arab revolt in Damascus. General Sarrail was buried in the Invalides.

SASKATCHEWAN A Prairie Province of Canada, situated between Alberta on the west and Manitoba on the east, extending northward from Montana and North Dakota to the Northwest Territories. Area, 251,700 square miles, population, according to the census of 1926, 821,042, estimated June 1, 1929, 886,700. Capital, Regina, with a population in 1926, of 37,320. Other cities are Saskatoon, 31,234, a gain of 25 per cent over 1921, Moosejaw, 19,039, Prince Albert, 7873. In 1927 there were 4799 public elementary schools with 193,903 pupils and 7760 teachers and 19,501 students in high or secondary schools. The total area under field crops in 1928 was 21,063,078 acres and the revenue was about \$334,867,000. The gross agricultural revenue of

\$403,915,000 in 1927 was derived chiefly as follows: field crops, \$347,515,000, farm animals, \$21,956,000, dairy products, \$18,560,000, poultry and eggs, \$12,498,000, fruits and vegetables, \$2,700,000.

Mineral production in 1928 was valued at \$1,536,965, including coal valued at \$868,867. Total exports in 1926-27 amounted to \$9,849,274 and imports to \$20,700,339. In 1926 there were 7237 miles of steam railways in the province.

The government is under a lieutenant governor, appointed by the Governor-General of the Dominion of Canada, and a legislative assembly of 63 members elected for five years by universal suffrage. Women vote and are eligible for seats in the legislature. Lieutenant Governor in 1929, H. W. Newlands, Premier and Minister of Education, Jas. G. Gardiner. See CANADA.

SATIN MOTH See ENTOMOLOGY, ECONOMIC. **SAULT STE MARIE,** CANALS AT In 1929 the 19,793 vessels passing through the United States and Canadian canals at Sault Ste. Marie, Michigan, and Ontario, had a total registered tonnage of 68,239,570, as compared with 19,250 vessels of 66,835,763 tons in 1928. These consisted in 1929 of 18,035 steamers, 1217 sailing vessels, and 541 unregistered vessels as compared with 17,757 steamers, 1011 sailing vessels, and 487 unregistered vessels in 1928. The United States canal, there were 16,209 vessel passages with a registered tonnage of 63,363,447, and through the Canadian canal 3584 vessel passages with a registered tonnage of 4,876,123. Lockages in 1929 numbered 14,585, as compared with 14,101 in 1928. The number of passengers showed a decrease, the totals for 1928 and 1929 being 56,053 and 54,415 respectively.

The total freight passing through the canals aggregated 92,622,017 short tons, or an increase of 5,629,020 tons. Of the total freight tonnage, 71,840,016 were east-bound and 17,782,001 were west-bound. The leading items of east-bound freight carried through the United States canal were wheat, 201,522,937 bushels, grain, other than wheat, 49,732,469 bushels, and iron ore, 64,721,128 short tons which together with the tonnage carried through the Canadian canal brought the totals up to 225,421,673 bushels, 68,127,000 bushels and 64,827,025 tons, respectively.

Among the leading articles of west-bound traffic were 15,103,048 short tons of soft coal, of which 14,934,468 tons were carried through the United States canal and 168,580 tons through the Canadian canal. The total tonnage of hard coal was 729,321 of which 695,952 tons went through the United States canal and 33,369 tons through the Canadian canal.

SAVINGS BANKS. See BANKS AND BANKING.

SAXONY. The name Saxony is applied to three divisions of the former German Empire, the Republic of Saxony (formerly the Kingdom of Saxony), the former Grand Duchy of Saxony (now a part of Thuringia), and the Province of Saxony in Prussia.

REPUBLIC OF SAXONY. The third largest state of the German Republic, proclaimed a republic on Nov. 9, 1918. Area, 5780 square miles, population, according to the census of 1925, 4,094,281. The capital, Dresden, had a population in 1925 of 619,157. The city of Leipzig, with a population in 1925 of 1,000,000 in other cities with over 100,000 in 1925 were Chemnitz, 333,851, and Plauen, 111,436. In proportion to its size, Saxony is the

leading state in German industry and rivals the chief industrial provinces of Prussia. In 1928 the area under cultivation was 2,491,435 acres.

Textile manufacturing is the chief industry, although mining and metal working are important. The production of coal in 1927 totaled 4,032,000 metric tons and of lignite 10,734,000 metric tons, the combined total having a value of 109,501,000 Reichsmarks. The output of 142 breweries in 1928 was 84,305,727 gallons of beer. The ordinary budget for 1928-29 balanced at \$100,716,555 and the extraordinary budget amounted to \$11,423,818. The present constitution of the Republic became effective Oct. 26, 1920. Premier in 1929, Herr Heldt (Socialist).

SCALE. See ENTOMOLOGY, ECONOMIC SCANDINAVIAN LITERATURE. This review includes the late books of 1928 in addition to the books of 1929, and is divided into Danish, Norwegian, and Swedish literature.

DANISH. Poetry. Johannes Wulff's *Kosmiske Sange* (Cosmic Songs) are dreamy, vague, and expressive of strong feeling. In *Den tredje Dag* (The Third Day), Poul La Coura portrays delicately man's inmost thoughts and feelings.

Fiction. Knud Andersen in *Perlemor* (Mother of Pearl) shows his usual familiarity with life on the sea and his usual ability to make it real to the reader. The book shows, also, strong sentiment and a deep understanding of religious problems. *Godaet på Månen* (The Estate on the Moon), by Aage Magelung, is worthy of mention for its beautiful descriptions of Swedish nature and for the strangeness of its hero, who leads a happy existence of dreams and hallucinations. This tendency away from reality to a kind of ethereal existence is seen also in Anker Larsen's *Sognet der vokser ind i Himlen* (The Parish Which Reaches Heaven). A. C. Andersen's posthumous novel, *De stille i Landet* (The Peaceful in the Land), marked a return to the style of his first work, *Husmandens Datter*. Among collections of short stories we may mention Knud Hjørtoft's *Drømmen om Kvinden* (The Dream about Woman), characterized by a charming realism, a clever repartee, and a delicate use of language, and Johannes Bucholtz's *Fodspor i Støvet* (Footprints in the Dust), a mixture of autobiographical material and free fancy, often running into the grotesque and improbable. The short stories found in Johannes V. Jensen's *Ved Livets Bred* (At Life's Shore) give the impression of a large background and make one feel the march of centuries.

Religion, Biography, Criticism. Paul Tuxen's *Buddha* is a scholarly and authoritative study of Buddhism and its present status. In Jeppe Aakjær's autobiography, *Fra min bedste Tid* (From My Short Years), the parts dealing with the author's mother are the best. *Scima Lagerlof*, by the German scholar, Walter A. Berendsohn, is an account from the point of view alike of Lagerlof and of an appreciative understanding of the Swedish author.

NORWEGIAN Drama. Helge Krogh's *Konkykten* (The Sea Shell) was staged under the supervision of the author himself. Nils Collett Vogt's *Forbi er forbi* (Past is Past) is a collection of four plays, perhaps the best ever written by the author. The great theatrical event of the season was the opening of the *Nye Teater* in Oslo.

Poetry. Charles Kent's *Den gode strid* (The Good Fight) is a collection of poems, many, simple, full of heartfelt emotion, and free from

bombast. Alf Larsen's poetry has of late become more cheerful and more deeply pervaded by religious feeling. This is true also of *Med vdr under vingen* (With Spring under the Wing), which expresses a love of God and of nature. The religious element is strongly felt also in Edin Holme's *September-sol* (September Sun). Halldis Møren shows great lyric power in *Harpe og doll* (Harp and Dagger).

Fiction. In *Helenes historie* (Helene's Story), Hulda Garborg tells in a realistic and gripping way the story of a girl who spends a part of her life in America. *Av skyggernes slægt* (Of the Family of Shadows), by Kristian Elster, Jr., shows an understanding of the times and a broad human sympathy. *Anakreons død* (Anacreon's Death), by far the best work written until now by Johannes Thraenkle, gives a good picture of the life of Anacreon of Crisæa in the nineties. In *Skogens eventyrer* (Adventures of the Woods), Mikkel Fønhus tells the story of a fox in an interesting manner. Among Landsmål productions are Peter Egge's *Han og hans døtre* (He and His Daughters), which depicts the conflict between the conservatism of the children and the liberal conservatism of their parents, and Olav Duun's *Carolus Magnus*, which shows the danger of teaching a child that he is destined to become great.

Literary Criticism. Halvdan Koht added a second volume to his *Hverfis Tæske*. Olav Midtun wrote a short book on Arne Garborg.

SWEDISH Drama. Par Lagerkvist's *Han som fick leva om sitt liv* (He who had to live his life), which is more realistic than the author's earlier plays, is permeated with a note of fatalism. In *Rembrandts son* (Rembrandt's Son), Tor Hedberg treats the old Ibsenian theme, a life calling, this time that of the artist. Hjalmar Bergman's *Patrascket* (Trash), which has literary merit combined with scenic effectiveness, was played with success.

Fiction. Albert Viksten's *Timmer* (Timber) gives a good picture of the industrial forest workers in northern Sweden. Although it is written objectively and dispassionately, we cannot help reading in it an indictment of the existing social order. *Långt från landsvägen* (Far from the Highway), by Vilhelm Moberg, the Swedish Thomas Hardy, is a sombre picture of life on the Swedish farm. Elin Vagneur feels with and for her characters and relates the everyday happenings of her story with a simplicity and charm that are rarely equaled. In *Svalorna flyga högt* (The Swallows Fly High), the noblest and most sympathetic character is a woman. Elin Bohlin's *Blenda* is the story of a girl who loved "not wisely, but too well" and who faces the consequences bravely. There is in this story much sympathy and humanity, and a few theories which, while not always orthodox, in some cases show a higher moral sense than that displayed by the exponents of conventional morality. In *Minnena* (Memories), E. Norlund tells the story of a couple who after a brief separation discover that the memories of their life together make the thought of a separate existence unbearable to either of them. Myrind Johnson, the supreme master in the portrayal of human thought in its devious, broken, and often illogical path, gives a cross-section of modern life in his *Kommentar till ett stjärnfall* (Commentary to a Falling Star). Two excellent collections of short stories deserve mention. Sigfrid Siwertz' *Res-*

kamraterna (The Traveling Companions) and Ludvig Norström's *Svenskar* (Swedes).

Memoirs and Criticism. *Prostinnan* (The Provost's Wife) contains memoirs and letters of Gunnar Wennerberg's mother, collected by his daughter, Signe Taube. In *Frodinga sociala dikting* (Frodinga's Social Poems), Arne Munthe discusses Frodinga's poetry of the period around 1890. Einar Elg, Knut Hagberg, and Victor Svanberg contributed works on Viktor Rydberg. See also **PHILOLOGY**, **MODERN**.

SCHAFF, MORRIS An American army officer and author, died Oct. 19, 1929, in Southboro, Mass. He was born in Kirkersville, Ohio, Dec. 28, 1840, and was graduated in 1862 from the U. S. Military Academy. As second lieutenant of the Ordnance Corps, he entered the Civil War in 1862, was promoted to first lieutenant in 1863, and in 1864 was brevetted captain for gallant service in the Battle of the Wilderness. He resigned from the United States Army in 1871, and in 1882 was made inspector general of the Massachusetts Militia. General Schaff was the author of *Etna and Kirkersville* (1905), *Spirit of Old West Point* (1907); *Battle of the Wilderness* (1908); *Sunset of the Confederacy* (1912); *Jefferson Davis, His Life and Personality* (1922).

SCHOOL AGE. See **CHILD LABOR**.

SCHOOLS. See **EDUCATION** IN THE UNITED STATES.

SCHURÉ, shu'ré, EDOUARD A French musicologist, died in Paris, April 12, 1929. He was born in Strassburg, in 1841, and studied law and philology there. In 1867 he settled permanently in Paris. His chief works are *Histoire du l'œd en Allemagne* (1868), *Le Dram musical* (1875), *Nouvelles sur R. Wagner* (1900), *Précursurs et Récolteurs* (1904).

SCHURIG, ARTHUR A German author and critic, died Feb. 16, 1929. He was born in Dresden, Apr. 24, 1870, and studied at the universities of Leipzig and Berlin. He wrote *Wolfgang Amadeus Mozart* (1913), *Der vollkommene Spicaburger* (1927), *Die Legenden um Beethoven* (1927), *Der goldene Ball* (1927). He also translated and edited works by Mérimée, Flaubert, Balzac, Zola, and others.

SCHURZ, CARL, ANNIVERSARY. See **CELEBRATIONS**.

SCIENCES, NATIONAL ACADEMY OF. See **NATIONAL ACADEMY OF SCIENCES**.

SCIENTISTS, CHRISTIAN. See **CHRISTIAN SCIENTISTS**.

SCOTLAND. See **GREAT BRITAIN**.

SCOTLAND, CHURCH OF. See **PRESBYTERIAN CHURCH**.

SCREEN-GRID TUBE. See **RADIO COMMUNICATION**.

SCULPTURE. Sculpture in America continued to be far behind painting in development, interest, and excellence, in spite of the fact that the largest exhibition ever held in the United States took place during the year. This exhibition, made possible by a gift of \$100,000 from Archer M. Huntington, was held in the California Palace of the Legion of Honor under the auspices of the National Sculpture Society of New York City. It opened in February and continued to be on view in San Francisco for six months. There were over 1200 pieces and 300 artists and the entries were valued at \$1,000,000. The sculpture exhibited included many monumental pieces, representing most of the better known American sculptors.

There were as usual very few exhibitions of sculpture alone, and some of these not of the best. An excellent exhibition, however, was shown in January, that of the French sculptor Duchamps-Villon which presented his work in wide range and offered an unusual opportunity to study "one of the few first-rate sculptors of modern times." Another worth-while exhibition was that of small bronzes by Bourdelle, doubly interesting because of the recent death of the artist.

NECROLOGY. The number of deaths of important sculptors included Emile Antoine Bourdelle, famous French sculptor and a great influence in his generation, the Italians, Vincenzo Gemito and Achille D'Orsi; Charles Grafly, well-known American sculptor, also Emil Fuchs, sculptor and painter.

BIBLIOGRAPHY. Two publications of the National Sculpture Society coincidental with the exhibition of contemporary American Sculpture *Contemporary American Sculpture* and *The Spirit of American Sculpture*, by Adeline Adams; *The American Renaissance*, a rather unduly pessimistic analysis of the present cultural status, but hopeful for the future, *Some Modern Sculptors*, by Stanley Cason, treating the period from Rodin to Epstein.

SEAL FISHERIES. See **ALASKA**.

SEAPLANE. See **AERONAUTICS**.

SECRECTIONS, INTERNAL, AND ENZYMES. Considerable progress resulted during 1929 in the isolation of active principles of various glands of external and internal secretions. For the first time since its original discovery nearly a century previous, pepsin, the digestive enzyme of the stomach, was isolated in crystalline form by Dr. J. H. Northrup of the Princeton branch of the Rockefeller Institute. Insulin is considered as a drug under a separate section (see **INSULIN**), but we may add here that Professor Abel of Johns Hopkins, the first to isolate it in crystalline form, announced that only a fraction of the entire molecule possesses the therapeutic action seen in diabetes. Twin hormones, each possessing a special functional and therapeutic efficacy, were isolated from the pituitary body by Kamm.

SEISMOLOGY. The time taken by an earthquake wave to travel from a focus near the surface to its antipodes is almost exactly 21 minutes. As the crust within and near the focus is for some days in a highly sensitive condition, it is possible that the return-pulsation may affect the frequency of after-shocks, and in examining the catalogues of the after-shocks of 11 great quakes, Davison detected a 42-minute periodicity in their occurrence. This periodic influence persists for several days as a rule, sometimes for several weeks, and after the great displacement that gives rise to a quake, the earth continues to throb for at least 10 days. The after-shocks seem to have two distinct origins, during the first five days, they result mainly from repetitions of the original movement, transferred in part to other regions, especially to those bordering the area of displacement, afterward, they are mostly produced by settlement of the displaced mass.

A search of the records of past earthquakes, by Terada and Miyabe, has shown that during the sixteenth century the locations of quakes in Japan and Eurasia moved farther south, while those in North America moved farther north, i.e., they all tended to approach the equator; about the year 1600, this tendency was reversed, and they receded from the equator. By

1700 the Eurasian earthquakes began to move southward again, while those in South America began a new northward march shortly afterward. About 1800 the reverse tendency again appeared, while about 1800 a further reversal took place, successive quakes in Japan have recently shown a tendency to occur farther and farther north. It is suggested that this slow change in the latitude of quakes may possibly be due to a pulsation of the earth, whereby the equatorial protuberance alternately increases and decreases.

The Rev Francis A Tondorf, S J, a well-known seismologist, died November 20.

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SELANGOR = **FEDERATED MALAY STATES**

SENEGAL, *sen'egal*. A colony belonging to France on the west coast of Africa, under the Government of French West Africa (see **FRENCH WEST AFRICA**). Total area, 74,112 square miles, population in 1926, 1,318,287. Capital, St Louis, with a population in 1926 of 10,746 (Europeans, 1038). Other important towns are Dakar, the seat of the Government-General of West Africa, and a fortified naval station, population, 1926, 33,697 (Europeans, 2939), and Rufisque, population, 8053 (Europeans, 799).

Cotton is cultivated and a wild variety also is found, but the principal source of wealth consists of peanuts. Ginn arabic, hides, rubber, and groundnuts also are produced for export. Total exports in 1928 amounted to 760,428,000 francs, of which 593,234,000 francs represented peanut shipments, and total imports to 895,536,000 francs (1 franc exchanged at 0.0392). Cotton piece goods, rice, coal, Guinea cloth, sugar, fuel oil, wheat flour, and automobiles were the chief imports. The local budget for 1927 totaled 134,442,000 francs.

Dakar is the only coaling station on the French West African coast. The administration is in the hands of a lieutenant-governor, assisted by a council of 40 members, 24 of whom are elected by the French citizens and 16 by representatives of the native chiefs. The colony sends one deputy to the French Parliament. Lieutenant-Governor in 1929, M Jore, appointed in 1926.

SERBIA. A former Balkan kingdom which was proclaimed in December, 1918, a part of the new unitary Kingdom of the Serbs, Croats, and Slovenes, later (1929) officially named Yugoslavia. See **JUGOSLAVIA**.

SERVISS, GARRETT PUTNAM. An American writer and lecturer on scientific subjects, died in 1924. Born N J, May 24, 1829. He was born in New Brunswick, N Y, Mar. 24, 1857, and was graduated from Cornell University in 1872. Two years later he graduated from the law school of Columbia University, but he never practiced law. From 1882 to 1892, while an editorial writer for the *New York Sun*, he wrote for the paper anonymous articles on astronomical topics. Both his books and his lectures, for the most part on astronomical subjects, were popular.

SESQUICENTENNIAL CELEBRATIONS

See **CELEBRATIONS**.

SEVENTH-DAY ADVENTISTS. See **ADVENTISTS**.

SEVILLE EXPOSITION. See **EXPOSITIONS**.
SEWERAGE AND SEWAGE TREATMENT. The United States Supreme Court decided Jan 14, 1929, that the Chicago Sanitary District could not legally divert water from Lake

Michigan to the Mississippi River system for the purpose of diluting and carrying sewage away from the lake to protect the water supply of Chicago. The decision was made in a suit (see **CIVIL CASE BOOKS**) brought by Wisconsin and other States to prevent the diversion on the ground of damage to navigation by lowering the level of the Great Lakes. The court did not pass upon the legality of diverting water from one drainage basin to its detriment for the benefit of another basin, holding it unnecessary to rule on that point because diversion to the injury of navigation is unwarranted. It ruled that some diversion was necessary at Chicago for the protection of Port of Chicago navigation against sewage pollution, but that the amount was negligible in comparison with the 8500 feet per second being diverted.

The court again appointed Charles E Hughes as referee in the case, this time to make specific recommendations for the decree of the court, as to a programme for cutting down the diversion and as to what the diversion should be finally. After taking expert testimony and hearing arguments on both sides, Mr Hughes reported on December 17 advising that the diversion be reduced to a minimum of 1500 second feet by Dec 30, 1938, by stages as follows: 6500 feet by June 30, 1930, and to 5000 feet as soon as controlling works are built by the district to prevent the flow of the Chicago River into Lake Michigan in time of floods. This programme was based on the construction of additional sewage treatment works by the Sanitary District to be completed by stated dates. Several small and one large plant had been completed and another large one was under way at the close of 1929. (Consult *Engineering News-Record*, Jan 21, Dec 19, and Dec 26, 1929, for abstracts of the Supreme Court decision and Mr Hughes's findings and for a statement of the sewage treatment works already built at the close of 1929 and that must be completed at various dates in the following nine years.)

BIBLIOGRAPHY Revised editions of the following books appeared: Babbitt, *Sewerage and Sewage Treatment*, Folwell, *Sewerage*, Metcalf and Eddy, *American Sewerage Practice*, vol 1, "Design of Sewers" (all New York).

SEX. See **ZOOLOGY**.

SEYMOUR, ADMIRAL OF THE FLEET, THE RIGHT HON SIR EDWARD HORRAT. An English naval officer, died in Maidenhead, Berkshire, on Mar 4, 1929. He was born Apr 30, 1840 and was educated at Radley. In 1852 he entered the Royal Navy, where he was promoted to commander in 1866, captain in 1873, rear admiral in 1889, vice admiral in 1895, and admiral in 1901. He served with distinction in the Crimean War in 1854-55, in the China War from 1857 to 1862, in West Africa in 1870, and in the Egyptian War (1882), he commanded H M S *Irish* from 1898 to 1900, he was commander-in-chief in China, during which time he had the distinction of commanding the ships of eight nations in the Boxer Uprising of 1900. He was commander-in-chief at Davenport in 1903-05 and, from 1905 to his retirement in 1910, he served as Admiral of the Fleet. He was knighted in 1897, and was given the Order of Merit in 1902. He published *My Naval Career and Travels* in 1911.

SHAKESPEARE STUDIES. See **PHILOLOGY**, **MODERN**.

SHANNON POWER PROJECT. See **IRISH FREE STATE**, under *Production*.

SHANTUNG, shan'tōng'. One of the 30 provinces of China. In dispute between China and Japan after the Treaty of Versailles, it was returned to China by Japan in accordance with the agreement reached at the Versailles Conference. 1921-22 Area, 55,970 sq. miles; population, estimated at 30,803,245. See CHINA.

SHARP, DALLAS LORE. An American educator, naturalist, and author, died Nov. 29, 1929, in Hingham, Mass. He was born in Haleville, N. J., Dec. 13, 1870, was graduated from Brown University in 1895, and received the S. T. B. degree from Boston University in 1899. Ordained in the Methodist Episcopal ministry in 1895, he served as pastor of several churches until 1899. In that year he became assistant librarian at Boston University, assistant professor of English in 1902, and after 1902, until retirement in 1922, he was professor of English. He was a well-known naturalist, contributing to magazines articles on native birds and small mammals. His books also reflect his interest in nature.

SHATTUCK, FREDERICK CHEEVER. An American physician and educator, died in Brookline, Mass., Jan. 11, 1929. Born in Boston, Nov. 1, 1847, he was graduated from Harvard in 1868, receiving the A. M. degree in 1872, and the M. D. degree in 1873. He commenced his medical practice at Boston in 1875. Joining the Harvard medical faculty in 1879, he served as clinical instructor in auscultation and percussion until 1884, instructor in the theory and practice of physics, 1884-88, and Jackson professor of clinical medicine from 1888 until his retirement in 1912, when he was made professor emeritus. On his retirement he was elected overseer of Harvard University, serving until 1919.

SHEEP. See LIVESTOCK. See WOOL.

SHILOH, EXCAVATIONS AT. See ARCHÆOLOGY.

SHIP, NAVAL. See NAVAL PROGRESS.

SHIPBUILDING. The total output of merchant shipbuilding launched in 1929

to the annual summary of the mere building of the world compiled by Lloyd's Register of Shipping, was 2,793,210 tons, or an increase of 93,971 tons as compared with 1928. These figures, as usual, did not include war-ships and took into account only merchant vessels of 100 tons gross and upward that were launched in 1929, whether they were completed during the year or were still under construction.

The vessels launched in 1929 included 27 vessels of 174,000 tons to be fitted with steam turbines and 25 vessels of 128,000 tons with a combination of steam reciprocating engines and turbines. Those to be fitted with internal-combustion engines amounted to 1,270,000 tons, as compared with 1,183,000 tons launched in 1928, representing 84.4 per cent of the world's output of steam tonnage as compared with 62.8 per cent in 1927, 29.50 per cent in 1924, and 7.75 per cent in 1921. The increase in the tonnage of motorships was indicated by the fact that at the end of 1929 there was under construction in the world 387,451 tons of motorships in excess of steam tonnage. The total steam tonnage of the year amounted to 1,504,000 tons, of which 410,000 tons included steamers fitted for burning oil fuel under the boilers, so that of the new tonnage only 39 per cent depended exclusively upon coal for propulsion.

Of the total number of vessels launched during the year, 1012 in number, there were 175 between 4000 and 6000 tons, 90 between 6000 and 10,000

tons, and 34 over 10,000 tons each. The largest six vessels launched during the year were as follows:

		Tons	Built in
Motorship	<i>Britannic</i>	26,840	Ireland
Turbine s.s.	<i>Empress of Japan</i>	25,000	Scotland
Motorship	<i>Tees</i>	21,500	France
Turbo electric	<i>Imperator</i>	20,526	United States
Turbine s.s.	<i>Orontes</i>	19,970	England
Motorship	<i>Winchester Castle</i>	19,950	Ireland

In 1929, 49 vessels of 324,870 tons were launched for the carriage of oil in bulk, this number being exclusive of vessels of less than 1000 tons. The larger proportion of this tonnage was built on the Islerwood system of longitudinal framing, the total number being 33 craft of about 228,000 tons exclusive of those of less than 1000 tons.

The countries in 1929 the largest shipbuilding outputs during 1929 were as follows:

	Tons
Great Britain and Ireland	1,522,623
Germany	249,077
Holland	186,517
Japan	164,457
United States	126,063
Denmark	111,496
Sweden	107,246

The table on page 750, from Lloyd's Register of Shipping, indicates the fluctuation in the year's totals of world's tonnage launched from 1913 to 1929. It may be noted that during the five years 1925-29 the average tonnage launched annually in the world was about 160,000 tons less than the average of the five pre-war years 1909-13. The five paragraphs show the items of interest in regard to the tonnage launched in various countries during 1929.

GREAT BRITAIN AND IRELAND. The output of Great Britain and Ireland in 1929, 1,522,623 tons, represented 54.5 per cent of the world's output and was 70,703 tons more than in 1928, in which year Great Britain and Ireland supplied 53.6 per cent of the world's tonnage as they did also in 1927, as compared with 48.2 per cent in 1926 and 58 per cent in 1913. The tonnage launched in England and Wales in 1929 amounted to 790,432 tons, in Scotland, to 588,336 tons, and in Ireland, to 143,855 tons. Distributed among the leading shipbuilding centres, the Clyde had 532,379 tons, the Tyne, 271,601 tons, the Wear, 245,511 tons, the Tees, 162,209 tons, and Belfast 143,855 tons. Of the total tonnage launched, 1,262,753 tons were for registration in Great Britain and Ireland and 259,870 tons were for owners in other countries, a percentage of 17.1 per cent comparable with 20.2 per cent in 1928 and an average percentage of over 22 per cent for the pre-war period 1909-13. Eighteen vessels of 10,000 tons and upward were launched, of which the largest were the motorship *Britannic*, 26,840 tons, and the turbine steamer *Empress of Japan*, about 25,000 tons. These were the largest vessels launched in the world during the year. Next came the turbine steamer *Orontes*, 19,970 tons, and the motorship *Winchester Castle*, 19,950 tons.

There were launched in addition 95 vessels of between 5000 and 10,000 tons each. Exclusive of vessels of less than 1000 tons, 25 vessels of 175,000 tons (12 steamers of 68,092 tons and 13 motorships of 106,917 tons) were launched during the year. Vessels fitted for burning oil fuel

launched during the year amounted to over 306,000 tons. Steam turbines were to be fitted to 15 vessels with a total tonnage of 107,477 and 10 vessels of 58,273 tons were to have a combination of reciprocating engines and low-pressure steam turbines. The 77 motorships of 464,188 tons launched during the year were equal to 44 per cent of the steam tonnage launched. Of these 22 were between 6000 and 10,000 tons each and 12, of over 10,000 tons. The average tonnage of steamers and motorships launched in Great Britain and Ireland, excluding vessels of less than 500 tons each, was 4443 tons.

GERMANY The tonnage launched in Germany during 1929, 85 vessels of 249,077 tons, showed a decrease of 127,339 tons from 1928. In the grand total were included two vessels of 12,080 tons fitted with steam turbines and 14 vessels of 65,186 tons with a combination of steam and low-pressure engines and low-pressure turbines. There

were also 28 vessels of 93,089 tons fitted with oil engines, the largest being the motorship *Milwaukee* of 16,889 tons. Three tankers of 26,217 tons—one a motorship of 8000 tons—were launched. In the year's totals two vessels exceeded 10,000 tons each; five were between 8000 and 10,000 tons; and 12 between 6000 and 8000 tons. It was interesting to note that 34 vessels of 111,576 tons were built for other countries, including 13 vessels of 49,086 tons for France.

HOLLAND The total tonnage launched in Holland during 1929 was 186,517 tons or the highest ever reached except in the record year of 1921 when 232,402 tons were launched. The 1929 total was 19,763 tons greater than the 1928. The figures, as usual did not include vessels intended for river navigation, of which a considerable tonnage is built annually in Holland. There were launched 11 vessels of over 6000 tons each, all of which were motorships. Five of these exceeded

TABLE SHOWING THE NUMBER AND GROSS TONNAGE OF MERCHANT VESSELS OF 100 TONS GROSS AND UPWARD LAUNCHED IN THE VARIOUS COUNTRIES OF THE WORLD DURING THE YEARS 1918-1929—LLOYD'S REGISTER OF SHIPPING

Year	Austria Hungary		Belgium		British Dominions Coasts		Canadian Lake Ports		Denmark		France	
	No	Tons	No	Tons	No	Tons	No	Tons	No	Tons	No	Tons
1913	17	61,757	54	30,181	77	26,744	14	21,595	31	40,932	89	176,095
1914	11	34,345*	8	17,145	58	22,288	22	26,246	25	32,815	34	114,052
1915	.	(*)	No Returns		27	13,289	4	8,725	23	45,198	6	25,402
1916	.	(*)	No Returns		36	22,577	4	8,994	28	35,277	9	42,752
1917	.	(*)	No Returns		60	66,475	25	27,994	33	29,445	6	18,828
1918	.	(*)	No Returns		184	240,514	22	49,490	13	26,150	3	13,715
1919	.	.	2	2,433	235	298,495	28	60,233	46	37,766	34	32,633
1920	.	.	5	8,371	90	174,557	13	29,087	30	60,669	50	93,449
1921	.	.	3	17,909	49	118,803	5	11,372	37	77,238	65	210,661
1922	.	.	4	7,497	37	53,347	2	9,418	23	41,018	62	184,609
1923	.	.	5	10,072	41	64,191	24	4,191	34	64,792	37	96,644
1924	.	.	2	3,997	29	29,815	2	16,064	45	61,937	26	79,685
1925	.	.	3	4,206	47	32,220	4	13,858	21	73,268	16	75,569
1926	.	.	8	3,627	39	22,842	3	10,836	25	72,108	34	121,342
1927	.	.	8	4,693	24	20,119	5	10,131	20	72,048	22	44,335
1928	.	.	3	16,343	47	22,959	1	734	21	138,712	20	81,416
1929	.	.	4	8,361	47	21,327	3	11,814	34	111,496	16	81,607

Year	Germany		Great Britain and Ireland		Holland		Italy		Japan		Norway	
	No	Tons	No	Tons	No	Tons	No	Tons	No	Tons	No	Tons
1913	162	465,226	688	1,932,153	95	104,296	38	50,356	162	64,664	74	50,637
1914*	89	387,192*	656	1,683,553	130	118,153	47	42,981	32	65,861	61	54,204
1915	.	(*)	327	650,919	120	113,075	30	22,132	26	49,408	59	62,070
1916*	.	(*)	306	608,235	201	180,197	10	56,654	55	145,624	52	42,458
1917*	.	(*)	284	1,165,896	146	148,779	1	98,906	104	350,141	41	46,103
1918*	.	(*)	301	1,848,150	74	74,026	15	60,791	198	450,924	51	67,723
1919*	.	(*)	612	1,620,442	100	137,066	32	82,713	138	611,883	82	67,578
1920*	.	(*)	618	2,055,624	99	183,149	82	134,190	140	456,642	30	38,855
1921	242	509,064	426	1,538,052	98	232,402	86	170,948	43	227,425	16	51,458
1922	187	525,829	235	1,031,081	60	163,142	42	101,177	49	83,419	23	32,391
1923	109	345,062	222	645,051	35	65,632	21	66,523	44	72,476	48	42,619
1924	108	175,113	494	1,449,885	41	63,627	19	82,526	31	72,767	34	25,119
1925	121	406,374	342	1,084,638	47	78,823	31	148,046	23	55,784	48	38,805
1926	60	180,548	197	689,568	47	93,671	27	220,021	26	52,405	25	9,247
1927	105	289,622	371	1,225,873	68	119,190	25	101,076	19	42,359	12	5,363
1928	81	376,416	420	1,445,920	74	166,754	29	58,640	37	103,663	12	10,401
1929	85	249,077	489	1,522,623	77	186,517	32	71,497	40	164,457	51	39,604

Year	Spain		Sweden		United States Coast		Great Lakes		Other Countries		Total	
	No	Tons	No	Tons	No	Tons	No	Tons	No	Tons	No	Tons
1913	12	8,488	25	18,524	182	228,232	23	48,216	17	4,786	1,750	3,382,882
1914*	5	5,163	26	15,163	84	162,937	10	37,825	22	13,840	1,319	2,852,753
1915*	5	12,765	27	20,319	76	157,167	8	20,293	5	876	743	1,201,638
1916*	6	10,847	34	26,769	167	384,899	44	119,348	12	3,449	964	1,088,080
1917*	10	22,777	34	26,760	266	821,115	60	176,804	27	9,761	1,112	2,937,786
1918*	18	17,389	59	53,759	741	2,602,158	188	490,877	22	17,089	1,866	5,447,448
1919*	41	52,659	51	50,971	852	3,579,826	199	495,599	24	14,972	2,481	7,144,977
1920*	13	45,950	46	63,823	467	2,348,735	42	127,528	44	42,047	1,759	5,861,666
1921	11	47,256	27	65,911	167	1,004,093	7	11,624	78	63,465	1,479	4,356,843
1922	2	7,776	14	30,038	55	97,161	4	21,977	53	77,316	852	2,467,084
1923	7	4,488	10	20,118	69	96,491	14	76,326	22	19,308	701	1,643,181
1924	2	3,859	12	31,211	71	90,155	8	49,408	12	21,673	924	2,247,751
1925	1	127	17	63,756	94	78,766	7	50,010	14	15,165	855	2,193,404
1926	6	25,671	14	63,518	78	112,217	5	35,398	24	18,972	681	1,674,977
1927	5	22,899	18	67,361	58	124,270	8	54,048	24	80,802	802	2,285,670
1928	7	11,852	20	106,912	57	86,092	6	5,265	24	67,260	869	2,699,209
1929	8	37,023	29	107,246	59	100,682	4	25,481	34	54,498	1,012	2,792,210

* Returns are not available as regards Germany and Austria-Hungary for the war period (1914-18) nor as regards Germany for 1919 and 1920

10,000 tons each, including the *Johan van Oldenbarnevelt* and the *Marna van St Aldegonde* of about 18,000 tons each. There were 48 vessels of 131,097 tons, or 70.3 per cent of the total output, to be fitted with internal-combustion engines.

JAPAN By an output of 104,457 tons, or an increase of 60,794 tons over the total for 1928, Japan stood fourth among the countries of the world with the largest total since 1921 when 227,425 tons were launched. In these figures are included 30 motorships of 134,673 tons, including the *Chichibu Maru* of 16,920 tons, the *Tatsuta Maru* of 16,780 tons, and seven others exceeding 6000 tons each. Of the total output 82 per cent was motorship tonnage. Two tankers of 15,942 tons also were launched.

DENMARK The tonnage launched during 1929, 111,496 tons, showed a decrease from the record figures for 1928, namely, 138,712 tons, but were the largest ever recorded with this exception. The largest vessel launched during the year was the *Amerika* of 10,300 tons, while the total motorship tonnage was 94,649 tons, including 14 vessels of 1000 to 6000 tons, one of 6866 tons and the *Amerika* already mentioned.

SWEDEN The tonnage launched in 1929, 107,246, slightly exceeded the record of the previous year, namely, 106,912 tons. In this were included 25 motorships of 104,490 tons, of which seven were between 6000 and 9000 tons and three tankers aggregating 23,400 tons.

FRANCE In 1929 France launched the motorship *Lafayette* of approximately 21,500 tons and the *Pelle Roussel* of about 17,000 tons. The country's total output of 81,607 tons was a slight increase over the 1928 total of 81,416 tons. The motorship tonnage, 62,928, was nearly four times the steam tonnage and in addition to the two ships mentioned included three vessels of between 6000 and 8300 tons each and two tankers of 16,213 tons. A turbine vessel of 4840 tons and a tanker of 7455 tons represented the steamer construction in excess of 4000 tons.

ITALY With an output of 71,407 tons there was a production of 12,857 tons higher than for 1928 but considerably lower than the post-war yearly average. There were launched a steamer of 6349 tons and a motorship tanker of 1450 tons. Internal-combustion engines were to be fitted on 20 vessels amounting to 55,447 tons or 77.5 per cent of the total output.

UNITED STATES According to *Lloyd's Register* the output for 1929 was 126,063 tons, or 34,706 tons higher than for 1928 but less than the average recorded for some years prior to 1928. There were six turbine steamers of 42,025 tons launched during 1929, including the *Pennsylvania*, a turbo-electric vessel of 20,526 tons built by the Newport News Shipbuilding & Dry Dock Co for the Panama Pacific Line of the International Mercantile Marine Company. There were two other vessels of 11,000 tons in which electric drive was employed, while the internal-combustion engine tonnage amounted to 36,452 tons. Three oil tankers or motorships of 12,303 tons were launched and one tanker of 1815 tons employing electric drive. In addition to the merchant tonnage built during 1929 the 10,000-ton scout cruiser *Salt Lake City* was completed by the New York Shipbuilding Company at Camden, N. J. Shipbuilding returns for 1929 were 126,063 tons. The *Engineering and Shipping* (New York) there was an increase of 22.3 per cent in the amount of tonnage built in the

United States in 1929, as compared with the previous year. Merchant vessels of all types reported built and delivered during the year numbered 554 with a total gross tonnage of 284,226, the output of 54 shipyards, in 1928, 452 such vessels were built with a total of 231,531 gross tons, the output of 42 shipyards. Of the vessels completed in 1929, 27.1 per cent were propelled by steam, 15.7 per cent were motorships, and the remaining 57.2 per cent were barges and other non-propelled craft. The majority of the merchant vessels were built for foreign-trade use, and the increase in their construction was the result of the aid accorded shipowners by the mail contract provision of the Jones-White Merchant Marine Act of 1928 and of the construction loan fund created by that act.

SHIPPING. In June, 1929, according to *Lloyd's Register of Shipping*, the gross tonnage of seagoing steel and iron steamers and motorships amounted to 62,896,000 tons, as compared with 42,514,000 tons in June, 1914. These totals disregard sailing vessels and all wood vessels in view of their comparatively small importance in international trade. In this comparison reference should be made to the change that had taken place in the total tonnage of some types of vessels which are included in the above figures. Tankers had increased between 1914 and 1929 from 1,479,000 tons to 7,071,000 tons and motorships including sailing vessels fitted with auxiliary power from 234,000 tons to 6,628,000 tons. In 1914 the tonnage of steamers fitted for oil fuel was 1,310,000 tons, while the 1929 figures indicated 19,421,000 tons.

It was interesting to note that the idle shipping laid up throughout the world on Dec. 31, 1929, was less than that of any previous date since the World War. According to *Commerce Reports* (U. S. Department of Commerce) there were only 3,110,000 gross tons idle, a figure which represented a reduction of 858,000 tons or 22 per cent from January 1, and a reduction of 2,650,000 tons or 46 per cent from that of Jan. 1, 1926. As will appear from the table on page 752 most of the laid-up tonnage was in the United States, and most of the reduction had occurred in that country. During the year 1929 there was a reduction of 810,000 gross tons in idle tonnage, leaving a new post-war total of about 2,000,000 tons. An exception to this trend was to be noted.

WORLD TONNAGE

[Number, gross tonnage, and description of vessels of 100 gross tons and upward belonging to each of the several countries of the world, June, 1929, as recorded in *Lloyd's Register*, 1929-30]

Flag	Sailing vessels		Total steam, motor, sailing	
	No	Gross tons	No	Gross tons
American (U. S.)	718	798,936	3,696	11,835,176
Sea	50	91,283	576	2,541,938
Northern Lakes			111	104,908
Philippine Islands				
Total	748	890,219	4,383	14,482,022
British				
Great Britain and Ireland	389	120,061	8,172	20,166,331
Australia and New Zealand	16	9,729	619	678,482
Canada—				
Coast	194	88,243	808	1,020,571
Lakes	3	6,656	115	314,097
Hong Kong	48	12,487	190	294,747
India and Ceylon	169	37,382	651	109,824
Other dominions				
Total	819	274,508	10,679	23,116,147

WORLD TONNAGE—Continued

Flag	Sailing vessels		Total steam, motor, sailing	
	No	Gross tons	No	Gross tons
Argentinian	18	21,536	311	296,236
Belgian	4	6,425	244	529,043
Brazilian	41	14,985	391	560,680
Chilean	11	10,143	119	154,563
Chinese	7	4,586	218	319,224
Cuban	18	7,178	66	45,270
Danish	78	21,123	701	1,055,867
Danzig			33	132,366
Dutch	19	6,647	1,389	2,939,067
Estonian	46	11,240	116	60,381
Finnish	113	66,875	348	298,323
French	184	75,979	1,682	3,178,663
German	23	34,895	2,137	4,092,552
Greek			516	1,366,685
Honduran	2	117	35	87,490
Italian	275	69,311	1,180	3,284,660
Japanese			2,059	4,186,672
Jugoslav			151	281,195
Latvian	17	2,891	108	150,159
Mexican	14	7,135	56	53,883
Norwegian	15	6,698	1,807	3,234,493
Panamanian	2	800	29	62,414
Peruvian	15	17,710	38	62,160
Portuguese	100	26,989	269	246,768
Rumanian			14	68,647
Russian (Soviet Union)	6	3,797	379	440,506
Spanish	95	25,265	877	1,161,591
Swedish	126	29,416	1,185	1,510,125
Turkish			189	172,096
Venezuelan	7	4,027	41	59,674
Other countries	72	10,611	311	221,961
Country not stated	16	13,449	57	72,936
Total		2,870,166,919	32,482	68,071,312

Notes.—A considerable number of vessels which are not completed appear in this table. Steamers of less than 100 tons gross and sailing vessels of less than 100 tons net are not included. Vessels trading on the Caspian Sea and wood or composite vessels trading on the Great Lakes of North America are not included. In the absence of satisfactory information, the records of most of the sailing vessels belonging to Greece, Turkey, and southern Russia are omitted from this table. Japanese sailing vessels are not reported in Lloyd's Register and therefore do not appear in this table. Under the heading "Country not stated" are included all vessels entered in Lloyd's Register without record of flag because definite information had not been received at the time these statistics were published, and under "Other countries" are grouped the figures for a number of countries because the tonnage owned by each country is comparatively small and therefore is not shown separately. The totals given above include steam, motor, and sailing vessels of steel, iron, and composite.

In Great Britain and Ireland, where the idle tonnage was greater by 54,000 tons or 11.5 per cent on Dec. 31, 1929, than at the beginning of the year.

The year 1929, all things considered marked steady and substantial growth of overseas trade but with such growth the shipbuilding industry was a factor, acting to disturb the balance between average shipping and cargoes. See SHIPBUILDING. In most of the countries of the world the ocean borne imports and exports in 1929 exceeded the amount for the previous year. Thus in the United States such a trade for the first six months of 1929, excluding oils, totaled 29,837,000 long tons as compared with 26,196,000 tons in the corresponding months of 1928 or an increase of 12.6 per cent. In Germany the goods loaded and discharged at the principal ports during 1929 amounted to 41,707,000 metric tons, as compared with 40,217,000 tons in 1928, or an increase of 3.7 per cent. The goods loaded aggregated 13,804,000 tons or 6.6 per cent greater than in the previous year while the goods discharged totaled 27,913,000 tons, an increase of 2 per cent.

During the year a new transatlantic record was made by the North German Lloyd Company's steamship *Bremen* to which reference was made

IDLE STEAM AND MOTOR SHIPPING OF THE PRINCIPAL MARITIME COUNTRIES
[In thousands of gross tons]

Country	Jan 1 Jan 1 Jan 1 Jan 1 Dec 31				
	1926	1927	1928	1929	1929
Idle in home country					
United States					
Shipping Board	3,518	2,336	2,371	2,160	1,531
Shipping Board					
tankers	134	56	41	31	0
Privately-owned	458	457	544	601	447
Government owned, other than United States					
Shipping Board	10	27	23	23	22
Total	4,120	2,876	2,978	2,816	2,006
Great Britain and Ireland	611	529	589	467	521
Italy	140	128	276	261	180
France	134	118	80	132	91
Greece	90	106	77	74	87
Australia	51	71	93	41	66
Japan	35	48	85	53	28
Spain	44	35	43	22	22
Belgium	21	14	1	4	14
Norway	22	17	91	20	12
Germany					
Netherlands	109	3	16	4	3
Sweden	10	9	15	2	4
Denmark	63	20	26		
Idle in foreign countries	279	100	65	76	68
Grand total	5,760	4,094	4,407	3,968	3,110

* Figures as of July 1, 1929

in the YEAR BOOK for 1928. On her maiden voyage in July the *Bremen* made an average speed of 27.83 knots, taking the record from the *Mauritania* which made an average speed of 26.25 knots in 1924. The *Mauritania*, it is interesting to state, in August, 1929, improved her record of three years previous with an average speed of 27.22 knots. The *Bremen* reached New York on July 22, 1929, having reduced the previous Cherbourg-to-New York record by eight hours and fifty-two minutes, covering the distance in 4 days, 17 hours, and 42 minutes. Leaving New York on July 27 the steamer made a record crossing in 4 days, 14 hours, and 30 minutes on the return voyage to Plymouth, England. The North German Lloyd Company's *Europa*, sister ship of the *Bremen*, launched in 1928, was severely damaged by fire while under construction at Stettin, delaying completion until 1930.

SHIPWRECKS See SAFETY AT SEA

SHOES, SHOE INDUSTRY See BOOTS AND SHOES

SHOOTING Sergeant J. B. Jensen, U. S. Cavalry, from Fort Bliss, Tex., captured the national rifle championship for 1929 in the tournament held in July at Camp Perry, Ohio, succeeding Carl Cagle, U. S. Marine Corps, as titleholder. The United States Infantry won the team title. One of the features of the season was the breaking of 100 targets by Mrs. A. Toeppen for the one hundredth time since she took up the sport.

Trapshooting retained its popularity, with many of the golf and yacht clubs throughout the country holding weekly contests at the traps. Mose Newman, of Sweetwater, Tex., captured the Grand American championship while Mrs. Norman Tilg, of Houston, won the honors in the women's event. Fran Trech, of Portland, Ore., took the amateur title and the Illinois team carried off the honors in the team race.

SIAM, si-am' An independent monarchy in southeastern Asia, bounded on the west by Burma, on the east by French Indo-China, and

on the south by the Gulf of Siam Capital, Bangkok, reigning King in 1929, Prajadhipok, of Sukhodaya

AREA AND POPULATION The area is estimated at 200,149 square miles and the population, at the census of 1929 was 11,506,000 (2,298,845 more than in the year 1919), including about 8,000,000 of the Thai people, of original Siamese, 500,000 Chinese, and a considerable Malay element in the South Bangkok in 1927 had about 550,000 inhabitants In 1927 28, 140,102 deck passengers, mostly from China, arrived at Bangkok and 63,765 departed

PRODUCTION Agriculture is the principal occupation of the population and rice is the chief article of production as well as of export Fishing, the extraction of teakwood, mining, and rice milling are the other leading industries In 1926-27 there were 7,216,000 acres, or 6 per cent of the total area, under cultivation, 90 per cent of which was devoted to rice The rice crop in 1927 amounted to 6,261,000,000 pounds of which 2,907,000,000 pounds, valued at \$73,575,000, was exported The crop harvested in 1928 was considerably smaller and in 1929 a prolonged drought further reduced the rice output Tin production in 1928 totaled 781.3 metric tons Other minerals mined are tungsten, coal, zinc, manganese, and antimony The government controls the manufacture of prepared opium for smoking

COMMERCE For the fiscal year ending Mar 31, 1929 exports were valued at 252,000,000 bahts (\$110,880,000), as compared with 276,000,000 bahts (\$121,440,000) during the preceding year, and imports at 189,000,000 bahts (\$81,600,000), as against 201,000,000 bahts (\$88,441,000) in 1927-28 The decline in export values was chiefly due to the drop in the prices of tin and rubber and the smaller exports of rice Exports of copra increased in value to \$2,200,000 and shipments of teak and stick-lac rose to \$440,000 for each commodity With the exception of 1920-21, the balance of trade of Siam has been consistently favorable Imports from the United States in 1928-29 amounted to \$2,800,000, as compared with \$2,430,000 in the preceding year

FINANCE The budget for 1929-30 calculated expenditures at 98,000,000 bahts (\$43,120,000) and revenues at 106,000,000 bahts (\$46,640,000) The expected surplus was to be applied to the reduction of the public debt For 1928-29, the government estimated expenditures at 99,982,000 bahts and receipts at 100,628,000 bahts, while revised estimates for 1927-28 placed expenditures at 100,016,000 bahts and revenues at 100,550,000 bahts The public debt on Mar 31, 1929, amounted to £11,640,000 all of which was floated in London In 1928-29 the average exchange rate of the baht was \$0.44

COMMUNICATIONS The railways of Siam, most of which are owned and operated by the government, constitute one of the most efficient systems in the Far East In 1927 the state railways had 1701 miles of line, which in the fiscal year ending March 31 carried 6,095,000 passengers and 1,113,000 long tons of freight, earning gross receipts of 16,857,000 bahts (\$7,506,000) In the same year there were 4427 miles of telegraph and telephone line, also government owned The port of Bangkok handles about 85 per cent of the total trade In 1927-28 a total of 1183 ships of 1,227,485 net registered tons entered and 1183 vessels of 1,279,374 tons cleared the port

(GOVERNMENT Executive power is vested in the

King, who is assisted by a consultative council of four elder statesmen of the royal household, and by an advisory cabinet council . . . the ministers of state and other high cabinet council functions as the legislative arm of the government, King Prajadhipok, who was born Nov 8, 1893, succeeded to the throne on the death of his brother, Rama VI, on Nov 26, 1925

SIBERIA. A vast area in northern Asia divided into a number of administrative units forming part of the Union of Soviet Socialist Republics Official Soviet sources estimated the area in 1929 at 15,764,504 square kilometers (6,086,681 square miles) and the population at about 23,722,771 The territory was divided administratively as follows

SIBERIA ADMINISTRATIVE UNITS

	Area (sq km)	Population
Far Eastern Area	2,816,323	1,605,837
Yakutsk Aut S S R	3,769,000	216,728
Buriat Mongol Aut S S R	419,000	484,361
Siberian Area	4,028,615	8,667,871
Kazak Aut S S R	2,924,918	6,530,528
Kirghiz Aut S S R	246,000	997,441
Ural Area (Asiatic section)	1,510,628	5,000,000*
	15,764,504	21,722,771

* Approximate figure

About 90 per cent of the population in 1929 was engaged in agriculture and stock raising Exploitation of the vast mineral and forest resources of the territory was only in the preliminary stages Siberia is one of the world's most important sources of furs Fishing is carried on to a considerable extent particularly in the Far Eastern Area It was estimated in 1927 that the total crop acreage was 7 per cent above the pre-war figure and that the wheat acreage had increased to 50 per cent of the total area, as compared with 45 per cent in 1923

Mining activities centred mainly in the Ural Area, the Siberian Area, and the Far Eastern Area The Ural Area has great iron-ore reserves, the Kuznetsk Basin containing large deposits of high grade coal, iron, manganese, gold, copper, and other minerals Siberia's main transportation line is the Trans-Siberian Railway, which extends a distance of 4491 miles from Sverdlovsk, capital of the Ural Area, to Vladivostok on the Pacific coast In 1929 a 950 mile railway line linking Siberia and Turkestan was under construction at a total estimated cost of about \$113,500,000 There was an air line in operation between Yakutsk, capital of the Yakutsk Republic, and Irkutsk in 1929 See RUSSIA

SIERRA LEONE. *Serria Le-Gnè* A British colony and protectorate on the west coast of Africa bounded by French Guinea on the north and Liberia on the southeast The approximate area of the colony is 4000 square miles and the population, according to the census of 1921, 85,163, of whom 1161 were Europeans The chief city is Freetown, with a population in 1921 of 14,142

The protectorate is situated between 6° and 10° N latitude and 10° and 14° W longitude, and its greatest extension inland is 180 miles Area, 27,000 square miles, population, according to the census of 1921 1,456,148, of whom 1,450,903 were natives The chief exports are palm kernel, kola nuts, palm oil, and ginger It is divided into three provinces, with a European commissioner at the head of each, The governor

and commander-in-chief of the colony is also governor of the protectorate. He is assisted by an executive and legislative council Governor and commander-in-chief in 1929, Brig Gen. Sir J A Byrne.

SIFTON, SIR CLIFFORD A Canadian statesman, died Apr 17, 1929, in New York City. He was born Mar 10, 1861, in the county of Middlesex, Ont., and was educated at Boys' College, Dundas, and at Victoria University, Coburg. Called to the Manitoba bar in 1882, he practiced in the city of Brandon, and in 1895 was created Queen's Counsel by Dominion patent. From 1888 to 1896, he served as a Liberal in the Manitoba Legislature for North Brandon, and, after 1891, was also Attorney-General of Manitoba and Minister of Education. During these years, he codified the civil laws of Manitoba and conducted with the Dominion authorities re-schools of the province. In 1896 he became Minister of the Interior and Superintendent-General of Indian Affairs in the administration of Sir Wilfrid Laurier. He resigned in 1905 because he disapproved the educational clauses in the bills establishing the northwest provinces of Alberta and Saskatchewan. First elected to the House of Commons in 1896, he served until 1911, when he resigned on grounds of opposing the proposal for a reciprocal trade agreement with the United States.

SILESIA, si-le-sha. The term applied to (1) a province of Czechoslovakia, including the former Austrian crownland of Silesia and a small section of Germany ceded by the Versailles Treaty, area, 1708 square miles, estimated population Jan 1, 1927, 721,500, (2) a county of Poland, including 1241 square miles detached from German Upper Silesia following a plebiscite in 1921 and Teschen Silesia, detached from Austria, by the Versailles Treaty, total area, 1633 square miles, population at the census of 1921, 1,124,967, and (3) the two Prussian provinces of Lower Silesia and Upper Silesia, the respective areas of which on Apr 1, 1925, were 10,276 and 3746 square miles, respective populations on the same date, 2,988,511 and 1,299,144.

SILK. The 1929 raw-silk crop of the world was estimated to be the largest on record, as indicated in the accompanying table, with the pro-

duction of Japan, 72,366,000 pounds, considerably in excess of that of any other country. The Yokohama spot price of raw silk, which at the beginning of the year was 1365 yen, reached a maximum of 1420 yen on April 24, and then declined to as low as 1160 yen on December 26, at which time the New York 90-day exchange rate for 1 yen was \$0.4975, the lowest price quoted since the Japanese earthquake of 1923. The cause of the depression was an increased supply in the Yokohama and Kobe markets on account of the desire of dealers to obtain cash for their stocks, and lower prices in the New York market. The Japanese market also was in an unstable condition on account of the preparatory steps for lifting the gold embargo. In China the spot price for 14-16 Canton silks was the lowest on record, sales being reported late in December at \$3.20 a pound. The condition was largely due to weakness of the exchange on account of heavy stocks of silver on hand in China and an excess of supply of this metal throughout the world. The New York raw-silk market showed stability for the greater part of the year. Quotations averaged around \$5.10 per pound for the first quarter, advanced to \$5.25 on May 1 as a result of good trade conditions and depleted stocks, declined to \$4.75 about the middle of June in anticipation of the new crop in Japan, advanced to \$5.15 the later part of August and \$5.30 in the early part of September, and gradually declined after the stock market crash in October to \$4.55 at the end of the year.

SILK, ARTIFICIAL. See RAYON.

SILVER. World production of silver in 1929 was over 5,000,000 ounces—or about 2 per cent more than the 1928 output. Consumption, affected largely by conditions in the Orient, was evidently much smaller, for the price of the metal dropped from 57 cents an ounce early in the year to 46 cents an ounce at its close. Inasmuch as the rate of production of silver is determined largely by the scale of lead- and copper-mining operations, of which it is an important by-product, the fall in price made slight difference in the rate of production, with the exception of Mexican mines, many of which produce only silver. The table on page 755, compiled from government sources, indicates world production in 1929.

WORLD RAW SILK PRODUCTION, INCLUDING TUSSAH SILK
(Compiled by the Statistical Bureau of the Silk Association of America)

	1928-1929 * Pounds	1927-28 Pounds	1926-27 Pounds	1925-26 Pounds	1924-25 Pounds	1923-24 Pounds
Europe	11,188,800	11,034,000	9,215,000	10,449,000	12,533,000	11,519,000
Italy	10,560,000	10,201,000	8,499,000	9,656,000	11,585,000	10,801,000
France	452,000	650,000	529,000	571,000	739,000	562,000
Spain	176,000	183,000	187,000	220,000	209,000	154,000
Levant	2,381,000	2,293,000	2,359,000	2,524,000	1,984,000	1,676,000
Asia						
Total quantity ex- ported ^b	91,050,000	87,270,000	84,337,000	72,874,000	69,571,000	53,015,000
China, Shanghai	12,534,000	12,311,000	10,825,000	10,494,000	8,817,000	8,697,000
China, Canton	5,919,000	5,809,000	7,055,000	5,302,000	6,550,000	6,018,000
Japan	72,366,000	68,899,000	66,193,000	56,975,000	54,064,000	38,100,000
India	231,000	309,000	264,000	200,000	200,000	200,000
Total, pounds	104,619,000	100,597,000	95,911,000	85,847,000	84,148,000	66,210,000
Tussah	958,000	970,000	1,400,000	2,205,000	1,712,000	990,000
Grand total, pounds	105,577,000	101,567,000	97,311,000	88,052,000	85,860,000	67,200,000

* Estimated

^b The total production of raw silk in China is an unknown quantity, therefore export figures have been used

^c Excludes tussah silk

The domestic consumption of raw silk (including tussah) in China is estimated to be 52 per cent of the production. The exports from Canton and Shanghai during the season 1928-29 were 19,400,000, which would indicate a crop of approximately 41,000,000 pounds. The Japan crop was estimated at 87,500,000.

WORLD SILVER PRODUCTION, 1929

Country	Ounces Produced	
	1928	1929
United States	56,149,000	60,857,000
Mexico	108,000,000	108,000,000
Canada	21,922,000	22,089,000
Peru	20,541,000	21,169,000
Australia	10,500,000	11,000,000
Elsewhere	40,888,000	40,441,000
Total	257,980,000	268,000,000

Saturation of the market, combined with unsettled conditions in China, was indubitably the reason for the fall in the price of the metal, a fall which was hastened by the failure to curtail production to the demand. Stocks on the Shanghai exchange had been very greatly increased and rumors of a reversion to gold standards did not help. The fluctuation of the market naturally decreased the purchasing power of India, China, and Mexico considerably.

The U S Bureau of the Mint, with the co-operation of the Bureau of Mines, prepared the following statement of the preliminary estimate of refinery production of silver in the United States during the calendar year 1929 based on arrivals at United States Mints and Assay Offices and at private refineries. This preliminary estimate indicated a production of 60,937,600 ounces, or an increase in silver output, as compared with 1928, of 2,475,093 ounces. The year of largest output, 1915, produced 74,961,075 ounces silver.

ESTIMATED PRODUCTION OF SILVER IN THE UNITED STATES, 1929

States	Ounces	Value*
Alaska	459,346	\$ 245,285
Alabama	2	1
Arizona	6,036,942	3,223,727
California	1,046,513	559,806
Colorado	4,359,342	2,327,889
Georgia	12	6
Idaho	9,394,082	5,016,440
Illinois	4,038	2,156
Michigan	17,998	9,611
Missouri	115,193	61,620
Montana	12,642,585	6,751,878
Nevada	4,529,930	2,418,984
New Mexico	998,982	533,156
North Carolina	14	7
Oregon	36,318	19,394
Pennsylvania	5,000	2,670
South Dakota	83,642	44,665
Tennessee	101,200	54,041
Texas	1,054,200	562,409
Utah	19,907,925	10,630,832
Vermont	3,400	1,816
Washington	44,907	23,980
Wyoming	3	2
Philippine Islands	87,836	46,904
Total	60,937,600	\$32,540,678

* Value at 53 1/2¢ per ounce, the average New York price of bar silver.

SIMMONS COLLEGE. A nonsectarian college for women in Boston, Mass., founded in 1899. The enrollment on Nov. 1, 1929, was 1520. The faculty numbered 140. The productive funds of the institution amounted to \$3,299,551 and the income for the year was \$512,957. The library contained 45,841 volumes. President, Henry Lafavour, Ph.D., LL.D.

SIMON COMMISSION. See INDIA, under HISTORY.

SINCLAIR, HARRY F. See UNITED STATES, under JUDICIARY.

SINGAPORE. See STRAITS SETTLEMENTS.

SINGING. See MUSIC.

SINTERING. See METALLURGY.

SKATING. The only person to break more than one speed-skating mark in 1929 was Miss Loretta Neitzel who on February 3, at Minneapolis, set new records for the quarter-mile and the mile events. Her time for the first-named race was 0 30 3/4 while her time for the mile was 3 16 1/4. The only other woman who set a new record during the year was Miss Elsie Muller who defended her Middle Atlantic championship honors at Bear Mountain, N. Y., January 10. Miss Muller skated the furlong in 0 22. Edward Seales set a record for the 220-yards on the same date, skating the distance four seconds faster than Miss Muller. Valentine Bialis took the laurels at the Lake Placid races in February by winning the 2-mile event in the world's record time, 5 35 1/4. Clas Thunberg, the Norwegian star, retained his European honors by doing marvelous work at Davos, Switzerland, in the middle of January.

The national figure-skating championship test was held in New York City in February and the men's event went to R. F. Turner of Boston, while a Vinson of the same city carried off the honors in the women's events. The world's figure-skating title test was held at Budapest and the men's title went to Gilles Grafstrom, while sixteen-year-old Sonja Henie, of Norway, took the women's crown for the third year in succession.

Jack Shea won the North American speed-skating title at Saanach Lake in February, followed by Bialis and Allen Potts in that order.

SLAVIC LANGUAGES AND LITERATURE. See PHILOLOGY, MODERN.

SLOSSON, LEWIN ELMLEY. An American chemist, author, and editor, died in Washington, D. C., Oct. 15, 1929. He was born in Albany, Kan., June 7, 1865, and was graduated from the University of Kansas in 1890, receiving the Ph.D. degree from the University of Chicago in 1902. In 1891 he became head of the department of chemistry at the University of Wyoming and at the same time chemist at the Wyoming Agricultural Experiment Station. From 1903 to 1920, he was literary editor for the *Independent*, during which time (1912-20) he was also associate in the Columbia University School of Journalism. After 1921 he was director of *Science Service*, an agency in Washington for disseminating popular knowledge about scientific subjects. Dr. Slosson was able to present scientific subjects in a lucid, popular manner. His *Creative Chemistry* (1919) became popular at once, and was adopted as a supplementary book in chemistry courses of many colleges and universities.

SMALLMAN CHOIR. See MUSIC.

SMALLPOX AND VACCINATION. Post-vaccinal encephalitis has been recognized since 1923 and can be traced as far back as 1912. Most of the cases have been reported in Holland and England with scattering examples in most of the other European countries. A recent inquest in Germany brought to light about 90 cases beginning in 1912, and Dr. H. G. Huber reported 3 new cases in the *Deutsche medizinische Wochenschrift* for August 16, all following first vaccinations of very young children (under 3 years of age). One of the cases which developed 24 days after vaccination was of doubtful nature, for the maximum incubation period had been fixed at 15 days. All of the patients recovered. This study owes its importance to the fact that Dr. Huber, aided in the laboratory by

Jewish players in this country, captured the national challenge trophy by defeating the Madison Kennel Football Club of St Louis in the finals, March 31 and April 7 Hakoah downed the New York Giants in the semi-finals while the Madison team had beaten the Sparta A A of Chicago In the competition for the cup offered by the newly formed New York State Football Association, the New York Giants, after victories over Hakoah and Bethlehem, emerged as winners of the trophy The national Amateur Cup was won by the Hakoah Football Club of Heidelberg, Pa., who defeated the First German Football Club of Newark in the final at Newark in April In the college ranks Penn State achieved the best record

SOCIAL ECONOMICS. See CHILD LABOR, COOPERATION, LABOR LEGISLATION, MATERNITY PROTECTION, MINIMUM WAGE, OLD-AGE PENSIONS, STRIKES AND LOCKOUTS, WOMEN IN INDUSTRY, ETC., also LITERATURE, ENGLISH AND AMERICAN

SOCIAL INSURANCE. See MATERNITY PROTECTION, OLD-AGE PENSIONS, UNEMPLOYMENT, WELFARE WORK, WORKMEN'S COMPENSATION

SOCIALISM. With the election of Socialist governments in Great Britain and Australia, the unusually high vote polled by Norman Thomas in New York's mayoralty campaign, and the efforts made by a group of intellectuals to create an American counterpart of the British Independent Labor movement, Socialism in 1929 became common currency again While the term Socialism, as applied to European political parties is of frequent occurrence, the fact is that most of the European Socialist parties are really liberal organizations In France, for instance, the Radical Socialist party is made up, for the most part, of small-town business men, artisans, and small farmers Similarly, in Czechoslovakia (where elections were held in 1929), the Social Democrats in reality are a trade-union group and as conservative in their tendencies probably as is the American Federation of Labor The National Socialists of the same country, headed by Eduard Benes, are even less liberal than the trade unionists Indeed, no so-called Socialist party in any country of Europe is socialist in the pure meaning of that term The Communists are really Socialists In other words, these groups are the only ones which adhere completely to the original Marxian programme Even the Communist parties in Germany have in recent times been developing right tendencies In fact, the only Socialist party in 1929 in control of a political government anywhere was in Russia Now generally, and perhaps erroneously, the term Socialism was being applied in European politics could be seen in France, where there were four parties in the Chamber of Deputies which had the word Socialist in their title These were the Republican Socialists, the French Republican Socialists, the Radical Socialists, and the United Socialist party The fact is, the term Socialist was even employed by the Poincaré group which had called itself the *Gauche Sociale et Radicale* (the Social and Radical Left)

GREAT BRITAIN. The election of the Socialist Ramsay MacDonald government in Great Britain is described in greater detail under **GREAT BRITAIN, History.** The twenty-ninth annual conference of the Labor party which was held at Brighton, September 30-October 3, indicated that

the party had definitely purged itself of its Communist elements In the absence of the Premier, who was on his historic trip to Washington in the interests of armament limitations, leadership at the conference was taken by Philip Snowden, Chancellor of the Exchequer, Arthur Henderson, Foreign Minister, and J H Thomas, Lord Privy-Seal

AUSTRALIA. In October, the Australian general election substituted a Labor majority of a dozen in the Lower House of the Commonwealth Parliament for the same majority held by the Nationalists, returned by the election of last year See **AUSTRALIA** under *History.* At the end of 1929, Labor controlled a majority of the votes in Southern Australia and Tasmania, up to the middle of the year, it was the dominant party in Queensland, and in the most important states of New South Wales and Victoria, it constituted the most powerful single party See **LABOR ARBITRATION AND CONCILIATION**

UNITED STATES. In the United States, the year saw a renewal of interest in the Socialist movement In May, a group of intellectuals began to lay plans for the creation of an American counterpart of the British Independent Labor party This group, calling itself the League for Independent Political Action, set forth its purpose as being "to carry on research, educational work, and agitation among the workers, both organized and unorganized, in industry and agriculture, in order to stimulate any existing and potential Labor organizations, as well as a progressive and realistic labor spirit and activity in all its phases: trade union, political, and educational" The statement of principles attacked the tactics of the Communists and the A F of L leaders Of the American Federation of Labor, the manifesto said "The situation has not been met by the present officials of the trade-union movement, largely dominated by the boss psychology of the national civic Federation"

The group set up the following basic principles for organization (1) To educate workers to demand a complete programme of social insurance, (2) to extend the sphere of trade-union influence and effectiveness, particularly by the promotion of organization along industrial lines of the skilled, semi-skilled, and unskilled workers in basic industries, (3) to encourage uncensored working-class education, (4) to establish the fullest possible development of genuine farm and labor cooperatives, (5) definite political party action by labor in elections, (6) the establishment of a centralized research agency, in order to study the new problems of labor technique and industrialism, (7) the organization of the workers of the country for social and industrial justice

Later in the year, the League elected Prof John Dewey, of Columbia University, as its chairman and Howard Wyle Williams, as its executive secretary Besides Professor Dewey, the members of the executive committee included such well-known names as Prof Paul H Douglas, W E B Du Bois, Sherwood Eddy, Harry W Laidler, James Weldon Johnson, Robert M Lovett, James H Maurer, A H Muste, Joseph Schlossberg, Norman Thomas, E C Lundman, Oswald G Villard, and Baine G Vladeck

The later unusually large vote of Norman Thomas in the New York mayoralty campaign brought to the fore further efforts to strengthen

the Socialist movement in the country. Mr Thomas polled in the neighborhood of 170,000 votes, the heaviest Socialist vote ever recorded in a municipal election in New York See *New York under Political and Other Events*

Norman Thomas and Morris Hillquit, leader of the Socialist party of the country, however, both rejected the creation of a liberal group in New York City that was not based upon Socialist principles Both genuine third-party movement in New York work through the Socialist Party and by the creation of a Socialist machinery The New York Socialist party indicated the basis of action upon which it would operate when, late in November, it sent out a call for a conference of labor, liberal, and progressive groups to be held early in 1930 for the purpose of bringing into the 1930 New York State campaign an independent Coalition party. The Socialist party announcement said "We are prepared to cooperate in such a coalition on the basis of its acceptance of a programme of social control" In other words, the American Socialist movement insisted upon sticking steadfastly to its original Socialist doctrine, despite the fact that it knew as well as did the liberals that a nonpartisan movement might succeed in electing Norman Thomas as mayor of New York These matters were further clarified in a two-day convention held in New York City, November 23-24 A programme for the party was adopted with the following leading principles (1) The Socialist party is based upon a well-defined body of doctrine Within these limits, it welcomes all men and women who accept its fundamental principles, without distinction of class, creed, or race, and is willing to accept the widest latitude of individual opinion (2) The Socialist party does not claim a monopoly of progressive or labor politics and is willing to meet with any group that gives promise of uniting the workers and progressive citizens into a political party Since, however, the Socialist party is the only political group in the country committed definitely to a programme of political reform, it believes the best interests of labor can be served by the continuance of the Socialist party organization (3) In the city of New York, the Socialists will continue to cooperate with nonpartisan groups, with the understanding, however, that the Socialists will never abandon their fundamental doctrines or relinquish their distrust of the two dominant political parties (4) The Socialist party is not committed to its name and will not hesitate to change it if any good reasons manifest themselves

COMMUNISTS The American Communist movement was split wide open by the expulsion of Jay Lovestone, its undisputed leader, from the party This action was taken by the Communist International in July. After having invited Lovestone, Gitlow, Wolfe, and Pepper to Moscow, the Comintern, after a lengthy review of the American situation, ruled that factionalism was disrupting the American Communist movement and that Lovestone's expulsion was the only guarantee of complete loyalty to Moscow leadership The action of the Comintern against Lovestone and his followers appears to have been the culmination of six years of bickering in the local party The factional quarrel reached a climax in March, 1929, at the annual conference of the Communist party The convention apparently was a continuous ovation for

Lovestone, who appears to have controlled 105 out of 106 delegates in attendance The dissenting vote was that of W. Z. Foster, former American trade-union official and organizer of the unsuccessful steel strike. With the removal of Lovestone, the American Communist movement appeared to be hopelessly divided The leader accredited by Moscow was Foster, though the Lovestone group still claimed to have the adhesion of the majority of the Communists of the country

SOCIAL PROBLEMS, STUDY OF See *UNIVERSITIES AND COLLEGES*

SOCIAL PROGRESS, INTERNATIONAL ASSOCIATION FOR This international Association, of which the Association for Labor Legislation is the American section, was created in 1925 by amalgamating three former allied organizations, the International Association for Labor Legislation, the International Social Insurance Committee and the International Association on Unemployment The annual meeting was held in Zurich, September 19-21 The Association publishes a periodical, *L'Avenir du Travail*, edited by Dr. Stephane Bauer, at the international headquarters at Basel, Switzerland

SOCIAL PSYCHOLOGY See *PSYCHOLOGY*
SOCIAL SCIENCE AND SOCIAL WORK

See *CHILD WELFARE, WELFARE WORK.*

SOCIAL WORK. See *WELFARE WORK*

SOCIETY ISLANDS. See *OCEANIA, FRENCH ESTABLISHMENTS IN*

SOCIETY OF CHEMICAL INDUSTRY. See *CHEMISTRY, INDUSTRIAL*

SOCIOLOGY. See *LITERATURE, ENGLISH AND AMERICAN*

SOIL EROSION. See *AGRICULTURE, UNITED STATES DEPARTMENT OF*

SOILS. Land reclamation, soil adaptation, soil erosion and moisture conservation, soil fertility, fertilizing value of minor soil constituents, soil reaction, and soil microbiology were among the topics receiving special consideration by soil investigators

The trend in the United States toward more discriminating use of soils continued and the bringing of new land under cultivation was still being discouraged

Many submarginal farms are found now throughout much of the Appalachian region from Maine to Georgia including the plateaus on the west, in the region known as the Highland Rim, in the Ozarks, and in some of the Western mountain areas Some areas formerly adapted to commercial crop production have sunk below the economic margin chiefly through soil depletion or erosion In extensive areas that have become submarginal gradual farm abandonment has been taking place Marked interest has developed in the possibility of aiding the stabilization of agriculture by public purchases of submarginal farm lands with a view to their conversion to timber growing

The soil survey continued to furnish a valuable basis for the selection and adaptation of soil types Activity in soil survey, mapping, and adaptation continued to be world-wide The United States retained the lead in such work and during the year the Department of Agriculture conducted soil-survey work in 72 separate areas distributed over 28 States Detailed surveys aggregating 20,650 square miles and reconnaissance to the extent of 2010 square miles were covered during the year, bringing the total acreage for the detailed survey to almost 500,000,000 and

the reconnaissance survey to slightly over 383,000,000, according to the *Report of the Chief of the Bureau of Chemistry and Soils for 1929*.

Progress also was made in the classification of muck and peat soils. This classification was meeting a need for detailed information regarding these deposits which was valuable for industrial purposes as well as to agricultural interests. The system of classification as developed had been used in 18 counties in Michigan, three in Wisconsin, and one in Minnesota. A new interest in soil survey and mapping also developed in connection with reforestation in that they provide a basis of land classification which should precede all systematic plans for reforestation and the establishment of State and Federal forest areas.

Soil impairment by erosion continued to be recognized as one of the most important problems confronting American agriculture. The value of the plant-food materials removed by erosion and runoff from the cultivated and pasture lands of the United States every year was conservatively estimated by the Bureau of Chemistry and Soils to be in excess of \$2,000,000,000. An appropriation by Congress of \$160,000 for the study of soil erosion was evidence of the recognition of erosion as a national menace. Under this appropriation the U. S. Department of Agriculture undertook the development of a national programme for the control of soil erosion. The programme of work, and much of the results obtained to date are fully discussed in the *Report of Proceedings of the First Session of the South-east Conference on Soil and Water Conservation* (College Station, Texas, 1929).

The demand continued for more accurate and specific information regarding the fertilizer requirements of crops on soils of known character, and soil fertility studies were being concentrated gradually in that direction, and considerably enlarged. The introduction of the newer concentrated fertilizers required some modification of this work. The evidence continued to accumulate that small applications of manganese salts have given striking effects under certain soil conditions over a considerable area of the United States, more particularly along the Atlantic and Gulf coastal plains. On other soil types, salts of copper, zinc, boron, and iodine, and of similarly less-abundant constituents of soils have given crop responses indicative of unusual functions in connection with crop growth and development, according to the Bureau of Chemistry and Soils. It also has been shown that the presence of manganese dioxide, for example, is characteristic of certain soil series.

The relation of soil reaction to crop production continued to receive much attention, with particular reference to its influence on the prevalence and severity of certain crop diseases. In this connection extensive investigations of cotton-rot rot were inaugurated for the purpose of correlating soil characteristics such as fertility and reaction with the prevalence of this disease. Some of the physiologically acid fertilizers and some nitrogen materials lessened the ravages of the rot rot on some of the less alkaline soil types during the year.

BIBLIOGRAPHY. Advances in the knowledge of the sciences of soil technology and fertility appear currently in *Soil Science* published in Baltimore, Md. Recent books on these subjects are *Agricultural Geology*, by F. V. Emerson (New York and London, 1928); *Grundzüge der Praktischen Bodenbearbeitung auf Bodenkundlicher Grundlage*, by O. Heuser (Berlin, 1928), and *Handbuch der Bodenlehre*, by E. Blumel (Berlin, 1929).

SOLAR PHENOMENA. See ASTRONOMY, PHYSICS.

SOLAR RADIATION. See GEOGRAPHICAL SOCIETY, NATIONAL. METEOROLOGY.

SOMALIA. See ITALIAN SOMALILAND.

SOMALI COAST. See FRENCH SOMALI COAST.

SOMALILAND, ITALIAN. See ITALIAN SOMALILAND.

SOMALILAND, so-ma'le-land, PROTECTORATE. A British territory on the African coast of the Gulf of Aden, bounded on the south, west, and north by Italian Somaliland, Abyssinia, and the French Somali Coast, respectively. Area about 68,000 square miles. Population estimated at 344,700, nearly all Mohammedan and entirely nomadic except on the coast where permanent settlements have been made. The chief town is Berbera, with about 30,000 inhabitants.

In 1927 imports totaled £427,516, exports, £355,575, revenue (1926-27), £90,568, expenditure (1926-27), £149,125, including a military grant-in-aid of £43,500. The government is under the British Colonial Office, which is represented by a local governor and commander-in-chief. Governor in 1929, Sir H. B. Kittermast, appointed Jan. 26, 1926.

SONG RECITALS. See MUSIC.

SOUTH, UNIVERSITY OF THE. A Protestant Episcopal institution for the higher education of men in Sewanee, Tenn., founded in 1857. The enrollment for the autumn term of 1929 was 306. The library contained 43,003 volumes. President, Benjamin Franklin Finney, LL.D.

SOUTH AFRICA, UNION OF. A self-governing dominion of the British Empire, comprising the provinces of the Cape of Good Hope, the Transvaal, Natal, and the Orange Free State, constituted a legislative union by the South African Act of September, 1909. Capital, Pretoria, seat of the Legislature, Cape Town.

AREA AND POPULATION. Total area, 472,347 square miles, divided as follows: Cape of Good Hope, 276,536; Natal, 35,284; Transvaal, 110,450; Orange Free State, 49,647. Total population, according to the census of 1921, 6,923,580, distributed as follows: Cape of Good Hope, 2,782,719; Natal, 1,429,398; Transvaal, 2,087,636; Orange Free State, 628,827. The total European population of the Union of South Africa, according to the final audit of the 1926 census, is shown in the following table:

CENSUS OF UNION OF SOUTH AFRICA FOR 1926

Province	Males	Females	Total	Per cent increase since 1921
Cape	357,583	348,551	706,137	8.53
Natal	81,170	77,746	158,916	16.13
Transvaal	313,733	294,849	608,582	11.98
Orange Free State	104,392	98,593	202,985	7.65
Total	856,918	819,742	1,676,660	10.34

The estimated total population in 1928 was 7,777,583, among whom there were 1,738,037 Europeans, 5,277,023 natives, 183,771 Asiatics, and 677,852 mixed and other colored persons. The principal cities, with their estimated populations in 1928 (the figures for 1921 in parentheses), are as follows: Johannesburg, 320,185 (288,131);

Cape Town, 252,955 (207,404); Durban, 110,971 (146,310); Pretoria, 74,282 (74,052); Port Elizabeth, 67,138 (46,094) The capitals of the respective provinces are Cape of Good Hope, Cape Town, Transvaal, Pretoria, Natal, Pietermaritzburg, Orange Free State, Bloemfontein (46,101 inhabitants in 1928) During the years from 1923 through 1927, births among the European population averaged 43,232 annually and deaths 15,804, an excess of 27,428 births In 1927 a total of 34,195 persons, including 30,438 Europeans, arrived in the dominion and 35,761, including 29,739 Europeans, departed

Education Under the South Africa Act, control of lower education is vested in the four provincial administrations In 1927, exclusive of private farm schools in Natal, there were 4665 schools for whites, with 336,459 pupils, and 3501 schools for Negroes and other colored persons, with 304,617 pupils, all of which were either state or state-aided schools Teachers numbered 23,121 and the expenditure by the government was £7,597,072 In the same year there were 268 private schools for whites with 18,839 pupils and 421 schools for colored children, with 19,455 students Teachers in both white and colored private schools totaled 1691 At the end of 1927 there were 6400 students enrolled in the 10 universities within the dominion

Production About 9,349,000 acres, or 3.1 per cent of the total area, was under cultivation in 1926, with some 6,061,000 acres devoted to cereals There were about 2,600,000 acres of forests The area and production of the chief crops in the crop year 1928-29 were as follows: Corn, 5,583,000 acres, 69,400,000 bushels; wheat, 985,000 acres, 6,930,000 bushels; oats, 630,000 acres, 7,598,000 bushels; potatoes, 4,535,000 bushels; barley, 944,000 bushels; cotton, 5,200 pounds Statistics of other leading crops for 1927-28 (figures for 1928-29 not available) were: Sugar cane, 112,000 acres, 2,158,000 short tons; tobacco, 23,750,000 pounds; tea, 3000 acres, 3,326,000 pounds; rice, Kaffir corn, citrus and deciduous fruits, grapes, and peanuts are other products

Stock raising is an important industry, the number of wool-producing sheep in the Union on June 30, 1928, being estimated at 35,978,000 In 1927 there were 40,110,000 sheep, 10,412,000 cattle, 7,947,000 goats, and 848,000 swine The wool clip for 1928 was 285,000,000 pounds, as compared with 273,000,000 pounds in the preceding year The production of mohair was 11,000,000 pounds Wool exports in 1929 (calendar year) totaled 218,880 bales The number of ostriches in the union decreased from 314,000 in 1918 to 104,000 in 1926 Mineral production during 1928 was valued at \$275,968,000, as compared with \$297,628,000 in 1927 The value of the output of the respective minerals was: Gold, \$211,013,000, diamonds, \$43,900,000, platinum, \$5,720,000, coal, 13,404,000 tons, valued at \$17,997,000, zinc, \$1,388,000, lead, \$438,000 Mineral production in 1929 showed substantial increases in gold, coal, and platinum over 1928 Gold production of the Transvaal in 1929 was valued at £44,259,778, as compared with £44,024,058 in 1928 The diamond-cutting industry in South Africa was developed under government sponsorship See DIAMONDS

In 1926-27 manufacturing industries employed 202,689 workers and 783,010 horse power, the total value of manufactured products for the year being \$475,153,000 and the value added by

manufacture, \$230,626,000 A measure for the establishment of a state-owned iron and steel plant was adopted by the government in 1928, and it was proposed to supply both the needs of the Union government and of the Rhodesian railways from this source

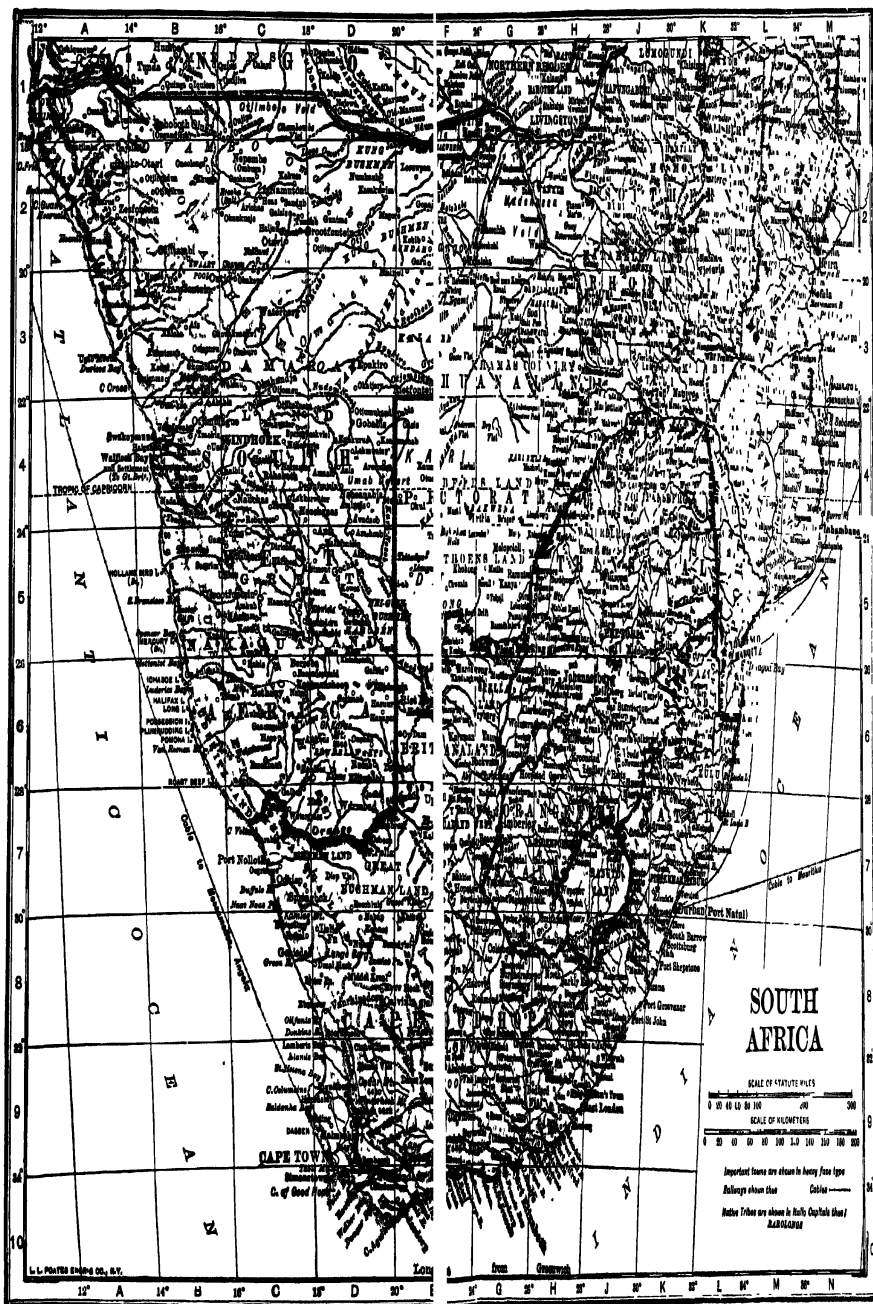
Commerce Foreign trade in 1928 resulted in an adverse balance of \$31,517,000, as compared with a favorable balance of \$1,009,000 in 1927 Imports increased to \$384,880,000 from \$360,051,000 in 1927, or 7 per cent, while exports fell off 2 per cent, from \$361,000,000 in 1927 to \$353,363,000 Of the total exports, 61.8 per cent went to the United Kingdom, 8.1 per cent to Germany, and 2.2 per cent to the United States, of the imports 43.3 per cent came from the United Kingdom, 17 per cent from the United States, and 6.3 per cent from Germany The gain in imports from the United States in 1928 totaled \$7,200,000, the largest gain for any country

Finance Expenditures in the fiscal year ending Mar 31, 1929, totaled £28,800,000, exclusive of the railways budget and the loan account, and revenue totaled £30,500,000, leaving an ordinary budget surplus for the fourth consecutive year Operating expenses of the railways and harbors totaled about £30,000,000 and were met wholly from receipts Expenditures from the loan account, from which sums are advanced for public works and capital outlays of the railways, averaged about £11,000,000 annually in 1928-29 and the years immediately preceding Actual receipts of the ordinary budget in 1927-28 totaled £30,094,000 and actual expenditures £28,304,000, in 1926-27 receipts totaled £28,577,000 and expenditures, £27,362,000 The total public debt on Mar 31, 1929, amounted to £241,360,000 (\$1,181,000,000), as compared with £238,926,000 (\$1,162,733,000) on the same date the previous year

Communications Due to large increases in passenger and freight traffic, the gross earnings of the Union railways for the fiscal year ended Mar 31, 1929, totaled £26,135,000, or 3 per cent more than in 1927-28 There were 12,830 miles of railway line in operation, which carried 83,000,000 passengers and 26,087,000 short tons of freight All except 400 miles of line is state-owned and operated

The governments of the Union of South Africa and of Rhodesia voted in 1928 to subsidize an imperial air service between Cape Town and Cairo to the annual extent of £80,000 and £10,000, respectively In 1927, there were 68,422 miles of highway within the Union Vessels entering the ports in 1928 totaled 1424 of 5,210,000 net registered tons, and vessels clearing totaled 1416 of 5,194,000 tons The cargo landed, aggregating 3,214,171 tons, constituted a record

Government The executive power is vested in the governor-general, appointed by the Crown, who acts through an executive council of ministers, each in charge of a department, and legislative power in a parliament, consisting of a senate of 40 members, 12 of whom are nominated by the governor-general in council, and 32 by the provinces (eight each), and a house of assembly of 135 members, distributed among the provinces as follows: Cape of Good Hope, 51; Transvaal, 50; Natal, 17, and Orange Free State, 17, the basis of suffrage being the same as that existing in each province at the time of the formation of the Union The Governor-General, Commander-in-Chief, and High Commissioner for the Union in 1929 was the Earl of Athlone and the Executive



Council was composed as follows: Prime Minister and Minister of Native Affairs, General J. B. M. J. van der Vorst; Interior, Health, and Education, Dr. J. H. van der Merwe; Mines and Industries, F. W. Beyers; Railways and Harbors, C. W. Malan; Finance, N. C. Havenga; Justice, T. J. de V. Roos; Defense, Col. F. H. P. Creswell; Labor, T. Boydell; Agriculture, Gen. J. C. G. Kemp; Lands, P. G. W. Grobler; Posts and Telegraphs and Public Works, H. W. Sampson; Secretary to the Prime Minister and Secretary for External Affairs, Dr. H. D. J. Bodenstein.

HISTORY

Developments which must exert a vital influence upon the course of events in South Africa, both within and without the Union, made the year 1929 one of the most momentous in the history of the South African confederation. Of these, the most important were the growing unrest among the natives, evidenced by riots and open threats of rebellion, and the widening of the breach between the British stock of the coastal regions and the Boers, who predominate inland.

THE NATIONALIST VICTORY. Both of these problems were accentuated by the Nationalist (Government) party's victory at the parliamentary elections of June 12. The Nationalist party—largely composed of Boers—increased its representation from 63 to 77, obtaining a majority over all other parties, whereas in the previous Parliament it had been forced to rely upon the support of the Labor party. The South African party, representing the British standpoint, although headed by General Jan Christiaan Smuts, a Boer, increased its membership in Parliament from 54 to 61, while the Labor party, which held the balance of power with 18 members in the previous Parliament, retained only eight members, three of whom refused their support to Col. F. H. Creswell, the Labor leader and Minister of Defense in the Hertzog cabinet. The disaster suffered by the Labor party and the creation of 14 new constituencies explained the gains made by both major parties. Of the aggregate vote of the four provinces, the South African party had an actual majority of nearly 20,000 over their Nationalist opponents, the larger parliamentary representation of the latter being due to the anomalous election system.

THE NATIVE PROBLEM. Imperial relationships and the native problem were the two main issues of the campaign. The question as to what policy the 1,700,000 whites of the Union should adopt toward the 5,300,000 native Negroes had become increasingly acute since the Nationalist Prime Minister, General Hertzog, placed before Parliament in 1926 four important "native bills." One of these proposed to deprive the natives of Cape Province of the right to vote for ordinary members of Parliament, and in return to give natives throughout the Union the right to elect seven white members to the lower house of Parliament. Cape Province was the only one in which the franchise was given to all males, irrespective of race or color. The South African party, which stood for a settlement of the native problem at a National Convention and by mutual consent, opposed the government's measure, which failed by 43 votes to obtain the required two-thirds majority at a joint session of both houses of Parliament on Feb. 25, 1929. The government then dropped its other native bills pending the forthcoming elections.

IMPERIAL PREFERENCE. The Nationalist party originally stood for complete independence from Great Britain but ostensibly abandoned this demand following the Imperial Conference of 1926, at which South Africa and the other self-governing colonies were granted dominion status. The issue was revived, however, by the Nationalists' demand for a South African flag which did not contain the Union Jack, a proposal which aroused the angry opposition of the British element. A compromise effected in 1927 provided for the use of both a South African national flag and the Union Jack, but the official hoisting of the new flag in June, 1928, was accompanied by rioting in various sections of the Union, chiefly by natives and Asiatics, who saw in the Nationalist movement a menace to the continuation and extension of their existing rights. The imperial issue was brought to the fore again in September, 1928, when the government signed a commercial treaty with Germany, which, while reserving existing tariff concessions to British goods, gave Germany most-favored-nation treatment in regard to all concessions to be granted during the ensuing two years. The treaty was vigorously attacked by General Smuts and the South African party as a blow at the system of imperial preference. On Mar. 1, 1929, the House of Deputies ratified the treaty by a vote of 62 to 51, and Premier Hertzog announced that he would consider the treaty in effect without the approval of the Senate, in which the South African party then had a majority. The South African party, in the pre-election campaign, pledged itself to repeal the treaty immediately if it was returned to power, as well as to promote British immigration, extend the suffrage to women, amend the existing plan for state management and financing of the iron and steel industry, and to extend the boundaries of the Union to include the Rhodesias.

The results of the election showed that the stand taken by General Smuts on the issues of imperial preference and the native question had alienated a considerable number of Boers who had previously supported him. The vindication at the polls of the government's stand on both these issues was reinforced by the Senatorial election held September 6, at which the South African party's majority in the upper house was overthrown. Seventeen Nationalist and 15 South African party candidates were returned, and the government's right to nominate eight additional Senators to represent the native population insured its domination. The new cabinet formed following the election of June 12 was composed as follows: Prime Minister and Minister of External Affairs, Gen. J. B. Hertzog; Native Affairs, E. G. Jansen; Mines and Industries, F. W. Beyers; Railways and Harbors, C. W. Malan; Justice, O. Pirow; Interior, Public Health and Education, Dr. D. F. Malan; Public Works, Posts and Telegraphs, H. W. Sampson; Finance, N. C. Havenga; Labor, F. H. P. Creswell; Defense and Armaments, F. H. P. Creswell.

NATIVE UNREST. The Nationalist victory, on a platform demanding the preservation of the white man's domination, had seemingly natural repercussions among the natives, whose fears of white exploitation were played upon by alleged Communist agents and their converts among the tribesmen. In the Rand mining district, where some 30,000 native laborers were concentrated, there followed a series of riots and strikes and a

boycott of the beer halls and eating houses catering to the natives. Following the refusal of many to pay the poll tax of \$5 levied annually on all adult natives, 400 police rounded up thousands of native dock laborers in Durban on November 14 and arrested 600 who were unable to produce poll-tax receipts. Tear-gas bombs were thrown at one menacing concentration of natives. Communist and anti-white propaganda was said to have been printed in the principal native languages and broadcast among the tribes. In October Sir Edward Grigg, Governor of Kenya Colony, to the North of the Union, reported serious unrest and lawlessness among the tribes of that territory. The seriousness of the native problem, not only in the Union but in all South Africa, was stressed by General Smuts in a Rhodes lecture delivered at Oxford University on November 16. He urged the abandonment of the attempt to force the African into alien European moulds and an effort to foster the indigenous native culture. This had worked out successfully in Cape Province, where two-thirds of the natives managed their own local affairs under the supervision of white magistrates, he said.

OTHER EVENTS On November 5, the Union of South Africa entered into direct diplomatic relations with the United States for the first time when Eric Hendrik Louw presented his credentials as Minister to the United States to President Hoover. The trial in September of Professor du Plessis on a charge of heresy aroused much interest throughout the Union.

SOUTH AMERICA. See under the various South American countries. See also **EXPLORATIONS**.

SOUTH AUSTRALIA. One of the States of the Australian Commonwealth, comprising the central and southern part of the island continent, bounded by Central Australia on the north, by Western Australia on the west, and on the east by Victoria, New South Wales, and Queensland. Area, 380,070 square miles, population, according to the census of 1921, 495,336, estimated Mar. 31, 1929, 579,665, exclusive of 101,177 of whom the number is unknown (City of Adelaide and largest city, Adelaide, with a population (including suburbs), in 1929, of 330,217. In 1928 there were 11,408 births, 5147 deaths, and 4146 marriages. In the same year emigration from the province exceeded immigration by 2684.

Education is free, secular, and compulsory. In 1927 there were 1012 schools, primary, secondary, and vocational, with 86,513 pupils under instruction, in the 186 private schools there were 15,750 pupils enrolled. Higher education is provided by the University of Adelaide.

According to final government estimates, the wheat crop for 1928-29 totaled 26,826,004 bushels from 3,443,563 acres, as compared with 24,086,012 bushels from 2,941,360 acres in the previous year. Barley in 1927-28, 219,491 acres, 3,001,420 bushels, oats, 187,024 acres, 1,378,437 bushels. Hay and grapes are other leading products. Livestock in the State in 1927 included 7,200,000 sheep, 310,314 cattle, 224,027 horses, and 69,733 swine. The estimated wool production in 1928-29 was 75,250,000 pounds (78,369,918 in 1927-28). Mineral production in 1928 totaled £1,032,952 (£1,188,522 in 1927). The principal minerals are copper, iron, gypsum, salt, phosphate rock, and some gold, silver, and lead.

According to preliminary figures for the year

ending June 30, 1929, direct overseas imports were valued at £11,307,376 and direct overseas exports at £14,849,993, as compared with imports of £12,509,300 and exports of £18,030,143 in the previous year. The chief exports are wool, wheat, wheat-flour, minerals, meats, butter, honey, wine, fruits, hides and skins, tallow, leather, and manures. The revenue for the fiscal year 1927-28 totaled £11,346,903 and expenditure £11,621,834. The report issued in 1929 by a royal commission appointed to investigate the state's finances, showed deficits in the budget operations for every year from 1914-15 to 1927-28, aggregating £8,718,039. A further deficit was indicated for 1928-29. The public debt on June 30, 1928, totaled £90,012,402, which represented an increase of nearly 110 per cent since 1920. The length of railway lines in the state in 1928 totaled 3400 miles. A total of 144 vessels of 5,123,261 tons entered the ports in 1928-27.

The administration is under a governor appointed by the Crown, and an executive council. Legislative power is vested in a council and the Assembly, the latter consisting of 40 members elected for three years. Governor in 1929, Brig.-Gen. Sir Alexander G. A. Hore-Ruthven, appointed May, 1928, Premier, Treasurer, and Minister of Railways, R. L. Butler.

SOUTH CAROLINA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,683,724. The estimated population on July 1, 1928, was 1,864,000. The capital is Columbia.

AGRICULTURE. The following table gives acreage, production, and value of the principal crops, in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Cotton	1929	2,188,000	845,000 *	\$69,290,000
	1928	2,861,000	726,000 *	66,792,000
Corn	1929	1,422,000	23,321,000	2,108,000
	1928	1,422,000	17,064,000	1,898,000
Tobacco	1929	138,000	82,902,000 *	13,279,000
	1928	148,000	82,288,000 *	10,451,000
Oats	1929	408,000	11,016,000	8,813,000
	1928	337,000	7,751,000	6,821,000
Potatoes	1929	22,000	2,354,000	3,296,000
	1928	36,000	4,068,000	2,614,000
Hay	1929	368,000	716,000 *	6,656,000
	1928	440,000	880,000 *	7,016,000
Sweet potatoes	1929	50,000	5,750,000	4,888,000
	1928	49,000	4,214,000	3,582,000
Wheat	1929	64,000	768,000	1,152,000
	1928	64,000	800,000	1,288,000

* Bales * Pounds * Tons

MINERAL PRODUCTION. As in previous years the items of clay products and stone furnished much the greater part of the total value of the mineral product of 1927. The production of stone increased to 1,197,870 short tons for 1927, from 881,180 tons for 1926, in value, to \$1,992,558 for 1927, from \$1,505,869 for 1926. The value of clay products stood little changed, for 1927, at \$1,802,772, from \$1,869,420 for 1926. There was a considerable production of raw clay, which attained for 1927 the value of \$743,742. The total value of the mineral product of the State was \$4,251,137 for 1927; for 1926, \$3,077,209.

FINANCE. State expenditures in the year ended Dec. 31, 1928, as reported by the U. S. Department of Commerce, were for maintaining and operating governmental departments, \$14,051,691 (of which \$3,427,419 was for local education); for interest on debt, \$478,705, for improvements, \$13,841,609, total, \$30,372,005 (of which

\$18,529,453 was for highways, \$3,422,701 being for maintenance and \$15,106,752 for construction. Revenues were \$19,028,937. Of these, property and special taxes formed 26 4 per cent; departmental earnings and compensation to the State for officers' services, 7.7; sale of licenses, 56 0 (including gasoline taxation of \$3,286,900). The funded debt of December 31, 1928, \$38,475,122 outstanding or \$38,221,840 net of sinking funds, included \$32,837,368 for highways. On a property valuation of \$425,453,764 were levied State taxes of \$2,943,970.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 3743.35. There were built, in 1929, 57 miles of additional first track.

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to operations of 1927, there were in the State, in 1927, 1059 manufacturing establishments. These employed 108,902 wage earners, whose wages for the year totaled \$74,477,866. Materials and supplies used in manufacture cost \$206,772,453. Manufactured products attained the total value of \$358,334,205.

EDUCATION With the introduction of higher training standards for teachers the requirement that teacher candidates must undergo examination in order to qualify was removed. In order to relieve counties of the burden of interest in the interval from the first of the year to the time of payment of State aid to the counties the practice was adopted of paying out one-half of the year's disbursements from State equalization fund in January. There were enrolled in the public schools of the State, in the academic year 1928-29, 248,682 white, and 217,809 colored, pupils, or 466,491 altogether. The average school session of the year was 173 days for whites and 114 days for the colored. Expenditure per capita of the enrolled was \$60.06 for white pupils and \$7.89 for colored, for the year. Expenditure for all public-school education totaled \$16,654,236. Salaries of teachers averaged, by the year, \$1678 for white men, \$930 for white women, \$390 for colored men and \$301 for colored women.

CHARITIES AND CORRECTIONS The central State authority over the greater part of the State's charitable and correctional institutions is exercised by the State Board of Public Welfare, which was created in 1920. A Child Placing Bureau aids needy children in divers ways. Under the State Board of Health are two institutions for tubercular patients, at State Park, the South Carolina Sanatorium (white) and the Palmetto Sanatorium (colored). The other chief State institutions are Industrial School for Boys, Industrial School for Girls, State Reformatory for Negro Boys, State Training School (for the feeble-minded), State Hospital, Confederate Infirmary, and State Penitentiary.

LEGISLATION The General Assembly of the State convened in regular biennial session on January 8 and adjourned on March 15. Its main achievement was to accomplish a complete change in the policy of the State with regard to the financing of road construction. What had been called the pay-as-you-go policy was given up in favor of rapid construction of a large aggregate mileage, by resort to a great bond issue. The bond measure as passed authorized the issue of State bonds to a total of \$65,000,000 of which not more than \$20,000,000 was to be put out in any one

year. The issue of these bonds was not to require the sanction of a referendum. The revenue of the State tax on gasoline, up to 5 cents a gallon, was devoted to the service of these obligations. Their proceeds were to meet the cost of the highway plans and the terms of their issue were to be proposed by the Highway Department. Owing to uncertainties as to legality and, in part, to dispute as to the preferable method, two alternative plans were provided, under one the State was to do its road building itself, and under the other two highway districts covering between them the entire State were to do the construction and to be reimbursed by the State. The tax gasoline was increased from 5 to 6 cents a gallon, in order that it might continue to supply the means of State distribution for local road maintenance.

A Farm Relief Act was passed, and a State Commission on Natural Resources was created. The Sunday-observance law of the State having been declared unconstitutional by its Supreme Court, a new law regulating employments and pursuits on Sunday was passed, but this law was vetoed by Governor Richards on the ground that it lacked constitutionality in the same respects as its predecessor, in creating discrimination among individuals. A bill for the enforcement of compulsory attendance at school was passed, but was vetoed.

POLITICAL AND OTHER EVENTS By a bridge over the Cooper River and Town Creek, 23½ miles in length and costing about \$6,000,000, opened on August 8, Charleston was connected with the mainland by a direct land route for vehicles. The strikes prevalent in the textile mills of the North Carolina section of the Piedmont caused some labor troubles in South Carolina, but these were much less serious in duration and bitterness. The State Supreme Court sitting *en banc* ruled on October 13 that the 265,000,000 road-bond measure of 1929 was valid under the State Constitution.

OFFICERS Governor, John G. Richards, Lieutenant-Governor, Thomas B. Butler, Secretary of State, W. P. Blackwell, Treasurer, J. H. Scarborough, Budget Secretary, Walter E. Duncan, Attorney-General, John M. Daniel, Comptroller-General, A. J. Beattie.

JUDICIARY Supreme Court, Chief Justice, R. C. Watts, Associate Justices, Thomas P. Cochran, John G. Stabler, Eugene S. Bleasie, Jesse F. Carter.

SOUTH CAROLINA, UNIVERSITY OF A non-sectarian State institution of higher education in Columbia, chartered in 1801 and opened in 1805. The enrollment for the autumn session of 1929 totaled 1562, of whom 1006 were men and 556, women. President, Davison McDowell Douglass, A. M., D. D., LL. D.

SOUTH DAKOTA. POPULATION The fourth State Census of South Dakota was taken as of May 1, 1925, and showed a total population of 681,260, of which 20,559 were Indians. Of this total, 347,579 were males and 313,122 were females. The Fourteenth Census of the United States, returned for South Dakota 636,547 on Jan. 1, 1920. The estimated population on July 1, 1928, was 704,000. The capital is Pierre.

AGRICULTURE The table on the following page gives the acreage, production, and value of the principal crops in 1928 and 1929.

MINERAL PRODUCTION The State produced in 1927 more gold than any other member of the Union with the sole exception of California. Ac-

Crop	Year	Acreage	Prod. Bu	Value
Corn	1929	4,916,000	112,085,000	\$69,493,000
	1928	4,469,000	93,849,000	58,136,000
	1929	3,114,000	30,247,000	28,271,000
Wheat	1928	8,360,000	34,928,000	29,641,000
	1929	3,785,000	3,667,000	29,163,000
	1928	3,193,000	2,919,000	21,787,000
Oats	1929	2,259,000	64,382,000	21,890,000
	1928	2,191,000	59,211,000	19,540,000
	1929	2,016,000	37,296,000	16,783,000
Barley	1928	1,680,000	36,456,000	17,499,000
	1929	637,000	3,758,000	10,522,000
	1928	554,000	3,601,000	7,288,000
Potatoes	1929	67,000	4,422,000	5,085,000
	1928	67,000	6,030,000	2,412,000
	1929	186,000	2,046,000	1,555,000
Rye	1928	162,000	1,458,000	1,152,000

* Tons

cording to the preliminary figures for 1928 the quantity of gold mined in that year very nearly equaled that for 1927, which in turn was much above that for 1926. The quantity of gold mined in 1928 was 320,112 fine ounces and that in 1927 322,681, the value, \$6,617,300 for 1928 and \$6,670,400 for 1927. The yield of 1927 formed somewhat less than 80 per cent of the total value of the State's mineral product of that year. A small amount of silver was mined as well, in value \$52,436 according to preliminary estimate for 1928. Stone alone of other mineral products attained a total value in excess of a half-million of dollars for 1927. The quantity of stone produced rose to 204,500 short tons for 1927, from 211,340 tons for 1926, the value was \$535,232 for 1927 and \$472,032 for 1926. Lithium, tungsten, and columbite minerals were mined in secondary quantities. The total mineral yield of the State for 1927, duplications eliminated, was \$8,463,592 for 1926, \$7,595,358.

Mines in South Dakota in 1929 produced \$6,523,000 in gold and 85,000 ounces of silver. The production of the Homestake mine, the main producing gold mine of the State and the largest single producer in the United States, was apparently slightly less than for 1928.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U S Department of Commerce, were for maintaining and operating governmental departments, \$8,324,334 (of which \$1,597,103 was for local education), for conducting public-service enterprises \$506,468, for interest on debt, \$3,116,716, for improvements, \$3,881,952, total, \$15,921,472 (of which \$4,867,531 was for highways, \$1,545,584 being for maintenance and \$3,321,947 for construction). Revenues were \$17,999,970. Of these, property and special taxes formed 27.1 per cent; departmental earnings and compensation to the State for officers' services, 8.2; sale of licenses, 31.0 (including gasoline taxation of \$2,925,363). The funded State debt of June 30, 1928, was \$58,299,700 outstanding and \$13,384,458 net of sinking funds; it included \$47,500,000 for public-service enterprises and investments and \$4,709,700 for highways. On a property valuation of \$71,709,966.919 were levied in the year State taxes of \$4,440,576.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan 1, 1929, was 4235.80. There were built, in 1929, 33.01 miles of additional first track.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to the operations of 1927, there were in the State, in 1927, 472 manufacturing establishments. These

employed 5551 wage earners, whose wages for the year totaled \$6,785,893. Materials and supplies used in manufacture cost \$63,019,877. Manufactured products attained the combined value of \$83,001,163.

EDUCATION. The school population in 1928 was estimated at 209,101. There were enrolled in the public schools 164,427 pupils. Of these, 136,501 were in the elementary, and 27,926 in the high-school, grades. Expenditures for public-school education totaled \$18,274,766. The yearly salaries of the teachers averaged \$1193.

CHARITIES AND CORRECTIONS. The chief central administrative authority over the State institutions of care and custody is the State Board of Charities and Corrections, one of the three constitutional boards of the government. Another constitutional board, the State Pardon Board, composed of the presiding judge of the State Supreme Court, the Secretary of State, and the Attorney-General, exercises powers of pardon elsewhere vested in the Executive. A statutory Parole Department headed by a State parole officer conducts the parole system. There are separate commissions for the administration of child-welfare activities and for the care of the feeble-minded. The State eleemosynary and custodial institutions are School and Home for the Feeble-minded, Redfield; School for the Deaf, Sioux Falls; School for the Blind, Gary, State Training School, Plankinton; State Penitentiary, Sioux Falls; Tuberculosis Sanatorium, Custer; Hospital for the Insane, Yankton; Soldiers' Home, Hot Springs.

LEGISLATION. The State Legislature held its regular biennial session, adjourning on March 8. The usual general appropriation bill was passed and approved by Governor Bulow with the exception of an appropriation of \$20,000 for purposes of investigation. Acquisition of lands for Federal use as places for the protection of migratory birds, according to the provisions of the Federal Migratory Bird Act, was authorized.

POLITICAL AND OTHER EVENTS. A discovery of manganese ore of possible high mineral value was reported in October. The ore deposit was stated to be along the course of the Missouri River, and was reported from Oacoma, lands to which one company had acquired leases were estimated to contain 100,000,000 tons or more of ore, and it was expected that if the deposit should justify hopes the State would be able to supply the Nation's manganese demand without need for importation.

OFFICERS. (Governor, W. J. Bulow, Lieutenant-Governor, J. T. Grigsby; Secretary of State, Gladys Pyle; Treasurer, A. J. Moodie, Auditor, William M. Dunn; Attorney-General, M. Q. Sharpe, Superintendent of Public Instruction, E. C. Giffen.

JUDICIARY. Supreme Court. Presiding Judge, N. D. Buich, Judges, Dwight Campbell, Samuel C. Polley, James Brown, Carl G. Sherwood.

SOUTH DAKOTA, UNIVERSITY of. A State institution of higher education in Vermilion, founded in 1882. The enrollment for the autumn term of 1929 was 1269 and for the summer session, 298. Herman G. James, J.D., Ph.D., succeeded Robert L. Slagle as president after the death of the latter Jan. 30, 1929.

SOUTH DAKOTA STATE COLLEGE. A State college, of agriculture and mechanic arts in Brookings, founded in 1882. The enrollment for the summer session and the autumn of 1929 was

1437, distributed as follows Agriculture, 130, engineering, 220; home economics, 106, pharmacy, 60, commercial science, 170, printing and rural journalism, 33; trades and industries, 5, general science, 211; special students in music, 25, graduate students, 22, secondary school of agriculture, 219; summer school, 220 The faculty, including experiment station and extension staff in agriculture and home economics, numbered 168 The library contained 35,000 bound volumes and 12,000 pamphlets President, Charles W. Pugsley, D Agr.

SOUTHERN CALIFORNIA, UNIVERSITY OF An institution of higher education for men and women in Los Angeles, Calif., founded in 1879 The enrollment for 1928-29, including summer session and extension classes, was 15,906 In the autumn of 1929, there were 500 members on the faculty The endowment was \$1,200,000, the income from tuition and fees, \$1,566,885, and other income, \$171,963 There were 110,000 volumes in the library. Mudd Hall of Philosophy was under construction in 1929 President, Rufus B. von Klenzsmid, Sc D, J D

SOUTH POLE See POLAR RESEARCH

SOUTHWEST AFRICA A former German protectorate, administered since Dec 17, 1920, by the Union of South Africa under a mandate from the League of Nations, bounded on the north by Portuguese West Africa, on the west by the Atlantic Ocean, and on the south and southeast by the Cape Province of the Union, and on the remainder of the eastern boundary by the Bechuanaland Protectorate Capital, Windhoek, with a population of 4002 Europeans and 10,489 natives, area, 311,820 square miles, population, according to the census of 1926, 24,115 Europeans and about 234,790 natives Stock raising is the principal pursuit as agriculture is handicapped by the scarcity of water The principal mineral product is diamonds, others are copper, vanadium, marble, tin, gold, and silver Under the influence of expanding mineral and agricultural development, the foreign trade of Southwest Africa has shown a consistently upward tendency In 1927 imports were valued at \$2,490,816 and exports at \$3,475,561 The estimates for 1928-29 were Revenue, 1,748,000, expenditure, £1,194,111, including £389,350 loan expenditure There are about 1361 miles of government-owned railway and 98 miles of privately-owned lines The head of the government is an administrator representing the Governor-General of the Union of South Africa, he has full power to legislate. Administrator in 1929, A. J. Werth, appointed in April, 1926

SOVIET SOCIALIST REPUBLICS OF RUSSIA. See RUSSIA

SPACE. See ASTRONOMY, PHYSICS

SPAIN. A constitutional monarchy of southwestern Europe, occupying the greater part of the Iberian peninsula and separated from France by the Pyrenees. Capital Madrid, ruling sovereign in 1929, King Alfonso XIII

AREA AND POPULATION. Continental Spain has an area of 190,050 square miles, including the Balearic and Canary Islands and Spanish possessions on the north and west coasts of Africa, the total area is 194,800 square miles According to the census of 1920, the population was 21,950,086, as compared with 19,950,817 in 1910 In 1927 it was estimated at 22,444,156. The cities with over 150,000 inhabitants on Dec 31, 1927, were, Madrid, 808,366, Barcelona, 760,348, Va-

lencia, 267,346, Seville, 215,107; Málaga, 158,733, Zaragoza, 153,681, Murcia, 152,945 From 1923 to 1927, births averaged 652,033 annually and deaths, 430,711

EDUCATION The total school enrollment for 1925-26 included 2,468,279 primary students, 74,273 secondary students, and 31,562 university students, there being about 28,870 public schools and 5500 private schools

PRODUCTION Agriculture is the chief occupation of the people, there being 47,823,000 acres, or 38.3 per cent of the total area, under cultivation in 1925 Another 62,471,000 acres were devoted to pastures and forests The area and production of the principal crops in 1928 were Wheat, 10,572,000 acres, 129,591,000 bushels, rye, 1,536,000 acres, 21,407,000 bushels, barley, 4,450,000 and 81,744,000, oats, 1,956,000 and 35,610,000, corn, 1,143,000 and 23,877,000, rice, 113,000 and 13,865,000, potatoes, 802,000 and 104,718,000 The beet-sugar output totaled 214,000 metric tons, olive orchards, 4,347,000 acres, 53,505,000 gallons of olive oil, grapevines, 3,541,000 acres, 428,274,000 gallons of wine Oranges, almonds, and filberts are other crops The harvest was generally below average in 1928, particularly the olive, wheat, and other cereal crops, but these were unusually good in 1929, the wheat crop being estimated at 38,000,000 quintals (one quintal equals 220.46 pounds), and the olive-oil output at 400,000 metric tons Livestock in the country in 1926 included 3,688,000 cattle, 5,032,000 swine, 20,529,000 sheep, 4,749,000 goats, and 3,061,000 horses, mules, and asses

Mineral production in 1928 was valued at 1,718,291,000 pesetas (\$285,064,000), as compared with 1,414,233,000 pesetas (\$241,208,000) in 1927 The mineral production in 1928 in metric tons included coal and lignite, 6,547,000, coke, 612,435, pig iron, 619,796, copper (blister), 25,000, lead, 143,007, zinc, 13,962. In 1927 the production of pyrites was 3,603,000 metric tons, copper (regulus), 27,986, mercury, 2493, superphosphates, 864,316, cement, 1,453,000 Cotton goods, paper, glass, sugar, cork products, silk, and metallurgical products are the chief manufactured products of Spain The annual production of cork is valued at about 50,000,000 pesetas (\$7,000,000)

COMMERCE Spanish imports increased 16 per cent to 3,004,991,000 pesetas (\$579,963,000) in 1928, while exports increased to 2,183,478,000 pesetas (\$421,411,000) The unfavorable balance of trade (\$820,513,000 pesetas) was believed to be largely offset by tourist expenditures and emigrant remittances Larger imports of grain were caused by the partial failure of the cereal crops and there was a 9 per cent increase in raw-cotton imports Exports of iron ore, oranges, onions, and olive oil showed large increases Exports to the United States in 1929 were estimated at \$36,200,000, or 3 per cent more than in 1928

FINANCE Preliminary figures for 1929 placed the revenues at 3,725,600,000 pesetas and ordinary budget expenditures at 3,487,800,000 pesetas (average exchange value of the peseta in 1929 was \$0.1468) This represented an increase of 203,600,000 pesetas over receipts for 1928, when ordinary revenue, according to preliminary returns, totaled 3,522,000,000 pesetas and ordinary expenditures, 3,342,000,000 pesetas Total ordinary and extraordinary expenditures in 1928 amounted to 3,784,500,000 pesetas, leaving a deficit of 262,200,000 (\$43,500,000). The budgets for 1929 and

1930, as proposed in January, 1929, were identical, providing for ordinary and extraordinary expenditures of 3,524,300,000 pesetas and receipts of 3,329,800,000. The 1930 budget was simplified and altered later in 1929, however, the extraordinary being incorporated in the ordinary budget. The new provisional budget for 1930 called for revenues of 3,660,700,000 pesetas and total expenditures of 3,637,700,000. Estimates for expenditures were later revised downward. The absorption of the extraordinary budget was made possible by the steady increase in revenues during 1928 and 1929.

The public debt on Mar 31, 1929, stood at 19,272,700,000 pesetas (\$2,918,400,000), as compared with 18,810,800,000 pesetas (\$3,162,600,000) on Apr 12, 1928.

COMMUNICATIONS. In 1928 there were 9859 miles of railway line in Spain, all of which belonged to private companies and most of which was operated with the aid of guarantees or subventions obtained from the government. In 1928 the railroad carried 119,037,000 passengers and 42,121,000 metric tons of freight, earning gross receipts of 800,885,000 pesetas (\$153,691,000). Borings to determine the feasibility of a railway tunnel beneath the Straits of Gibraltar were made in 1929.

The Spanish merchant marine on June 30, 1928, totaled 884 vessels of 1,104,272 gross tons capacity, of which 1,137,813 gross tons were run by steam or other mechanical power. A government subvention of 15,500,000 pesetas for the establishment and trial flights of a dirigible air service between Seville and Buenos Aires was voted in 1929. The trial flights were to be completed by July 30, 1931.

GOVERNMENT. According to the constitution, executive power is vested in the King, who acts through a responsible ministry, and legislative power in the Cortes, or National Assembly, consisting of the Senate and Chamber of Deputies. Parliament was dissolved by royal decree, Sept 16, 1923, and the control of the government was in the hands of the dictator, Primo de Rivera. He established a National Assembly with very shadowy powers late in 1927. King Alfonso XIII succeeded to the throne on his birth, which occurred after the death of his father, on May 17, 1886. The civil government in 1929 was constituted as follows: President of the Council and Minister of Foreign Affairs, Gen. Miguel, Primo de Rivera, Justice and Worship, Galo Ponte, War, Gen. Julio Ardanaz, Marine, Rear Admiral Mateo Garcia de Los Reyes, Finance, Calvo Sotelo, Interior, Gen. Martinez Andulo, Public Instruction, M. Calles; Public Works, Count of Guadalquivir, Labor, M. Aunos, National Economy, Count of Los Andes.

HISTORY

The increasing restiveness of the urban population and of a powerful section of the army under the curbing although temperate rule of Gen. Miguel Primo de Rivera, and the growing estrangement between the dictator and King Alfonso were the significant developments in the political situation in Spain during 1929. At the beginning of the year, Primo de Rivera, apparently fully seated in power, issued a proclamation to the effect that the dictatorship would be "more precise and concrete than formerly and more strictly applied." Twelve months later his régime was generally conceded to be tottering to

its end and speculation was rife as to how soon he would be forced to hand his resignation to the King.

ARTILLERY CORPS REVOLT. Entirely dependent upon the support of the army, the dictatorship received its first blow late in January through an abortive revolutionary movement along the southern and eastern coast, which was largely inspired and conducted by officers of the Artillery Corps, with the aid of a few naval officers and of José Sanchez Guerra, a former Conservative Premier of Spain. Except in Ciudad Real, where insurgents were in control for one day, the conspiracy was discovered and suppressed before it had made appreciable headway. Sanchez Guerra was arrested and imprisoned along with 40 artillery officers, all units of the Artillery Corps in continental Spain were ordered disbanded, and other officers who took part in the conspiracy were forced to reside in isolated points designated by the government. The revolt was due principally to the discontent of Artillery Corps officers at the dictator's ruling that promotion should be on the basis of merit rather than of seniority, as formerly. It did not succeed because the bulk of the army remained loyal; but the loyalty of the army to the dictatorship depended primarily upon the attitude of the King. The revolt was followed by an increasingly strict censorship of the press, and thus, together with the rising cost of living, attributed to the protective tariffs and monopolies fostered by the dictatorship, served to arouse the Spanish populace somewhat from its traditional indifference toward politics.

On March 6, in an interview with the French journalist, Jules Sauerwein, Primo de Rivera declared that by March, 1931, he would be ready to terminate the dictatorship as he believed that "the situation will have sufficiently evolved to permit the operation of a new and equitable Constitution." A few days later university students at Madrid and several other cities staged a protest strike against certain government measures, including the closing of the artillery school at Segovia, the arrest of students who had criticized the government, and the establishment of mixed tribunals of priests and professors. Ten persons were killed in riots in Madrid. A number of professors and university officials showed their sympathy with the students by resigning. The dictatorship responded by ordering the University of Madrid closed until October, 1930, and by imposing penalties upon students involved in strikes and riots. Later more universities were closed, but on May 29 practically all were allowed to reopen.

That Spanish opinion was not unanimously opposed to the Directorate was indicated by a demonstration of loyalty to Primo de Rivera held in Madrid April 14 by a throng said to number more than 90,000 persons, representing all parts of the country. The failure of the newspapers to give the desired space to accounts of the demonstration caused the dictator to establish a press bureau for the distribution to the press of statements "which the government regards as necessary for public information" and which the newspapers were obliged to publish in full.

PROPOSED CONSTITUTION. In July the draft of the new Constitution promised by Primo de Rivera was submitted to the hand-picked National Consultative Council by a commission of the assembly which had been at work on the matter for 20 months. In general the proposed

Constitution enhanced the power of the King at the expense of the Cortes, or National Assembly. It deprived the Cortes of its former power to modify the Constitution at any time, vested the right to initiate laws "in the King and the Cortes," instead of, as under the Constitution of 1876, "in the Cortes with the King," and reserved "to the exclusive initiative of the King and his responsible government" all laws involving foreign policy, treaties, national defense, constitutional reform, reduction of taxation, or an increase in the national expenditure. The Senate was replaced by a body comparable to the British Privy Council, but with the power to intervene in legislative matters. The proposed Constitution was vigorously opposed by a large section of the press, the labor organizations, and the republican and socialist elements. The meeting of the National Consultative Assembly at which the Constitution was to have been discussed, was ordered postponed to January, 1930.

SANCHEZ GUERRA CASE. In the meantime the case of Sanchez Guerra, the imprisoned former Premier, had gradually become the focal point of political interest. He was finally brought to trial in Valencia by court-martial on a charge of fomenting revolution, but the unpublished verdict, believed to have exonerated him, was rejected by General Gil Yuste, Military Governor of Valencia, on November 1. Inasmuch as King Alfonso had expressed the hope that amnesty would be granted, while Primo de Rivera declared himself in favor of punishing Sanchez Guerra "as an example," these manoeuvres were generally regarded as tangible evidence of differences between the dictator and the King, long the subject of rumor. General Gil Yuste was known as one of Primo de Rivera's most loyal followers. The Supreme Army and Navy Council then met to seek a way out of the impasse, and on December 6 it was announced that Sanchez Guerra and a number of others accused of complicity in the revolt would again be brought to trial. The former Premier was released on parole pending trial. Although himself a Conservative, who had severely repressed radical demonstrations in 1917 while serving as Home Secretary, Sanchez Guerra's imprisonment was seized upon by all the elements antagonistic to the dictatorship as an issue offering possibilities for its overthrow. There were new demonstrations of sympathy among University of Madrid students on November 29 and in many Spanish cities, particularly following the announcement of the dictator on December 13 that there would be no national elections in 1930, as had been expected. The government promised, however, that the National Consultative Council would be abolished in September, 1930, and that in its place "a legislative and fiscal organism" more representative of the nation would be set up. The fortunes of the dictatorship still rested with the army and indirectly with the King, who controlled the army. It became increasingly apparent that the King considered General Primo de Rivera's usefulness at an end, and it was this circumstance which led observers to predict that the dictator's régime would not long survive the year.

One view of the situation was that Alfonso had continued to support Primo de Rivera, despite their differences, for fear that the question of responsibility for the Moroccan disasters which preceded the dictatorship would endanger his throne once it was allowed to come before the

National Assembly, but that increasing discontent in the army and the alarming character of the financial crisis had forced him to consider a different course of action.

OTHER EVENTS. Outside the realm of internal politics other events during 1929 were the opening of the international fair at Seville on May 9 and of the Barcelona exhibition on May 15, the signing on July 10 of a treaty with France providing for the arbitration of commercial disputes, and the announcement of General Primo de Rivera on November 20 that plans had been made by the Council of Ministers for an immediate increase in Spanish naval strength. Dowager Queen Maria Christina (q.v.) died in Madrid February 6. Spain assumed a more important rôle in the international control of Tangier under a new arrangement which went into effect early in the year. See PORTUGAL, under *History*, and EXPOSITIONS.

SPANISH-AMERICAN LITERATURES.

A reviewer in this field must labor under difficulties in receiving promptly literary works from Spanish-American authors. Therefore again it is necessary to remind our readers that the facts here printed must not be considered as exhaustive, nor must the omission of some of the countries be taken as evidence that they produced nothing in 1929. It means simply that, despite all efforts, the chronicler received nothing from those countries—before taking up the several countries, mention must be made of one book of a general nature. Alice Stone Blackwell, *Some Spanish-American Poets*, with an introduction and notes by Isaac Goldberg (it contains 207 poems, by 89 authors, representing nineteen countries—translations, with Spanish text on the opposite page).

ARGENTINA. The following items show that Argentina was well represented in several fields—*Poison*, Margarita F. Aisamaseva, *Jeremy, el bolshhevik* (good, but foreign to the Argentine spirit), Maria Alicia Dominguez, *El hermano ausente* (this young writer here fulfills the promise of her first books), J. P. Saez (hijo), *Cuentos de Pasito puna* (fine bit of archeological recreation of the gaucho), Manuel Gálvez, *Humadité* (poor novel of the Paraguayan War, in which he almost praises the Dictator López, whom he had criticized as bloodthirsty in his earlier and better novel, *Los Caminos de la Muerte*), Juana Manuela Gorriti, *El Tesoro de los Incas* (*Leyenda histórica*), [*Facultad de Filosofía y Letras de la Universidad de Buenos Aires, Sección de Documentos, Serie 4a, Novelas Tomo I, Num. 6*], Carlos Maria Ocantos, *Fray Judas* (*Novelas Argentinas XX*), (the ex-diplomat has now completed his series of *Novelas Argentinas*, as originally planned), Enrique Larreta, *Zoyobis* (definitive edition of a novel which created a great stir when first published, in 1928), and Hugo Wast (Gustavo Martínez Zubiria, whose family consists of eleven children and the two parents, all of whom were visiting Spain after a year's stay in Paris), *Lucia Miranda* (dealing with the Conquest of the Rio de la Plata).

Essays Ramón Doll (young and vigorous writer), *Ensayos y Crónicas*, Alcides Greca, *La Torre de los Ingleses* (*Crónicas de viajes*) (although excellent and interesting, it does not reach the heights he attained with his *Viento Norte*, a novel published two or three years previously), Enrique Méndez Calzada, *El Tonel de Diógenes*

(very witty and genial satire), Alberto Ghiraldo, *Angustlandia bárbara* (better documented than Araquistain's criticism, but still unjust), and Samuel D. Strosow, *Anga* (an immigrant writes his recollections of vagabondage, slavery, and wretchedness, and does it with consummate art).

Drama Julio Sánchez Cardell, *La montaña de las brujas* (a drama dealing with Argentina), and Vicente Martínez Cuitiño (one of Argentina's outstanding dramatists), *La emigrada* (story of a wife who, refusing to divorce her profligate and useless husband, emigrates and strives to make a career for herself, so as to support her daughter), and *El espectador, o la cuarta realidad* and *Noche de almid* (both very successfully performed in Madrid by the Argentine Companies of Rivera—de Rosas and Camila Quiroga, respectively).

Poetry Clementina I Azlor, *Ritmos en el camino* (first book, but shows great promise in both form and inspiration), Arturo Capdevila, *Simbad* (exquisite romantic poems, composed in France, Spain, Portugal, and at sea), José Múrmol, *El poeta*, Luis Franco (a real poet, very much inspired by his master, Leopoldo Lugones, and even by Hesiod and yet an independent soul), *Los trabajos y los días. Georgicus* (exquisite), Rosa García Costa (dainty, spiritual, mystic), *Poesías Selección de La ronda de las horas, La simple cacería, y Esencia*, Ricardo Tudela (considered by some critics the best lyric writer in Argentina), *El vagabundo de la soledad* (poems in prose), Marcos Fingert, *Antena* (juvenile and simple), and Fernández Moreno (a young author, who in 14 years published 14 volumes of verse in easy, fluent style, but who has not yet become great), *Décimas*.

Eulogium Alberto Pulcos, *Sarmiento* (excellent biography), and *La vida y la obra de Ricardo Rojas-Sanc 1853-1927* (a volume of tributes by great scholars to their comrade, collected and published by his son).

Anniversaries The fourth anniversary of the death of the humanist, José Ingenieros, was celebrated with an even greater intensity of feeling than that which marked the previous anniversaries. Ricardo Rojas, Rector of the Universidad Nacional de Buenos Aires, was honored on the occasion of the quarter-centenary of his becoming an author: several scholars of note composed a book entitled *Obra de Rojas*.

Neology Argentina suffered three very severe losses through death: Roberto Cassaux (the great actor), Arturo Costa Alvarez (author of the important works *Nuestra lengua*, *Nuestro preceptismo literario*, and *El castellano en la Argentina*), and Paul Groussac (84 years old, National Librarian and Hispanist, expatriated Frenchman, who became blind in 1925, and in whose honor an extraordinary number of *Notas* for July was wholly devoted to tributes to him by eminent personages who treated him as novelist, dramatist, musical critic, historian, and scholar).

CHILE The Chilean Academy lost four of its members through death: Vicente Reyes, Joaquín Díaz Gálvez, Enrique Neirameau y Morán (author and statesman), and Francisco A. Concha Castillo (poet of elegant style). To fill the vacancies thus created, the Chilean Academy elected José Alfonso, General Francisco J. Díaz, Roberto Peragallo, and the poet Samuel A. Lillo, who had already taken possession of his chair, by reading his entrance discourse on *Escilla y la*

Araucana. Two other writers must be mentioned: J. Fernández Pesquero (a Spaniard who has long lived in various countries of the Americas and has settled in Chile, and who has already won fame through his *Aima araucana*, 1913, and his very beautiful *La patria del indiano*, 1915), *Enive las nieves de Patagonia*, and Julio Vicuña Cifuentes (the genial folk-loreist, who is now turning to prosody), *Estudios de métrica española* and *Epítome de versificación castellana*. The *Revista de Chile* published a special double number to commemorate the centenary of the arrival in Chile of the Venezuelan poet and grammarian, Andrés Bello.

COLOMBIA Colombia continued her excellent practice of official editions of the works of the great writers of Colombia. This time it is M. A. Caro, *Obras poéticas (edición oficial)*. A. Andrade Cispiño published *Suárez, Humanista*. A. Gómez Restrepo, the genial and scholarly Secretary of the Colombian Academy and now Colombia's Minister to Italy, published an exquisite volume *Cantos de Giacomo Leopardi, traducidos en verso castellano*.

CUBA Within the year several studies appeared from the pen of the poet José Manuel Carbonell y Rivero, President of the National Academy of Arts and Letters: *Juan Clemente Zenca, poeta y mártir*, *Pedro Angüel Castillón, poeta y rebelde*, and *Los Poetas Cubanos y el Ideal de Independencia* (all three of them important individual studies of the revolutionary period), and *Evolución de la Cultura Cubana (Recopilación dirigida, prologada, y anotada Edison oficial)*, 18 vols. (very important—treating *Poesía Lírica, Poesía Revolucionaria, Oratoria, Prosa, Ciencia, and Bellas Artes*). There was also Domingo Méndez Capote, *El Pacto del Zanjón* (exposition of the exact nature of this historic incident, which closed the Cuban rebellion of 1868). For folk-lore, mention should be made of M. Martínez Molea, *Contribución al Folk-lore. Vocabulario (españolano, ricanco, frasco procerbales, dichos y dichositos usados en Sancti-Spiritus*, tomo vii, Alfonso Hernández Catá, *El Ángel de Sodoma* (in this novel, the author of such works as *Los Frutos Ácidos, La casa de furas*, and *Pelago González*, marks out new paths in Hispanic letters).

Neorology The Cuban National Academy of Arts and Letters lost two of its most distinguished members through death: Miguel de Carrión, renowned author of such masterly works as *El milagro* and *Las honradas*, and Fernando Figueredo y Socarrás, illustrious writer and statesman.

ECUADOR The following works have come to our attention: Carlos Bolívar Sevilla, *Don Quijote en la Gloria*; and César Augusto Velarde, *Sacha* (a novel). Two members elect were received into the Academy: Gustavo Lemos and Julio Tobai.

MEXICO The materials that have come to hand are interesting, although more erudite than belletristic. *Essays* Guillermo Jiménez, *Cuaderno de notas* (essays on literary subjects); Alfonso Reyes, *Fuga de Navidad* (very delicate); José Vasconcelos (in collaboration with Miguel Alejo Robles, Manuel Puga y Acaí, and José Juan Tablada), *México y España* (an earnest effort at a better understanding between the two countries); B. Ortiz de Montellano, *Red*, and S. G. Vázquez, *Las locuras de Vasconcelos* (an attack on José Vasconcelos, ex-Rector of the University

of Mexico and ex-Minister of Public Instruction)

Poetry Solón de Mel (author's name is Guillermo de Luzuriaga), *La sinfonia del sol* (pictorial-pantheistic poems), Genaro Estrada (Assistant Minister of Foreign Affairs, well-known critic, novelist, and poet), *Escalera* (Tocata y Fuga) (a volume of poems that surpasses his *Crucero*, mentioned last year), Carlos Pellicer (poet, author of *Hora y 20*), *Camino* (alien to Góngora, Mallarmé and Valéry, his poems breathe the new rhythms of jazz, but lack the authentic sentimentality of the blues), and *Antología de la Poesía Mexicana Moderna* (ed., Jorge Cuesta).

Erudition Sor Juana Inés de la Cruz, *Respuesta a Sor Filotea de la Cruz* (crit. ed., E. Abreu Gómez), and *Obras escogidas* (ed., with prologue, by Manuel Toussaint, in *Clásicos Mexicanos*), Carlos González Peña (one of a group of Mexican editors who toured the States in 1918 and wrote thereafter *La vida tumultuosa*), *Historia de la literatura mexicana, desde sus orígenes hasta nuestros días*, Irving A. Leonard, *Don Carlos de Sigüenza y Góngora—A Mexican Savant of the Seventeenth Century*, Lesley Byrd Simpson, *The Ecomienda in New Spain*, R. Gracia Granados, *Por qué y cómo cayó Porfirio Díaz*, Ezequiel Padilla, *En la Tribuna de la Revolución*, Moisés Sáenz, *México. An Apoptosis and a Forecast*, and José Vasconcelos, *Tratado de metafísica*. Carlos Pereyra, historian and polygraph, assumed editorship of the *Biblioteca Histórica Ibero-Americana* and, for its first volume, decided upon a new edition of the *Biografía de D. Fray Juan de Zumárraga, Primer Obispo y Arzobispo de México*, by Joaquín García Icazbalceta (son of a family of great historians). *The Index de Documentos de Nueva España, existentes en el Archivo de Indias de Sevilla*, 2 vols., is invaluable for the history of Mexico.

Fiction Catalina d'Erzill, author of several dramas (*Cumbres de nieve*, *Esos hombres*, *La razón de la culpa*), and a novel (*La immaculada*), published a volume of short stories. *Apuntes de la Academia*. To fill the chair left vacant by the death of Juan B. Delgado (academician, poet, and diplomat), the Academy elected Genaro Fernández Mac-Gregor, novelist, critic, jurisconsult, and diplomat.

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Nicaragua. There was one election to the Academy, the member becoming *ipso facto* corresponding member of the Spanish Royal Academy, the poet Azarias Pallais. The member-elect, J. Andrés Utecho, took possession of his seat.

Peru. The Academy by a unanimous vote elected as its Director the President of the Republic, Augusto B. Leguía, and it received into membership the member-elect, Enrique Castro Oyanguren, notable man of letters, statesman, and diplomat. Victor Andrés Belaunde, scholar, diplomat, academician and professor in San Marcos University, published in *Cultura Venculosa* an important study on *La Federación de los Andes—Holtir nacionalista*, which it was hoped would appear soon in book form. José Carlos Mariátegui, in his 7 *ensayos de interpretación de la nacionalidad peruana*, gives a picture of the economic, religious, political, educational, and artistic life of Peru. As vol. 2 of his *Biblioteca Histórica Ibero-Americana*, Carlos Pereyra (of Mexico) published an *Antología de los Comentaristas Reales del Inca Garcilaso de la Vega*, edited by José de la Riva Agüero (although not

addressed to scholars, it will be found useful by them because of its complete index to the entire work).

Uruguay. The Ministry of Public Instruction established several prizes in arts and letters. The winners whose subjects concern us are (1) for the best work of poetry, Elbio Pinell Alzugar, *Ratz honda*, (2) for the best novel, Manuel de Castro, *Historia de un pequeño funcionario*, (3) for the best collection of short stories, Arturo Silveiro Silva, *Cuentos simples*, (4) for the printing of the best two books (one in prose and the other in verse), the former to María Paulina Medeiros de García, for *El posadero que hospedaba viejas ideas sin cobrarles nada*, and the latter to Ramón M. Díaz, for *Prosa de estrillas*. Pedro Leandro Ipuche (author of *Jubilo y miedo*), *Rumbo desnudo* (both books have been highly praised), Ilomero Martínez Albín, *Cantico de mi expresividad*, Jerónimo Zoloci, *Realización de la serenidad—Ensayos sobre la psicología de Fray Luis de León*, and Julio Veidí, *Adólcio cielo*,—four important works. Although Daniel Elías died in 1928, there appeared a posthumous volume of creditable verse, *Las alegrías del sol*, which shows that the author had not yet reached his possibilities. The *Asociación Cultural* was to publish also the remaining works: another volume of verse (*Los arroyos de la tarde*), and a volume of prose works and speeches.

Venezuela. Rufino Blanco Fombona again attracted attention with an important series of essays, *El modernismo y los poetas modernistas*, and the volume *Días de mi vida* (1904-1905). A. J. Calcaño Herrera, author of *Veros de juventud*, fulfilled critical prophecy concerning his talent with *Horas de vida* (really exquisite verse). J. A. Ramos Sucre gave us *El cielo de esmalte* and *Las formas del fuego* (symbolistic works more attentive to beauty of style than value of content) and M. Toro Ramírez, *El Gallo Pelón* and *La Señorita Bien* (two novels in one volume by the most productive of the younger Venezuelan novelists, whose work promised much for the future).

The National Academy of History elected to membership Mario Briceño Iragorry, a young but outstanding historian who has specialized in the Colonial Period and the War of Independence. The Venezuelan Academy (affiliated with the Royal Spanish Academy of the Language) elected to membership José Manuel Núñez to fill the chair of Lisandro Alvarado, who died a few days after handing to the publishers the manuscript of his *Glosarios del bajo español en Venezuela*, upon which he

for twenty years
SPANISH EXPOSITIONS See EXPOSITIONS
SPANISH LITERATURE For the fourth

year in succession, the dramatic output in 1929 seemed to run ahead of that of the other branches and for a second year in succession erudition seemed to outstrip fiction. There were several outstanding tributes. In Badalona the people placed a plaque on the birthplace of the Catalan actor Enrique Borrás, the Spanish Societies of Uruguay placed in the Teatro de la Princesa a plaque in honor of María Guerrero (see 1928 YEAR BOOK), and the Centro de Hijos de Madrid placed a similar plaque in the Teatro Español.

Drama. Some of the older generation again gave delight to their followers. J. Benavente, *Vidas cruzadas*, the Álvarez Quintero brothers, *Los duendes de Sevilla*, and *El niño me retrata*, E. Marquina, *San horca ni cuchillo* (treating

semi-historically the days of the Comuneros de Castilla), *Salvadora* (rural drama), and in collaboration with G. Martínez Sierra, *El camino de la felicidad* (a kind of new *Little Red Riding Hood*, applied to a moral struggle); G. Martínez Sierra, *Seamos feos* (one of his most beautiful plays), and *Triángulo* (disconcerting but excellent); L. Fernández de Ardevin, *Cuento de aldeas: comedia en verso, Un caballero y dos damas* (prose), and in collaboration with a young writer, Valentín de Pedro, *La santa*, Pedro Muñoz Seca, *El alfiler*, *¡Pégame, Luciano!*, and in collaboration with Pérez Fernández, *El sofá, la radio, el peque y la hija de Palomeque* and *¿Qué tienen en la mirada?*, Linares Rivas, *Hilos de añosa* (forceful drama of everyday life), and *El pájaro en alas* (tragedy of a highly cultured and wealthy village lass, who lacked the initiative to break away); J. I. Luca de Tena, *Las hogueras de San Juan* (far beyond his earlier efforts); Cipriano Rivas Cherif, *El sueño de la razón* and *Pepita Jiménez* (reverent staging of Juan Valera's great novel), E. de Alvear, *Lo que nos da la vida*, Luis de Vargas, *Seis poetas*, Valentín Andrés, *Tarari* (in which inmates of an insane asylum rebel and take possession of their keepers).

The following also may be noted: José López Rubio and Eduardo Ugarte, *De la noche a la mañana* (won A B C prize for beginners and acclaimed as something really new in comedy); A. Insúa and T. Borriús, *Una mano suave*, Francisco de Viu (capable young writer), *Lo improvisato*, F. Santander and J. Vela (young writers), *La casa de Iuján*, F. Oliver, *Han matado a don Juan*, C. M. Baena, *Levántate, Magdalena*, J. M. Segarra, *Judit*, Adelina Aparici y Osorio, *La discolor* (first play, promises much), and Nicolás Jordán de Urries (new author), *Veces de sociedad*.

FICTION. Again there was a goodly representation by well-known writers. A. Palacio Valdés, *A cara o cruz*, E. Zamacois, *Los vivos muertos* (sequel to his *Las raíces*), José Más (celebrated for series of novels on Sevilla, now treats of alcañía and fisher-folk), *La Costa de la muerte*, J. M. Carretero ("El Caballero Andaz"), *La venenosa* and *El ángel de la traviación*, Ricardo León, *Visión de descos*, and *Las niñas de mis ojos*, G. Díaz-Caneja, *El misterio del hotel* (clean and delightfully funny), José Toral, *La odisea de Pedrín-Historia de un año*, "Azorín," *Blanco en azul-Cuentos*, and *Félicia Vargas: Etopéya* (his master-piece to date), V. Blasco Ibáñez, *En busca del Gran Kan* (*Crusóbal Colón*), A. Insúa, *El barco embrujado*, R. del Valle-Inclán, *Vira mi dueño*, P. Mata, *La reconquista*, R. Gómez de la Serna, *El ducho del átomo*, Pío Baroja, *Memoirs of a hombre de acción: La senda dolorosa, Humano enigma*, and *El nocturno del Hermano Beltrán*, Concha Espina, *El Príncipe del cantar* (attractive short stories), and *La Virgen prudente* (strong plea for the modern woman, but not quite equal to her previous work), J. M. de Acosta, *El Morbo* (study of disease from spiritual as well as physical point of view), A. de Hoyos y Vinent, *Sacerdocio*, and Felix Urabayen, *Centauros del Premeo* and *Serenata lírica a la vieja ciudad* (his third book on Toledo).

The following also will be found of interest: Jaidiel Poncea, *Amor se escribe en hache*, and *Esperame en Siberia, vida mía*, J. Bruno, *El burlón*, Salvador González Anya, *Lo oración de la tarde*, Luis de Oteyza, *El diablo blanco*, Emilio Neila, *La bien nacida*, A. Robles (young novelist) *Novia partido por 2*, Luisa Carnés,

Peregrinos de Calvario (first novel of a young girl of artistic ability); and Carmen G. Maurino, *No tenía corazón (novela premiada en el concurso de "Lecturas,"* and first work of a young Asturian lady of society).

POETRY. Some of the best of Spanish verse appears in the drama. Of nondramatic verse, the following are of worth: J. M. Luelmo, *Imocel* (very Gongoristic); F. García Lorca, *Primer romancero gitano* (1924-1927), R. Alberti, *Sobre los ángeles*, J. Guillén, *Cántico* (miracle of intellectual imagery), and E. de Mesa, *La posada y el camino* (exquisite).

ERUDITION. Among the most interesting works of erudition were the following: M. Méndez Bejarano, *Poetas españoles que vivieron en América*, M. Fria Lagom, *Concha Espina y sus críticos*, J. M. Salaverría, *Sevilla y el andalucismo*, and *Loyola* (study of the man, not the saint); J. Pérez Yáñez, *Cada mujer educada es una escuela creada*, Américo Castro, *Santa Teresa y otros ensayos*, E. Gutiérrez-Gamero, *La España que fué* (continuation of his *Mis primeros ochenta años*), Angel Dotor, *Don Quijote y el Cid*, Calderón, *El médico prodigioso* (ed., J. Gieddes), *La Comedia y polsita* (ed., P. F. Douglass), *Un teatro árabe occidental de la leyenda de Alejandro* (ed., etc., E. García Gómez), V. Fernández Llera, *Gramática y Vocabulario del Nuevo Juzgo*, A. M. Alcover y Sureda (and others), *Inscripciones Catalán-Valencio-Baleares* (fascicles 7-8), M. García Blanco, *Mateo Alemán y la novela picaresca alemana*, C. P. Wagner, *El libro del Cavallero Zifar* (Part 1), L. Pfandl, *Geschichte der Spanischen Nationalliteratur in ihrer Blütezeit*, J. Bickermann, *Don Quijote und Faust—Die Helden und die Werke*, Gerhard Moldenhauer, *Die Legende von Barlaam und Josephat auf der Iberischen Halbinsel*, Cervantes (*Obras completas*) *Don Quijote* etc. . . . tomo 1 (ed., Schevill and Bonilla y San Martín), Marqués de Villa-Urrutia, *El General Serrano, duque de la Torre*; Juan Valea, *Obras Completas*, tomo 50, and Dorothy Schons, *Apuntes y Documentos Nuevos para la Biografía de Juan Ruiz de Alarcón y Mendoza*.

The most outstanding three productions of the year were R. Méndez Pidal, *La España del Cid*, tomo 1, and *Flor nueva de romances viejos*, and Conde de Romanones, *Notas de una vida*, tomo 1 (1886-1901), his life until he became Minister, and tomo 11 (1901-1912), his six Ministries.

Of a slightly different type of erudition are J. Ortega y Gasset, *Kant. 1724-1924—reflexiones de un centenario*, J. de Camba, *La casa de Luculo, o el arte de comer—Nueva fisiología del gusto*, José Plá, *La misión internacional de la raza hispánica*, A. Palacio Valdés *Testamento literario* (important); E. Gómez de Baquero, *Nacionalismo e Hispanismo*, F. Cambó, *Las Dictaduras*, E. R. Tarduchy, *Psicología del Dictador*; J. Pemartín, *Los valores históricos en la dictadura española*, and Teófilo Ortega, *La Muerte es vida*.

ROYAL ACADEMY. Under the reorganization of its membership, the Academy received four new members for the provincial linguistic interests: Gallegan, two—Armando Cotarelo y Valledor, professor at the University of Santiago de Compostela and member of the Real Academia Gallega, and Ramón Cabanillas, philologist and poet; Valencian, the lexicographer, Fray Luis Fullana; and Basque, Resurrección María Az-

cue. The Academy continued its publication of important works: *Poesías de Fray Luis de León* (con las notas inéditas de M. Menéndez y Pelayo), tomo i; *Obras completas de Lope de Vega*, tomo xi; *Obras de Lope de Vega*, tomo vi of the *Obras dramáticas*, and *Poesías dramáticas castellanas del siglo XVII*, tomos i and ii. It continued also its photographic reprints of rare books, the unique copy of the princeps edition of the Spanish translation of *Fabulas de Esopo*, 1711-1719, and the *Cancionero de Juan del*, 1490.

The following prizes were awarded: Premio nacional de literatura, en 1928, José Montero Alonso, "El Debate" Prize, for short story, José D. de Quijano, *Madrestra huérfana*, Mariano de Cavia Prize for journalism for 1928, José Cuartero, the Academy's Prize for the centenary of Camoens, the Portuguese scholar Marques Braga, *Luis Camoens—Poesías y obras dramáticas castellanas*, the Piquer Prize (drama), Joaquín Montaner, *El estudiante de Vich*, Fastenrath Prize (dramas), Eusebio de Gorbea, *Los que no perdona*, mentioned last year, and Fastenrath Prize (novels) Antonio Porras, *El centro de las almas*.

NECROLOGY. The following deaths occurred: Conde de López Múñoz, octogenarian statesman, academician, poet, and at his death president of the Asociación de Escritores y Artistas, Torcuato Luca de Tena, founder (1891) of *Blanco y Negro*, and (1903) of the daily *A B C*, R. Fouché-Delbosc, great French—Illustration founder (1894) of the *Revue Hispanique* and editor thereof until his death, "Andemio," Eduardo Gómez de Baquero, academician and critic, and one distinguished corresponding member of the Academy from the provinces Luis Montoto.

SPECTROSCOPY. See ASTRONOMY, PHYSICS.

SPECULATION. See FINANCIAL REVIEW.

SPEED REGULATION. See AUTOMOBILES.

SPENCER, SIR (WALTER) BALDWIN. An English ethnologist and educator, died in Ushant, Argentina, July 14, 1929. He was born in Stretford, Lancashire, in 1860, and was educated at Owens College, Manchester, and at Exeter College, Oxford. He was professor of biology at the University of Melbourne from 1887 to 1919, after which he became emeritus professor. As zoologist he accompanied W. A. Horn's scientific expedition into Central Australia in 1894, when he met F. J. Gillen, with whom he collaborated in making investigations among the tribes of Australia. They studied the tribes in Alice Springs and Lake Eyre districts of Central Australia in 1896-98, and in 1901-02 they extended their course northward and eastward. Sir Baldwin alone conducted investigations among the peoples of Melville and Bathurst Islands. The results of these sympathetic studies of the tribes of Australia are recorded in his published works.

SPIRIDON SALE. See ART SALES.

SPIRITUALISM. See PSYCHOLOGICAL RESEARCH.

SPIRITUALIST ASSOCIATION, NATIONAL. An organization maintaining the religious belief that the spirit world forms a counterpart of the world of common experience. Spiritualism originated as a doctrine in the writings of Andrew Jackson Davis in 1845.

In 1929 there were 22 State associations, as well as many local societies in territory outside the State organizations. The churches numbered approximately 650, with a membership of more than 45,000. The general activities are carried on

through four bureaus: Progressive Lyceums (Sunday schools), the bureau of phenomenal evidence, the bureau of propaganda, and the bureau of education. The organization conducts the Morris Pratt Institute, Whitewater, Wis., and issues the periodicals *Progressive Thinker*, *Banner of Life*, *Reason*, and *The National Spiritualist Officers*. In 1929 were President, Joseph P. Whitwell, St. Paul, Minn., secretary, the Rev. Harry P. Strack, Washington, D. C., treasurer, Frank Joseph, Chicago, Ill. Headquarters are in Washington, D. C.

SPITZBERGEN. See WEST SPITZBERGEN, also SVALBARD.

SPORTS. Articles covering the activities in the various sports during 1929 will be found under such titles as ATHLETICS, BASEBALL, FOOTBALL, GOLF, RACING, TENNIS, YACHTING, etc.

SQUASH RACQUETS. SQUASH TENNIS. See RACQUETS.

STAINLESS STEEL. See METALLURGY.

STANFORD UNIVERSITY. A nonsectarian institution for the higher education of men and women in Palo Alto, Calif., founded in 1891 in memory of Leland Stanford Jr. The enrollment for the autumn quarter of 1929 was 3535, and for the summer quarter, 1405. The faculty numbered 525. The productive funds of the university amounted to \$29,941,345, and the budget income for the year, including fees, was \$2,928,000. Gifts received during the year included the following: For research and scholarships, \$243,160, special funds, \$3118, new buildings, \$2574, endowment, \$282,249. The library contained 500,000 volumes (including the Hoover War Library). Acting president, Robert Eckles Swain, Ph.D., executive head of the chemistry department, who was appointed to serve during the leave of absence of Ray Lyman Wilbur.

STARS. See ASTRONOMY.

STATE BANKS. See BANKS AND BANKING.

STATE INSURANCE. See WORKMAN'S COMPENSATION.

STATE TAXES. See TAXATION.

STATISTICAL ASSOCIATION, AMERICAN. An organization founded in Boston in 1830 to foster an interest in statistics and to promote scientific methods of collecting and interpreting statistical data. Among the committees maintained during 1929, to improve both public and private statistical work, were: The joint advisory committee on the census, composed of six members, three of whom are appointed by the association, to advise the directors of the census on important questions of statistical policy, the committee on governmental labor statistics, to standardize statistics on employment hours and earnings in the various States and in the Dominion of Canada, and the committee on institutional statistics. The committee on social statistics was appointed to improve statistical work in social organizations, and the committee on the Encyclopedia of the Social Sciences was engaged as an advisory and sponsoring body along with nine other societies, in the preparation of that work.

The various association chapters meet from time to time in the leading cities of the United States. The ninety-first annual meeting was held in Washington Dec. 27-30, 1929. The officers of the association for 1929 were: President, Edwin B. Wilson, vice presidents, Mordecai Ezekiel, Ralph G. Hurlin, Francis Walker, counselors, Robert E. Chaddock, R. H. Coats, F. Leslie Hay-

ford; secretary-treasurer, Willford I. King; editor, Frank Alexander Ross. The official publication is the *Journal of the American Statistical Association*, a quarterly. Headquarters are in the Commerce Building of New York University, 230 Wooster Street, New York City. See **STATISTICS**. Statistical data are employed extensively in the economic and social reviews

United States: Atlanta, Baltimore, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Houston, Indianapolis, Jacksonville, Kansas City, Los Angeles, Memphis, Minneapolis, Mobile, New Orleans, New York, Norfolk, Philadelphia, Pittsburgh, Portland, Me., Portland, Oreg., Richmond, St. Louis, San Francisco, Savannah, Scranton, Seattle, Washington

INDEX NUMBERS SHOWING CHANGES IN COST OF GROUPS OF ITEMS ENTERING INTO COST OF LIVING IN THE UNITED STATES, 1913, TO DECEMBER, 1929

Date	Index numbers						
	Food	Clothing	Rent	Fuel and light	House furnishings goods	Miscellaneous	All items
Average, 1913	100 0	100 0	100 0	100 0	100 0	100 0	100 0
December, 1914	105 0	101 0	100 0	101 0	104 0	103 0	103 0
December, 1915	105 0	104 7	101 5	101 0	110 6	107 4	105 1
December, 1916	126 0	120 0	102 3	108 4	127 8	113 3	118 3
December, 1917	157 0	149 1	100 1	124 1	150 6	140 5	142 4
December, 1918	187 3	205 3	109 9	147 9	218 6	165 8	174 4
June, 1919	184 0	214 5	114 2	145 6	225 1	173 2	177 3
December, 1919	197 0	268 7	125 3	156 8	263 5	190 2	199 8
June, 1920	219 0	287 5	134 9	171 9	292 7	201 4	216 5
December, 1920	178 0	258 5	151 1	194 9	285 4	208 2	200 4
May, 1921	144 7	222 6	159 0	181 6	247 7	208 8	180 4
September, 1921	153 1	182 1	160 0	180 9	224 7	207 8	177 3
December, 1921	149 9	184 4	161 4	215 0	218 0	206 8	172 3
March, 1922	138 7	175 5	160 9	175 8	206 2	203 3	166 9
June, 1922	140 7	172 3	160 9	174 2	203 9	101 5	168 4
September, 1922	139 7	171 3	161 1	183 6	202 9	201 1	166 3
December, 1922	140 6	171 5	161 9	186 4	208 2	200 5	169 5
March, 1923	141 9	174 4	162 4	186 2	217 0	200 3	168 8
June, 1923	144 9	174 9	163 4	190 6	222 2	200 3	169 7
September, 1923	149 3	176 5	164 4	181 3	225 4	201 1	172 1
December, 1923	150 3	176 3	166 5	184 0	222 4	201 7	173 2
March, 1924	143 7	175 8	167 0	182 0	221 3	201 1	170 4
June, 1924	142 4	174 2	168 0	177 3	216 0	201 1	169 1
September, 1924	146 8	172 3	168 0	179 1	214 9	201 1	170 6
December, 1924	151 5	171 3	168 2	180 5	216 0	201 7	172 5
June, 1925	155 0	170 6	167 4	176 5	211 3	202 7	171 5
December, 1925	165 5	169 4	167 1	188 9	214 1	203 5	177 9
June, 1926	169 7	168 2	165 4	180 7	210 4	203 3	174 8
December, 1926	161 8	166 7	164 2	188 3	207 7	203 9	175 6
June, 1927	158 5	164 9	162 1	180 8	205 2	204 5	173 4
December, 1927	155 9	162 9	160 2	183 2	204 6	205 1	172 0
June, 1928	152 6	162 6	157 6	177 2	201 1	205 5	170 0
December, 1928	155 8	161 9	155 9	181 3	199 7	207 1	171 3
June, 1929	154 8	161 3	153 7	175 2	198 5	207 3	170 2
December, 1929	158 0	160 5	151 9	178 7	197 7	207 9	171 4

to be found in this volume. The reader is referred to the following subjects for statistics bearing on industry, immigration, trade unions, marriage and divorce, births and deaths, unemployment and financial operations: **CHILD LABOR**, **OLD-AGE PENSIONS**, **WOMEN IN INDUSTRY**, **CO-OPERATION**, **STRIKES**, **WORKMEN'S COMPENSATION**, **CRIME**, **TRADE UNIONS**, **IMMIGRATION**, **MARRIAGE AND DIVORCE**, **UNEMPLOYMENT**, **FINANCE**, **AGRICULTURE**. Below are presented statistics on the cost of living and wages.

INDEX NUMBERS OF THE COST OF LIVING The U. S. Bureau of Labor Statistics established that the cost of living in the United States increased 0.1 per cent as between December, 1928 and December, 1929. From December, 1928, to December, 1929, food prices increased 2.2 per cent, clothing decreased 1.4 per cent, rents decreased 4 per cent; fuel and light decreased 2.6 per cent; house furnishings decreased 2 per cent; and miscellaneous items increased 0.8 per cent. The above table presents the index figures for the cost of living from the average for 1913 to December, 1929, by the groups of items above discussed. It will be observed that rents showed the smallest increase over the whole period, with the costs of food next. In 1929, prices of house-furnishing goods continued to remain high. It should be said here that the data for these cost-of-living studies were obtained from examinations of prices in the following 32 cities of the

INDEX NUMBERS OF WAGES In the 1928 YEAR BOOK reference was made to the work of the International Labor Office in publishing figures of real wages for a number of the industrial countries of the world. During 1929 the scope of these data was extended. The list of workers was augmented to include those engaged in electrical installation, electric power distribution, transportation, the food industry, and workers employed by local authorities, in addition to the workers originally included, viz., those employed in the building, engineering, furniture, printing and bookbinding industries. The commodity budget also was enlarged to include additional food items, fuel, light, and soap. The table that follows gives the index numbers of real wages in a group of countries. Two series are presented, the first listing indexes for food only and the second for food, fuel, light, and soap.

The following has been the method employed in the calculation of the indexes. For each town there is calculated an unweighted average of the wages of all the types of workers studied and these averages are combined into a general average to stand for the country being considered. The number of times the average wage in each country will purchase the international budget is then ascertained, the resulting figures being converted into indexes on the basis of Great Britain as 100. Further, account is taken of the prices of the commodities included in the budget as

well as of the average quantities consumed by the workers and their families. The cost of the budget in dollars is figured at the current rates of exchange. An examination of the table below indicates that the highest level of wages is to be found in the United States with the countries next in order being the following, Australia, Denmark, and Sweden.

INDEX NUMBERS OF COMPARATIVE REAL WAGES IN THE LARGE TOWNS OF DIFFERENT COUNTRIES, GENERALLY IN JUNE-JULY, 1929
[Great Britain=100]

Country	Number	Towns covered		General average index numbers	
		Names		Based on food, fuel, on light, and soap	
United States	10	Baltimore, Boston, Chicago, Denver, Los Angeles, New Orleans, New York, Philadelphia, St. Louis, San Francisco		187	191
Australia	2	Melbourne, Sydney		146	143
Denmark	1	Copenhagen		103	104
Sweden	3	Göteborg, Malmö, Stockholm		102	101
Great Britain	7	Birmingham, Bristol, Glasgow, Leeds, London, Manchester, Newcastle		100	100
Irish Free State	3	Cork, Dublin, Dundalk		100	98
Netherlands	4	Amsterdam, The Hague, Rotterdam, Utrecht		86	85
France	4	Lyons, Marseilles, Paris, Toulouse		54	53
Spain	4	Barcelona, Bilbao, Madrid, Valencia		47	45
Austria	3	Graz, Linz, Vienna		46	45
Estonia	2	Tallinn, Tartu		42	41
Portugal	1	Lisbon		35	32

There was published during the year, as *Census Monograph Ten*, by the Bureau of the Census, one of the most significant studies of wages that has been prepared in recent years. This was the volume *Earnings of Factory Workers, 1899 to 1927*, the work of Paul F. Brissenden. Basing his

TABLE I ESTIMATES OF REAL EARNINGS—UNITED STATES, ALL INDUSTRIES COMBINED

Year	Actual money earnings	Index of cost of living 1914 = 100	Purchasing power of money earned in 1914
1899	\$ 446	0 74	\$601
1900	449	76	591
1901	471	78	604
1902	497	80	621
1903	498	84	593
1904	483	83	582
1905	516	81	646
1906	568	86	660
1907	579	91	636
1908	496	87	570
1909	557	87	640
1910	559	92	608
1911	534	95	562
1912	592	96	617
1913	617	99	623
1914	576	100	576
1915	608	98	620
1916	768	107	718
1917	860	120	667
1918	1,104	157	703
1919	1,213	179	677
1920	1,488	205	726
1921	1,047	176	595
1922	1,171	166	705
1923	1,317	169	839
1924	1,310	169	776
1925	1,402	170	825
1926	1,436	171	830
1927	1,373	171	805

work on studies of the official quinquennial and biennial censuses of manufactures, made by the Census Bureau, Mr. Brissenden has gone beyond the ordinary tables of wage averages and has presented estimates for every year since 1899 of the actual per-capita earnings of factory workers. Perhaps the most important piece of work done in this study is the presentation of earnings in terms of purchasing power through the application of

cost-of-living indexes to the indexes of actual earnings (not average earnings). An examination of the summary figures presented below shows that real wages of American factory workers showed no significant changes in the period 1899-1915. There was a gain during the period of the War, and a temporary setback as a result of the business collapse of 1921. In the years following,

however, real wages have continued to mount, going much beyond the levels ever attained in the pre-war period. Table I presents Mr. Brissenden's estimates of actual money earnings and the conversion of these earnings into real earnings on the basis of the 1914 dollar. Table II presents the index numbers for the same data.

LABOR TURNOVER. Beginning in August, the *Monthly Labor Review* began to present monthly statistics on labor turnover in the manufacturing industries. Previously similar data had been collected by the Metropolitan Life Insurance Co. and had been published in the *Review* every quarter. The October, 1929, figures covered 400 fac-

TABLE II INDEX NUMBERS OF EMPLOYMENT, MONEY EARNINGS, THE COST OF LIVING, AND REAL WAGES IN THE UNITED STATES, ALL INDUSTRIES, EACH YEAR 1899-1927

Year	Employment	Index numbers of—		
		Money earnings, actual	The cost of living	Real earnings
1899	106	77	74	105
1900	103	78	76	103
1901	107	82	78	105
1902	110	86	80	108
1903	107	86	81	103
1904	102	84	83	101
1905	111	91	81	112
1906	113	99	86	115
1907	111	101	91	110
1908	96	86	87	99
1909	108	97	87	111
1910	105	97	92	106
1911	101	93	95	98
1912	108	103	96	107
1913	108	107	99	108
1914	100	100	100	100
1915	104	106	98	108
1916	113	133	107	125
1917	110	149	129	116
1918	107	192	157	122
1919	106	210	179	118
1920	108	258	205	126
1921	89	182	176	103
1922	103	203	186	122
1923	113	229	189	146
1924	105	227	189	135
1925	111	243	170	143
1926	112	249	173	144
1927	106	238	171	140

tories with nearly 700,000 employees. The table that follows presents the data for labor turnover on a monthly basis. The rates are stated as percentages of the number on the pay roll. The following explanation may be quoted from the *Monthly Labor Review* to make plain the use of "net turnover rate"

It is self-evident that a growing plant has an accession rate higher than the separation rate, or it would not be growing. A declining plant has a separation rate greater than the accession rate. The turnover rate is the rate necessary to keep the plant going on the volume of business that it may have for the time being. The net turnover rate, therefore, is the same as the accession rate in a declining force and the same as the separation rate in a plant having an increasing force. The net turnover rate is designated as such at the end of the tables.

AVERAGE LABOR TURNOVER RATES IN SELECTED AMERICAN FACTORIES
[The rate is per 100 employees on the pay roll. The monthly rate is the rate for the calendar month]

Month	Monthly Rates										Accession rate	Net turn over rate
	Quit		Separation rates		Discharge		Total *					
	1928	1929	1928	1929	1928	1929	1928	1929	1928	1929		
January	13	23	07	04	03	04	24	31	28	50	24	31
February	13	24	6	4	4	5	31	32	24	44	21	32
March	17	31	7	5	4	6	28	42	30	52	28	42
April	21	36	6	5	4	6	31	46	17	58	11	46
May	24	35	7	5	4	5	15	44	40	51	35	44
June	22	32	6	4	4	5	32	42	34	50	32	42
July	23	30	5	4	4	5	32	39	40	52	32	39
August	27	34	4	4	4	4	36	41	47	46	36	41
September	13	31	4	5	4	5	42	41	47	49	42	41
October	27	24	4	8	4	4	16	36	48	38	36	36
November	21		4		4		29		41		29	
December	17		4		4		25		32		25	
Average	21		5		4		31		37		31	

* Arithmetic sum of quit, lay off, and discharge rates

AMERICAN STATISTICAL ASSOCIATION The ninety-first annual meeting of this society was held at Washington, D. C., December 27-30, 1929. The deliberations of the society centered in the following topics: Business Statistics, Appraisal of Economic Forecasts, Business in 1929; Forecasts for 1930; Prohibition; Evaluation of Securities; Price Analysis and Forecasting; Plans and Problems of the United States Census; Economics of Consumption; Biology, A Decade After the War, Population Outlook for the United States.

The *Journal of the American Statistical Association* continued to publish articles of high rank concerned with the technology of statistics and the development of statistical method in a variety of fields. Some of the outstanding discussions in the numbers of the *Journal* of the year were "The Problem of Prosperity," by Carl Snyder; "Statistics and Economics," by E. M. Burns; "Measurement of the Demand for Food," by Faith M. Williams; and the "Need for an Index for Social Data," by Mary Johnston.

PROGRESS OF THE CENSUS The act providing for the fifteenth decennial census was signed by President Hoover on June 18. The census of population and agriculture was ordered to be taken on the first day of April, 1930. The chief cause for the delay in the enactment of the census law was due to the provisions of the bill applying to the apportionment of representatives in the Lower House of Congress.

The census machinery was to be directed by William M. Stewart, director of the Census, Leon E. Trusdell, Chief Statistician for Population, William L. Austin, Chief Statistician for Agriculture, Robert J. McFall, Chief Statistician for Distribution. The census of manufactures was to

be under the direction of E. Dana Durand, Statistical Assistant to the Secretary of Commerce. See CENSUS.

STEAMBOAT INSPECTION SERVICE,

UNITED STATES See SAFETY AT SEA.

STEAM BOILERS. See BOILERS, STEAM.

STEAM ENGINE. No important progress was to be noted in this field, most of the advances being scored under STEAM TURBINES, as discussed below.

STEAM TURBINES. Several large steam turbines announced during 1928 went into operation during 1929. These included the 208,000-kilowatt three-cylinder unit at the State Line Station, near Chicago, the 165,000-kilowatt cross-compound unit at the Hell Gate Station,

New York, and the 160,000-kilowatt tandem-compound unit at East River Station, New York. The latter has a single generator, with double winding. The latter's 1,200-hp. turbine in operation is a 7,000-hp. machine at the Charles B. Huntley Station at Buffalo. This soon was to be superseded by an 80,000-kilowatt single-cylinder unit on order for the same company.

All these large units operate at moderate steam pressures, 375 to 600 pounds, but the fact that there were eleven steam turbines on order to operate at 1200 to 1400 pounds, in addition to several in service, was an indication of the trend toward high pressures in the United States.

During the year a new type of turbine made its appearance, namely, the steerable-compound in which the high-pressure unit is mounted on top of the low-pressure unit. The object of this arrangement is to save floor space. Five such units were building at the end of the year. Two of these, each of 25,000-kilowatts, were going into the New South Amboy Station of the New Jersey Central Power & Light Company, two of 50,000-kilowatts were to be installed in Station A of the Pacific & Electric Company at San Francisco and one of 110,000-kilowatt was on order for the Rouge Plant of the Ford Motor Company at Detroit. These units all were to operate at 1200 to 1400 pounds pressure.

The use of high-pressure turbines was not confined to central stations as several were in operation or on order for industrial power plants. One of the most interesting of these was a 1400-pound unit being built for the Dow Chemical Company, located at Midland, Mich. This was designed to exhaust at 360 pounds. More and more steam turbines of the extraction type were

being installed in industrial plants, to operate at initial pressures around 400 pounds and bleed steam for process at one or more intermediate pressures. Many of these machines were being equipped with automatic control to maintain the proper balance between load, back pressure, and extraction steam demand.

The first turbine with a welded plate-steel casing made its appearance during 1929. This was a 100-kilowatt machine for auxiliary drive at the East River Station, New York. Another departure during the year was the appearance of the first all-welded plate condenser. This was installed in connection with a 30,000-kilowatt turbine at the Fair Shoals plant of the Broad River Power Company.

STEEL, FLORA ANNIE. An English novelist died in Minchinhampton, England, Apr. 12, 1929. She was born in Harrow, Apr. 2, 1847, the second daughter of George Webster, sheriff-clerk of Wiltshire. In 1867 she married a Bengal civilian and went to live in India until 1889. There she was for a time provincial inspector of government and aided schools in Punjab and a member of the Educational Committee. She published with Lieutenant-Colonel Richard Temple a collection of Punjab folk tales, *Wide-Awake Stories* (1884), and in 1887 *Complete Indian Cook and Housekeeper*. On her return to England, Mrs. Steel continued to write interestingly and with accuracy of life in India. Her books, written in England, include *The Law of the Threshold* (1924), *The Curse of Eve* (1928), setting forth her views on social problems.

STEEL. See IRON AND STEEL. CHEMISTRY, INDUSTRIAL, METALLURGY.

STEEL IN CONSTRUCTION. See BRIDGES.

STELLAR EVOLUTION. See ASTRONOMY.

STEVENS INSTITUTE OF TECHNOLOGY. A college of engineering in Hoboken, N. J., founded in 1870. The enrollment for the autumn of 1929 was 444 and for the summer session of that year, 76. There were 62 members on the teaching staff. The productive funds amounted to \$3,000,000, and the income for 1928-29, including fees from students, was \$348,000. President, Harvey Nathaniel Davis, Ph.D.

STIRLING, REAR ADMIRAL YATES, U. S. N. Ret., died Mar. 5, 1929, in Baltimore, Md., where he was born May 6, 1843. He was graduated from the U. S. Naval Academy in 1863, and during the Civil War, 1863-65, served on the *Shenandoah* in the North Atlantic Blockading Squadron, participating in both attacks on Fort Fisher. Promoted through the grades, he was made commander in 1880, captain in 1894, and rear admiral in 1902. He commanded the *Newark* in 1895-96, the *Lancaster* in 1896-97, and, from 1898 to 1900, served as a member of the Light-house Board. He was commandant of the Naval Station at San Juan, P. R., in 1900-02 and of the Navy Yard at Puget Sound in 1902-03. In 1902-03, also, he commanded the Philippine Squadron of the Asiatic Fleet, the Cruiser Squadron in 1904, and in 1904-05 he was commandant-in-chief of the Fleet. He retired in 1905.

STOCK-EXCHANGE OPERATIONS. See FINANCIAL REVIEW.

STOCKS AND BONDS. See FINANCIAL REVIEW.

STOKERS. See BOILERS, POWER PLANTS, STEAM.

STONE, MELVILLE ELIJAH. An American journalist and former general manager for the As-

sociated Press, died Feb. 15, 1929, in New York City. He was born Aug. 22, 1848, in Hudson, Ill. Educated in the schools of Chicago, he became a reporter for the *Chicago Tribune* in 1864. From 1868 to 1871, he managed a foundry and machine shop, but, when the shop was burned, he turned again to journalism. He edited several Chicago dailies during 1871-74, and in 1875, with two partners, he established the *Chicago Daily News*. The interest of the partners he later sold to Victor F. Lawson, with whom he also founded in 1881 the *Chicago Morning News* (which became the *Chicago Record*). In 1888, because of failing health, he sold his interest in the papers to Mr. Lawson, and spent three years traveling in Europe. On his return to Chicago, he became in 1892 president of the Globe National Bank, remaining in this position until the bank's consolidation with the Continental National Bank in 1898. He became in 1893 general manager of the Associated Press, with headquarters in New York City, and after 1921 he was counselor for the organization. Mr. Stone became director at a time when the Associated Press (then the Western Associated Press) was one of several similar associations. His autobiography, *Fifty Years a Journalist* (1921), is a record of an interesting career.

STONY POINT BATTLE ANNIVERSARY. See CELEBRATIONS.

STOREY, MOORFIELD. An American lawyer, died Oct. 24, 1929, in Lincoln, Mass. He was born Mar. 19, 1845, and was graduated from Harvard University in 1866, studying at the law school there the following year. During 1867-69 he was private secretary to Charles Sumner, after which he was admitted to the bar and began the practice of law in Boston. From 1873 to 1879, he edited the *American Law Review*. Mr. Storey in 1896 was president of the American Bar Association, after 1905 president of the Anti-Imperialist League, and after 1910 president of the National Association for the Advancement of Colored People. He wrote *Politics as a Duty and as a Career* (1889), *Life of Charles Sumner* (Statesman Series, 1900), *What Shall We Do With Our Dependences* (1903), *Ebenezer Rockwood Hoar, a Memoir* (with E. W. Emerson, 1911); *The Reform of Legal Procedure* (Storr's Lectures at Yale Law School, 1911), *The Democratic Party and Philippine Independence* (1915), *The Negro Question* (1918), *Problems of Today* (Godkin Lectures at Harvard College, 1920).

STORMS. See METEOROLOGY.

STOURBRIDGE LION ANNIVERSARY.

See CELEBRATIONS.

STRADIVARIUS QUARTET. See MUSIC.

STRAITS SETTLEMENTS. A British Crown colony in Malaysia, consisting of Singapore, Penang (with Province Wellesley and the Dindings), and Malacca. The area is approximately 1600 square miles, population, according to the census of 1921, 883,769, estimated in 1928, 1,005,635. The estimates for the various parts in 1927 were as follows: Singapore, 217 square miles, with 538,077 inhabitants; Penang (with Province Wellesley and Dindings), 280 square miles, with 333,063 inhabitants; Malacca, 720 square miles, with 188,828 inhabitants. In 1926 there were 359,262 immigrants from China and 156,132 from southern India. The movement of population in 1927 was: Births, 37,233; deaths, 35,561. The seat of the government is Singapore.

In 1927 there were 282 schools (all government aided), with an enrollment of 43,217 and an average attendance of 40,249. The chief interest is commerce, mostly transit trade (the ports are free from customs duties). The chief cities are Singapore, which had a population of 350,355 in 1921, and Penang, with a population of 123,069 in 1921.

The trade of the Straits Settlements in 1927, including intercolonial trade with other parts of British Malaya, was as follows: Singapore, imports £108,567,365, exports, £92,354,925, Penang, £36,635,268 and £33,781,282, Malacca, £4,357,110 and £5,067,968; Labuan, £228,304 and £341,392, Christmas Islands, £230,231 and £243,597, Dindings, £137,502 and £342,210.

The budget for 1928 estimated receipts at 32,916,000 Straits dollars (\$18,690,000) and expenditures at 38,951,000 (\$21,164,000), conversions to United States currency being made at par. In 1927 the actual receipts totaled 37,602,000 Straits dollars (\$21,350,000) and expenditures 39,253,000 (\$22,288,000). Large expenditure was made on public works during 1928 and a $5\frac{1}{2}$ per cent loan floated in 1928 was retired. The public debt on Dec. 31, 1927, amounted to \$124,846,000 (United States currency). In 1927, 8082 vessels of 13,625,000 net registered tons entered, and 8982 of 13,634,000 tons cleared, the port of Singapore.

The administration is under a governor, aided by an executive council of official members, and a legislative council of official and unofficial members, the latter being nominated or selected by the chambers of commerce of Singapore and Penang. Governor in 1929, Sir Hugh Clifford, who is also High Commissioner for the Federated Malay States and Brunei, and British Agent for North Borneo and Sarawak. Under the administration of the Straits Settlements are the Christmas Islands, annexed in 1900, Cocos, or Keeling Islands, annexed in 1903, and the colony of Labuan, annexed Jan. 1, 1907. See CHRISTMAS ISLANDS, and LABUAN.

STRATIGRAPHY. See GEOLOGY

STRATON, THE REV. DR. JOHN ROACH An American Baptist clergyman, died at Clifton Springs, N. Y., Oct. 29, 1929. He was born in Evansville, Ind., Apr. 6, 1875. Ordained in the Baptist ministry in 1900, he served as pastor in Chicago (1905-07), in Baltimore (1908-13), in Norfolk, Va. (1913-17), and at the Cavalry Church in New York City after 1918. In 1906 he received the D.D. degree from Shurtleff College in Illinois. He was a noted Fundamentalist, arguing the question of Fundamentalism with Modernist leaders. His debates with Dr. Charles Francis Potter were followed with interest by both schools of thought. He also lectured and wrote in the interest of the Anti-Saloon League. In 1927 he conducted faith-healing services at Calvary Church and brought upon himself bitter attacks from clergymen of his own and other denominations.

STRAUS COLLECTION. See ART SALES.
STREET AND HIGHWAY SAFETY. See AUTOMOBILES.

STREETS. See ROADS AND PAVEMENTS, CITY PLANNING.

STRESEMANN, GUSTAV A German statesman, died Oct. 3, 1929, in Berlin, where he was born May 10, 1878. He was educated at the universities of Berlin and Leipzig. In 1907 he was elected to the Reichstag, at which time he was

general manager of a union of manufacturers, having long been an industrial leader. He became Chancellor in 1923, but the cabinet which he formed fell the same year. He was appointed Foreign Minister in the new cabinet formed by Dr. Wilhelm Marx, and held this position in all succeeding ministries until his death. Herr Stresemann, leader of the German People's party, had many political opponents and met with bitter opposition; but he was, nevertheless, recognized as Germany's greatest post-war statesman. It was he who effected the security pact with France, negotiated the Locarno Treaty, and gained Germany's entrance into the League of Nations on an equal footing with the Allied nations. In 1929 he obtained a promise of the evacuation of the Rhine by the Allied troops. He was one of the greatest of the European peace promoters, working for the adoption of the Dawes Plan in 1924 and for the Young Plan in 1929. In 1926 he shared the Nobel Peace Prize with Aristide Briand. His death, brought on by overwork, occurred the day after he had prevented a crisis in the Reichstag over the unemployment-insurance law.

STRIKES AND LOCKOUTS. The final figures compiled by the U. S. Bureau of Labor Statistics for the year 1928 showed that the number of disputes beginning in that year was materially less than that for any of the other years since 1916. On the basis of 1916 as one hundred, the index figures for disputes as computed by the Bureau was as follows:

	Relative number of disputes		Relative number of disputes
1916	100	1921	41
1917	117	1924	33
1918	88	1925	34
1919	96	1926	27
1920	90	1927	19
1921	61	1928	17
1922	29		

The table that follows presents the strike history for the period January, 1928-June, 1929.

Month	Number of disputes begun in month	In effect at end of month	Number of workers involved in disputes	Number of men days lost during month
1928				
January	48	63	18,850	81,880
February	52	58	35,441	103,496
March	41	47	7,459	76,069
April	71	48	143,700	129,708
May	80	56	15,640	133,546
June	44	46	31,351	14,137
July	54	42	18,012	112,187
August	59	42	8,887	105,760
September	52	34	8,897	62,862
October	61	42	27,866	41,474
November	44	38	37,840	38,745
December	23	29	5,172	55,842
1929				
January	45	34	14,727	39,484
February	48	34	20,184	40,385
March	77	42	14,052	41,321
April	103	52	30,130	52,292
May	68	73	26,220	58,959
June	69	71	19,702	54,584

During the year 1928, the Bureau of Labor Statistics compilations showed that nearly one-third of all the industrial disputes occurred in the eight cities of New York, Boston, Philadel-

phia, Fall River, Lynn, Chicago, Cleveland, and Paterson

The following are the conclusions of 656 of these strikes during the year 1928. Two hundred and seventy-two ended in favor of the employers, 197 ended in favor of the workers; 160 ended in compromises, 3 terminated with the employees returning, pending arbitration, 14 were jurisdictional and protest strikes, 10 were not reported. In 1928 the total duration in days of these 656 industrial disputes was 17,997 making an average of 27 days per strike. Since 1921, the trend has been generally in a downward direction. In the earlier year, there was a total of 1258 strikes lasting 64,231 days, with an average of 51 days per strike. Only in 1927, was the strike history more favorable than the record of 1928. In that year, there were 669 disputes with a total loss of work of 15,865 days.

The researches of the Bureau of Labor Statistics showed that settlement by arbitration was meeting with increasing favor. Of the 656 disputes involving 402,706 workers ending in 1928, 130 or 20 per cent of the total were settled by arbitration.

GREAT BRITAIN. The history of Great Britain and Northern Ireland for 1928 showed a less favorable situation. In the year, a total of 302 labor disputes involved 124,000 workers with a total of 1,388,000 days lost. It will be observed that, while the number of workers on strike was considerably smaller than in the United States, the total number of days lost was almost ten times as great. Nevertheless, the total number of strikes, 302, was smaller than for any other year in the recent history of Great Britain, and the aggregate number of days lost, 1,388,000, was the lowest ever recorded by the Ministry of Labor. The chief industries affected by the industrial disputes were coal mining and textile.

NEW YORK GARMENT INDUSTRY. On July 2, a strike called by the International Ladies' Garment Workers' Union in New York City brought out 30,000 cloak and suit workers in the entire trade. The strike was called against the inside manufacturers, the contractors, and the jobbers for the purpose of improving conditions in the industry and the winning of a new agreement. Union demands included a five-dollar wage increase, reestablishment of the unemployment insurance fund, a 40-hour week, a modification of the workers' rights after discharge. Actually, the strike ended at the breaking down of the sweating system which, as a result of internal disorganization, had raised its head in the industry in recent years. On July 11, 10 days later, a settlement of the strike difficulties was reached between the union and the Industrial Council, the leading employers' organization. The union withdrew its demand for an increase, however, it was its chief point, that of the organization of a joint control commission for the purpose of maintaining shop standards and agreements and to discourage the manufacture of garments in non-union shops. It was generally agreed by both sides that one of the elements of danger in the situation was the expansion of chain-store consumption. At its annual convention in December, in Cleveland, the International Ladies' Garment Workers' Union announced that it planned to call a similar organization strike in the ladies' dress industry. It was expected, too, that the union would seek the establishment of the week-work

basis instead of the prevailing piece-work payment scheme. In the same month, a group of prominent retail-store distributors pledged their support to the maintenance of decent working conditions in the industry.

NEW ORLEANS STREET-CAR WORKERS. On July 1, began a bitter and long-drawn-out dispute in that city, which involved approximately 1500 street-railway workers on strike against the local street-traction company. The men went out for wage increases, but the company refused the union. The strike was violent largely due to the fact that the companies sought to run the cars manned by strike-breakers. It was reported that a number of street cars was burned by the strikers and their sympathizers. On September 5, following conferences of President Green of the American Federation of Labor and representatives of the local car men and the public service company, an announcement was made to the effect that an agreement had been reached. The car men, however, voted to reject the agreement on the score that the company had refused to indicate that it would take back the strikers. In the middle of the month, it was apparent that the strike had been lost.

BUILDING TRADES, MISSOURI. On May 1, there began in St. Louis a strike of building-trade employees which affected a total of 4200 workers who succeeded in tying up seriously building operations in that city. The chief cause for the strike was a demand for increased wages. After six weeks of idleness, compromises were effected, resulting in the creation of new wage scales.

CANADA. Canada's history for the year 1928 continued to show the same decline that has been the trend in recent years. During 1928, 101 disputes between capital and labor involved only 18,239 workers, as compared with 22,683 in 1927 and 24,142 in 1926. The peak of Canadian labor disputes was reached in 1919, when 38,988 workers were on strike during the year. In 1928, 726 employers were affected and the total time lost in working days was 238,132.

SOUTHERN TEXTILE AREA. In March and continuing intermittent strikes during the year, involving only small units, but waged bitterly on both sides, industrial warfare broke out in the Southern textile area, that paradise of American capital "where labor was cheap, American, and contented." The lightning struck now in Tennessee, now in Georgia, again and again in South Carolina, and in North Carolina. In Elizabethton, Tenn., first in March and then in April, the workers in the rayon mills went out on strike in protest against the stretch-out system, for a shorter working week and for the newly-formed local established

Textile Workers' Union, affiliated with the A. F. of L. In Elizabethton, a new wage scale was won. Under it, women workers were to receive 18 cents per hour for the first three weeks, 20 cents for the next three weeks; with a maximum rate of 24 cents for the most efficient. Thus for a 60-hour week, a maximum of \$14.40 could be hoped for, but the mill owners refused to recognize the union and the later strike of April did not succeed in checking the discharge of workers active in the organization of the Elizabethton local. In March, too, a series of strikes broke out in the South Carolina mill towns of Ware Shoals, Pelzer, and Greenville. The stretch-out system, under which a sin-

gle worker was expected to operate practically twice as many machines as heretofore, without higher pay or a shorter working day, was the cause for the walkout. The workers, unorganized and without the aid of the A. F. of L., were quickly defeated.

Gastonia and Marion, N. C., were the scenes of bloody conflict and the wretched story of Southern white labor in these two Southern mill towns aroused the whole nation and compelled the A. F. of L. at its annual convention to pledge all its strength and resources to force unionization with an improvement of working conditions. In Marion, in September, the 650 workers in one of the mills had struck, under the guidance of A. F. of L. organizers. It was established that the workers were receiving an average of \$14 a week, were working from 10 to 12 hours a day and were being denied the right to unionize. In fact, the leading cause of the strike was the discharge of 15 workers who were active in trade-union activity. The local authorities at once came to the assistance of the mill owners and furnished deputy sheriffs to police the mill grounds to prevent molestation of the strike-breakers. On October 2, there was a clash between the sheriff and his deputies and a strike picket parade with the result that six strikers, all men and all American-born, were killed. The sheriff and 17 others, of whom 11 were deputies, were held for the grand jury. Governor O. Max Gardner promised an investigation and the Communist Trade Union, the National Textile Workers Union, took advantage of the situation to carry its propaganda into the disaffected areas. Before the month had ended, the strikers had been defeated and the mills were resuming operations. In November, two of the strike leaders were found guilty of rioting and sent to jail. It was not so easy, however, to hold anybody accountable for the slaying of the strikers. First, the indictment against the sheriff was dismissed, then, on December 21, a jury of mountaineers brought in a verdict of not guilty against the eight deputy sheriffs who were finally brought to trial.

In Gastonia, the sequel of the strike was somewhat the same. Here, in April, the workers went out on strike in the Loray Mill of the Manville-Jenckes Company, a Rhode Island corporation. The workers were being organized by the National Textile Workers Union, the Communist organization. On June 7, in resisting a raid on the strike headquarters, strike leaders fired into the attacking group with the result that Police Chief Aderholt was killed. Immediately, 15 men and women were arrested for the murder. Because of local hostility, a change of venue was granted the defendants and after an original mistrial and a change in the indictment from first- to second-degree murder, on October 21 seven men were found guilty of the murder as charged. It was apparent that every precaution had not been taken to insure fairness.

North Carolina justice was not so swift in bringing to trial the murderer of Ella May Wiggins, a striking mill worker and the mother of five children, who was killed on September 14, when a mob fired into a truckload of strikers on their way to a meeting. Nine minor bosses in the Loray Mill at Gastonia were arrested in connection with the murder, but on October 24 the grand jury reported its inability to bring in an indictment because of "insufficient evi-

dence." Though the presiding judge refused to dismiss the nine defendants, local sentiment predicted an end of the matter. Meanwhile, the strike in the Loray Mill had been lost. In November, a special presiding judge, appointed by the Governor, sought again to obtain indictments for the murder of Mrs. Wiggins. The end of the year saw no action taken.

STRYKER, MELANCTHON WOOLSEY An American clergyman and former college president, died Dec. 6, 1929, in Rome, N. Y. He was born in Vernon, N. Y., Jan. 7, 1851, and was graduated in 1872 from Hamilton College and in 1876 from Auburn Theological Seminary. Ordained in the Presbyterian ministry in 1876, he served as pastor from that time until 1892, successively in Auburn and Ithaca, N. Y., in Holyoke, Mass., and in Chicago, Ill. From 1892 to 1917, Dr. Stryker was president of Hamilton College. He was a student of hymnology and the author of hymns and poems. He published *Song of Miriam* (1888); *Three Addresses on Lincoln* (1917); *Vesper Bells*, verse (1910), *Christian Prayers*, a hymnal (1920); *Lincoln's Land, and Other Verses* (1921); *Ethics in Outline* (1923), *Embers*, collected verse (1926).

STUDDERT-KENNEDY, THE REV. GEORGE **ANKETELL**. See **KENNEDY, THE REV. GEORGE ANKETELL STUDDERT**.

STUDENTS IN UNIVERSITIES AND COLLEGES. See **UNIVERSITIES AND COLLEGES**. **STUDY, COURSES OF**. See **EDUCATION IN THE UNITED STATES**.

SUBMARINES. See **NAVAL PROGRESS, VESSELS, NAVAL**.

SUBWAYS. See **RAPID TRANSIT**. **SUDAN, ANGLO-EGYPTIAN** A territory in the Nile region of Africa, extending south from Egypt and Libya to British East Africa and the Belgian Congo, bounded on the east by the Red Sea, Eritrea, and Abyssinia, and on the west by French Equatorial Africa, under British authority. Area estimated at 1,008,100 square miles, population in 1928 estimated at 6,469,041. Capital Khartoum, with a population of 31,965, other cities, Omdurman, 79,238, Khartoum North, 92,982, with adjacent rural district.

Most of the world's supply of gum arabic and ivory comes from the Anglo-Egyptian Sudan. In 1927 gum-arabic exports totaled 21,239 tons valued at ££680,887 (one pound Egyptian = equal \$4.983). Cotton is a leading crop, there being 216,544 acres under cultivation in 1927 the crop from which (1927-28) was estimated at 110,000 bales (averaging 278 pounds). Much of the cotton area is irrigated. Sesame, groundnuts, senna leaves and pods, dates, hides and skins, gold, and salt are other products, in addition to such cereals as dura (great millet) and dukhan (bulrush millet).

Imports in 1927 totaled ££6,155,344 and exports, excluding re-exports, ££4,956,000. Most of the trade was carried on with Great Britain and Egypt. The budget estimates for 1928 balanced at ££5,978,000. In 1927 actual revenues totaled ££5,929,945 and expenditures ££5,550,480. The figures do not include the revenue and expenditure for local provincial services, which in 1927 amounted to ££167,174 and ££143,673 respectively. In 1928 there were 1802 miles of railway line open to traffic and a section of 135 miles was under construction from Kassala to Gharaf. The navigable tributaries of the Nile are served by government steamers. Under a convention signed

at Cairo, Jan. 19, 1899, the region south of the 22d parallel is administered by a governor-general appointed by the Egyptian government with the assent of Great Britain. The Sudan has been divided into 15 provinces, each under a governor. Since 1910 the governor-general has been assisted by a council. Governor-General in 1929, Sir John L. Maffey.

SUEZ CANAL. The reports for 1928 of the Compagnie Universelle du Canal Maritime de Suez and the preliminary reports for 1929 showed unprecedented activity during these years, both in number of passages of ships and in the movement of merchandise. In 1929, it was estimated that 6274 ships with a net tonnage of 33,466,014 passed through the canal, as compared with 6084 ships with a net tonnage of 31,905,902 in 1928, and 5545 ships with a net tonnage of 28,962,000 in 1927. The movement of merchandise in 1929 was 34,516,000 gross tons; in 1928, 32,622,000 gross tons, and in 1927, 29,524,000 gross tons. Total transit and navigation receipts in 1928 amounted to 222,396,000 gold francs, exceeding those of 1927 by 13,710,163 gold francs in spite of a reduction of 25 centimes per ton which went into effect Apr. 1, 1928.

The five principal flags represented in canal traffic—British, Dutch, German, French, and Italian—exceeded their previous high records. The accompanying table gives the number of transits and net tonnage by nationality for the year ending Dec. 31, 1928.

SUEZ CANAL TRAFFIC, 1928

Country	No of Transits	Net Tonnage
Great Britain	3,393	18,124,074
The Netherlands	617	1,329,638
Germany	611	3,300,018
France	359	1,926,949
Italy	363	1,646,792
Japan	158	940,070
United States	123	729,351
Norway	149	686,749
Denmark	71	163,928
Sweden	66	307,116
Greece	90	280,031
Belgium	40	160,055
Russia	20	67,821
Spain	6	17,801
Egypt	8	13,586
Finland	2	7,769
Uruguay	2	3,226
Turkey	2	2,658
Portugal	2	2,593
Czechoslovakia	1	1,844
Siam	1	1,119
Total	6,084	31,905,902

SUGAR. Estimates published by Willett and Gray placed the world's production of sugar in 1929 at 30,001,000 short tons, of which 19,725,000 tons were cane sugar and 9,120,000 tons beet sugar. The yields in short tons of cane sugar for the more important producing countries were estimated as follows: Cuba, 5,488,000 tons, Java, 3,250,000 tons, British India, 2,968,000 tons, Formosa and Japan, 991,000 tons, Hawaii, 913,000 tons, Philippine Islands, 812,000 tons, Porto Rico, 762,000 tons; and Dominican Republic, 420,000 tons. It was further estimated that South America produced 1,776,000 tons, Africa, 783,000 tons, and Australia and Fiji, 764,000 tons.

Cane-sugar production in the United States, which is limited to Louisiana, was forecast by the Department of Agriculture at 208,000 short tons compared with 132,000 short tons the year before. The 1929 area of sugar cane in Louisiana was placed at 173,000 acres against 115,000 acres

in 1928. The value of the entire Louisiana cane crop was estimated to be \$12,770,000 as compared with \$10,021,000 the preceding year. The price of cane in 1929 was \$3.76 per ton and in 1928, \$3.87 per ton. The production of sugar-cane sirup in the Southern States was estimated at 23,458,000 gallons, or 15 per cent greater than the 1928 production of 20,401,000 gallons. The increase was largely due to a larger acreage. The December 1 price was 75 4 cents per gallon in 1929 and 77 6 cents the year preceding and on this basis the total farm value was \$17,691,000 and \$15,835,000 for the two years, respectively.

Estimates for 1929 by the International Sugar Association of Vienna as reported by the International Institute of Agriculture placed the European production of raw sugar from sugar beets at 5,769,131 short tons, about 80,000 tons less than the production in 1928. The production of sugar beets for the year was estimated at 35,495,490 short tons. The leading countries and their yields were as follows: Germany, 2,032,370 tons; Czechoslovakia, 1,087,346 tons; Poland, 936,000 tons; and Italy, 470,000 tons. The Soviet Republics, which are not included in the above estimates, produce annually about 10,000,000 tons of sugar beets and according to a preliminary estimate produced 1,353,000 tons of sugar in 1928. In Europe, 614 beet-sugar factories operated in 1929 against 643 in 1928.

The Department of Agriculture estimated the production of sugar beets by the United States in 1929 at 7,672,000 tons and the beet-sugar production at 1,041,000 tons, an increase of 571,000 tons of beets and a decrease of 20,000 tons of sugar as compared with 1928. The December 1 farm price was \$10.70 per ton and the farm value of the crop \$57,679,000 in 1928 and \$11 and \$50,477,000, respectively, the year before. The average yield per acre was 10.7 tons. Colorado produced 2,880,000 tons of sugar beets, Nebraska, 1,062,000 tons, W. 65,000 tons, Utah, 564,000 tons, and 544,000 tons.

It was estimated that in 1929 the United States produced 1,706,000 pounds of maple sugar and 2,595,000 gallons of maple sirup. The bulk of this production was supplied by Vermont, New York, and Ohio, Vermont leading with 966,000 pounds of sugar and 1,083,000 gallons of sirup. See CHEMISTRY, INDUSTRIAL.

SUICIDE. See CRIME

SUISUN BAY BRIDGE. See BRIDGES

SULLIVAN EXPEDITION, SESQUICENTENNIAL CELEBRATION OF See CELEBRATIONS

SULPHUR. Production, shipments, and exports of sulphur reached new levels in 1929, according to the U. S. Bureau of Mines. Sulphur production amounted to 2,362,389 long tons in 1929, compared with 1,981,873 tons in 1928, and 2,111,618 tons in 1927, the previous record year. Shipments totaled 2,437,238 tons valued at about \$43,800,000, compared with 2,082,924 tons valued at about \$37,500,000 in 1928, the previous record year. In 1929 production was continued in Texas at Gulf, Matagorda County, by the Texas Gulf Sulphur Co., at Bryan and Hoskins Mounds, Freeport, Brazoria County, by the Freeport Sulphur Company at Benavides, Duval County, by the Duval Texas Sulphur; and at Wharton, Wharton County, by the Union Sulphur Company. A new operation on Boling Dome at Newgulf, Wharton County, Texas, was started by the Texas Gulf Sulphur Company during the latter part of March, 1929.

No production or shipments of sulphur were made in Louisiana in 1929. The final shipments of sulphur from the stockpile at Sulphur, Calcasieu Parish, La., were made in 1928. Over 99 per cent of the United States production and shipments of sulphur came from Texas.

Stocks of sulphur on hand at the mines decreased nearly 100,000 tons, following a decrease of approximately 100,000 tons in 1928, and were about 1,900,000 tons on December 31. The average quoted price for sulphur as reported by the trade journals was unchanged at \$18 a ton f o b mines throughout the year. Open prices were \$1 to \$3 a ton higher, and prices for sulphur exported were given as \$22 a ton f a s Atlantic ports.

Exports of sulphur or brimstone from the United States totaled 865,183 tons valued at \$17,028,813, compared with 685,051 tons valued at \$14,345,075 in 1928, and 789,274 tons valued at \$16,254,227 in 1927, the previous record year.

The world production of sulphur in 1928 was estimated at 2,413,000 metric tons, the equivalent of 2,374,392 long tons. Of this amount, 1,949,000 metric tons (1,981,873 long tons) were produced in the United States. Outside the United States the chief source of supply was Sicily which was reported to have produced, in 1928, 215,280 metric tons of sulphur, as compared with 231,440 metric tons in 1927. The production of continental Italy, chiefly Romagna, was given as 80,827 metric tons making the total estimated production of Italy 296,107 metric tons, a slight decrease from that of 1927. Japan produced 66,619 metric tons of sulphur in 1928, Spain, 15,000 metric tons; Chile, 10,000 metric tons, and China, 5600 metric tons. In Chile enormous deposits were reported newly discovered at Putana Volcano in the Province of Antofagasta, near the Bolivian frontier.

SULPHURIC ACID. See CHEMISTRY, INDUSTRIAL.

SUMATRA. See DUTCH EAST INDIES.

SUN. See ASTRONOMY.

SUNDAY-SCHOOL UNION, AMERICAN. A volunteer association composed of members of different Protestant denominations, whose object is to establish and maintain Sunday schools and to publish and circulate moral and religious publications. It was established in 1817 as the Sunday and Adult School Union. Through the contributions of individuals, churches, and Sunday schools, it sustains missionaries and supports its general work, which is carried on by 13 districts. In the year ending Feb. 28, 1929, 673 schools were organized and 516 schools re-organized, with a total of 3835 teachers and 35,719 pupils. There were 168 young people's societies established, 150 preaching stations opened; 28 churches of various denominations organized, and 12 churches built. The income for the year was \$582,803, expenditures amounted to \$578,501. The officers in 1929 were President, E. Clarence Miller, vice presidents, James M. Snyder, Barton F. Blake, and Robert L. Latimer; treasurer and recording secretary, John H. Talley; secretary of missions, G. P. Williams; editor of publications, James McConaughy. National headquarters are at 1816 Chestnut Street, Philadelphia.

SUPERPHOSPHATE. See FERTILIZERS.

SURGEONS, AMERICAN COLLEGE OF. A college or guild (not a teaching institution), organized in 1913 by some 500 surgeons of North America representing every branch of surgery.

The object of the college is "to elevate the standard of surgery, to provide a method of granting fellowships in the organization, and to educate the public and the profession to understand that the practice of surgery calls for special training, and that the surgeon elected to fellowship in this college has had such training and is properly qualified to practice surgery."

The membership in 1929 was more than 9000 and included prominent surgeons of the United States, Canada, and the Latin-American countries. The activities of the college are financed from initiation fees and yearly dues of the fellows, augmented by outside contributions. The college, in 1929, owned property valued at \$1,600,000 and had an endowment fund of more than \$800,000.

In 1917 a hospital standardization programme was initiated, which set definite professional requirements as to organization, diagnostic facilities, and methods of procedure and which provided for a careful annual survey of all hospitals with 25 beds and over. There were 2855 hospitals of 25 beds or over on the college's visiting list in 1929, and of these, 1969 were fully or conditionally approved.

The college maintains a library and department of literary research to further the standardization of literature on surgery and closely allied subjects and to encourage the wider reading and study of scientific material. The official journal is *Surgery, Gynecology and Obstetrics*. Officers for 1929-30 were: President, Dr. Merritt W. J. T. S., G. C. U. S. A., Washington, J. C. Miller, New Orleans, vice presidents, Dr. W. W. Pearson, Des Moines, and Dr. Perry C. Goldsmith, Toronto, treasurer, Dr. Frederic A. Besley, Waukegan, Ill. Dr. Franklin H. Martin was director general of the college and Dr. Malcolm T. MacEachern and Dr. Bowman C. Crowell, associate directors. Headquarters are at 40 East Erie Street, Chicago.

SURGERY. Dr. L. H. McKinnie of Colorado Springs attempts to give a forecast of surgical activity in the *Journal of the American Medical Association* for April 6. He limits himself to a few provinces only, the first of which is operations by incompetent surgeons. This is in line with the statement made not long ago by Dr. Wm. J. Mayo that the surgeon of the future will limit himself to a narrow and specialized line of operation, which naturally will widen the gulf between the expert and the incompetent. To secure better surgical training, the private purse of the student will no longer prove adequate and we must have State aid or endowment by philanthropy. Young men must be selected for their fitness and in some way made independent of ordinary financial considerations. A special qualification may be necessary, for membership in the American College of Surgeons is hardly sufficient for the future. It is also difficult to conceive of master surgeons who are not affiliated with the great universities or general hospitals. The better class of extramural surgeons should gravitate to these institutions until a standardized *modus vivendi* comes to pass. Nothing must happen which will drive superior men from a career in surgery, for the great surgeon has usually been a man of high character and ability as well as attainments.

SURINAM. See DUTCH GUIANA.

SUVIANA DAM. See DAMS.

SVALBARD. An arctic archipelago in the Eastern Hemisphere, area 25,000 square miles, formerly known as Spitzbergen. It comprises all lands between 10 and 35 degrees east longitude and between 74 and 81 degrees north latitude. By the Treaty of Paris, Feb. 9, 1920, it was placed under the full and absolute sovereignty of Norway. The principal islands are West Spitzbergen, usually called Spitzbergen, Northeast Land, Barents Island, Edge Island, Wiche Islands, Hope Island, and Prince Charles Foreland. Norway assumed control in 1925 and has appointed a governor, who lives at Green Harbor with a small staff. There are six mining camps inhabited the year round. The largest, Longyearbyen in Advent Bay, has 529 inhabitants. As all industries are conducted on Spitzbergen, they are treated under West Spitzbergen.

SWARTHMORE COLLEGE. A nonsectarian institution for the higher education of men and women in Swarthmore, Pa., founded in 1864 by the Society of Friends. The 1929 enrollment was 576 full-time students, of whom 289 were men and 287, women. The teaching staff numbered 75. The endowment and productive funds amounted to \$4,000,000. The library contained 68,000 volumes. In addition, the Friends Historical Library had a collection of 8500 volumes and original manuscript-record books of 46 Friends' meetings. President, Frank Aydelotte, LL.D.

SWAZILAND, swa'-zo-land. A British protectorate in South Africa, situated north of Zululand, at the southeastern corner of the Transvaal. Formerly under the South African Republic, it is now controlled by the British government acting through a high commissioner of the Union of South Africa. Area, 6704.6 square miles, population at the census of 1921, 112,638, of whom 2235 were Europeans. Capital, Mbabane. The chief agricultural products are corn (the staple product), tobacco, millet, various vegetables, peanuts, and cotton. The mineral resources are considered rich, but are undeveloped. The revenue for 1927-28 was £101,706 and the expenditure £103,681. There is a customs union with the Union of South Africa. The South Africa Act of 1909 included Swaziland as one of the territories which, on an address from the South African Houses of Parliament, might be transferred to the government of the Union. In September, 1929, it was announced that General Hertzog, Premier of the Union, was anxious to secure the inclusion of Swaziland during the life of his government. The transfer was said to be opposed by the native Swazis and by most of the Europeans in the territory. Local administration is under a resident commissioner. Resident Commissioner in 1929, T. Ainsworth Dickson.

SWEDEN. A constitutional kingdom in the extreme northwestern part of Europe, occupying the eastern and larger part of the Scandinavian peninsula. Capital, Stockholm, reigning sovereign in 1929, King Gustaf V.

AREA AND POPULATION. The total area of Sweden is 173,154 square miles, the population, according to the census of 1920, was 5,904,489, estimated in 1928, 6,105,190. The population per square mile in 1928 was 38.5. Births averaged 102,803 annually from 1924 through 1928, and deaths, 72,926, leaving an annual excess of births of 29,897. During the same period emigrants averaged 12,387 annually and immigrants 5536. The bulk of the emigrants went to the United States. Cities with more than 100,000 inhabitants

in 1928 were Stockholm, 474,094, Goteborg, 235,994, and Malmo, 118,535.

EDUCATION. Elementary education is free and compulsory between the ages of 7 and 14. In 1927 there were in the elementary schools, 26,847 teachers and 600,096 pupils. In the same year there were 77 public secondary schools, with 27,899 pupils, 563 people's high schools with 3581 pupils, two high and seven elementary technical schools with about 2900 pupils, military, navigation, agricultural, veterinary, and other special schools. There are two universities.

PRODUCTION. About half of the population is engaged in agriculture and half in commerce and industry. In 1926, 9,254,000 acres, or 9.1 per cent of the total area, was under cultivation, 2,280,000 acres were permanent meadows, and 60,704,000 acres were devoted to forests and pasture land. The total value of field crops in 1928 was placed at 1,152,861,000 crowns (\$308,968,000), including wheat, \$25,174,000, oats, \$49,889,000, potatoes, \$30,231,000, hay, \$89,561,000. The area and production of the chief crops was: Wheat, 575,000 acres, 19,470,000 bushels, rye, 686,000 and 17,161,000, barley, 273,000 and 9,572,000, oats, 1,810,000 and 87,516,000, mixed grain, 555,000 acres and 474,000 metric tons, potatoes, 337,000 acres and 65,884,000 bushels, sugar beets, 105,000 acres and 1,024,000 metric tons, beet sugar, 161,000 metric tons, hay, 3,336,000 acres and 4,793,000 metric tons, forage roots, 209,000 acres and 2,895,000 metric tons. Most crops showed a marked improvement over 1927.

Swedish industry and commerce maintained a high level of activity during 1929 and the latter part of 1928, after strikes in the iron, wood-pulp, and paper industries in the first half of 1928 had slowed up production. In 1929, railroad car loadings, shipping, bank clearings, foreign trade, employment, industrial output, and building activity all reached the highest levels since the World War. The mining industry in Sweden has been important for centuries. The annual production of Lapidary iron ore averaged 7,000,000 tons, at which rate it would require more than 150 years to exhaust the known deposits. Another rich mining area in the Skellefte River region in Sweden proper was being developed in 1929, the ores containing gold, silver, copper, arsenic, zinc, lead, and copper pyrites. A smelting plant for the treatment of the ore was under construction at Rönnskär, on the Gulf of Bothnia. Besides the iron and steel industry, shipbuilding, and the production of machinery, wood pulp and paper, lumber, and matches are the leading industries.

The 1928 output of major industrial products included: Pig iron, 396,092 metric tons, steel ingots, 576,170 metric tons, cement, 468,000 metric tons, rough lumber, 208,224,000 cubic feet, planed lumber, 57,000,000 cubic feet, wood pulp, 1,631,000 metric tons, cardboard and paper, 580,000 tons, flour-mill products, 607,000 tons, matches, 48,700 tons. Yugoslavia, Latvia, Estonia, Hungary, and Rumania were added in 1928 to the countries in which the Swedish Match Trust has secured a monopoly for the sale of matches through the extension of long-term loans to the respective countries. The production of electrical energy in 1928 increased from 3,517,000,000 kilowatt-hours in 1924 to 4,410,000,000 in 1928. Of the 1928 total, 1,541,000,000 kilowatt-hours were produced by government power stations and 346,000,000 by municipal stations.

COMMERCE The volume of foreign trade in 1929 was the highest since 1920. The value of exports, according to preliminary figures, totaled 1,808,000,000 crowns, as compared with 1,575,000,000 crowns in 1928, while imports increased to 1,772,000,000 crowns, as compared with 1,708,000,000 crowns in 1928. The estimated favorable balance of trade was 30,000,000 crowns, or about 4,000,000 crowns higher than in 1927, when the export surplus was unusually large.

FINANCE For the fiscal year ending June 30, 1930, the budget as approved by the Riksdag (Parliament) balanced at 779,509,000 crowns, as compared with the closed account for 1928-29 totaling 808,200,000 crowns. The approved budget for 1928-29 balanced at 744,740,000 crowns, including ordinary receipts of 689,608,000 crowns, extraordinary receipts of 55,078,000 crowns, ordinary expenditures of 658,525,000 crowns, and extraordinary expenditures of 86,221,000 crowns. There was a net surplus of 10,000,000 crowns as a result of financial operations of the government in 1927-28, and accordingly income and property taxes were considerably reduced in 1928-29.

The total public debt as of Jan. 1, 1929, stood at 1,836,900,000 crowns (\$492,289,000), 80 per cent of which was held in Sweden. At the end of 1929 the national debt amounted to 1,799,000,000 crowns, a reduction of 37,000,000 crowns during the year. Average exchange value of the krona, or crown, was \$0.2680 in 1928 and \$0.2878 in 1929.

COMMUNICATIONS At the end of 1928 there were 10,378 miles of railway line, of which 4015 miles were state owned and 6363 miles privately owned. In 1927, all railroads carried 66,313,000 passengers and 41,161,000 metric tons of freight, earning gross receipts of 344,062,000 crowns, (\$92,243,000). Planes of the civil air lines in 1928 flew 208,854 miles, carrying 14,948 passengers and 233,361 pounds of mail and goods. In 1929 there was a decided increase in the use of air lines. There were 13,140 miles of government-owned telegraph line and 1,028,554 miles of government-owned telephone wire in 1927. The merchant marine on June 30, 1928, consisted of 1383 vessels of 1,447,470 gross tons capacity. A total of 29,092 vessels of 15,894,000 net registered tons entered and 30,049 vessels of 15,989,000 tons cleared Swedish ports during 1928.

GOVERNMENT Executive power is vested in the King, who acts through a responsible ministry known as the Council of State, at the head of which is the Minister of State, or Premier. Legislative power rests in a Diet (Riksdag) of two chambers, of which the Upper has 150 members elected by the legislatures of the provinces, the Lower Chamber consists of 230 members elected for four years by universal suffrage. King Gustaf V was born June 16, 1858, and ascended the throne on the death of his father, Oscar II, Dec. 8, 1927. The cabinet (Conservative) appointed Oct. 2, 1928, was constituted as follows: Premier, Admiral Lindman; Foreign Affairs, Ernst Trygger; Justice, Georg Bismark; Defence, Harald Malmberg; Social Affairs, Sven Lubeck; Communications, Theodor Borell; Finance, Nils Wohlin; Education and Ecclesiastical Affairs, Claes Landskog; Agriculture, J. B. Johansson; Commerce, Vilhelm Lundvik; Ministers without Portfolio, August Beskow and Nils Vult von Steyern.

HISTORY. Interest in Swedish affairs during 1929 centred in the difficulties of the Lindman

Ministry, whose policies repeatedly brought it into conflict with a majority of the Riksdag. The question of providing state aid for the depositors of a number of savings banks which closed in the Spring caused the defeat of the cabinet in June. Only the weakness of the Social Democratic party, which lost ground in the elections in the Fall of 1928, prevented the formation of a new ministry. As it was, the Lindman cabinet was obliged to dismiss Minister of Finance Wohlin, to whose vacillating policy the failure of the banks was attributed by the Opposition. He was replaced by P. A. Dahl. Other problems which disturbed the political calm during the year were in some respects identical with the issues confronting the American Congress. They included farm relief, regulation of the liquor traffic, religious instruction in the schools, and military preparedness.

The debate over the bank failures was marked by a threat against the throne by Opposition deputies. When the cabinet affirmed its confidence in M. Wohlin following its defeat upon the bank issue, a Liberal deputy declared that if the King retained a government repudiated by the Riksdag "the people of Sweden would say the last word, no matter what happens." Relief of the depositors on a much larger scale than contemplated by the government was finally provided for by the Riksdag. The favorable action of the Minister for Ecclesiastical Affairs upon a petition requesting the reintroduction into the schools of the system of religious instruction in effect previous to 1927, precipitated another storm which had not been dissipated at the close of the year. The Left groups in the Riksdag overruled the Conservative parties in their demand for increased agricultural tariffs, particularly on sugar. The agitation for the further reduction of military expenses, strengthened by recent steps in that direction taken by Denmark (see DENMARK, under *History*), resulted in the refusal of the Budget Commission of the Riksdag to accept an increase of about 4,000,000 crowns in the military budget demanded by the government. An indirect proposal for the abolition of land and naval armaments was rejected by both houses of the Riksdag, however.

An event which furthered amicable relations between Sweden and Norway was the wedding of Crown Prince Olaf of Norway and Princess Martha, daughter of Prince Carl and niece of King Gustaf of Sweden, in Oslo on March 21. Other developments during the year were the ratification of the Kellogg-Briand Pact and of an all-inclusive arbitration treaty with France, a split in the Swedish Communist party, with the majority of the Communists rejecting the authority of the executive committee of the Third International at Moscow, the consummation of an agreement governing production and foreign sales of the Swedish, Norwegian, and Finnish pulp and paper industries, and the establishment of closer relations with the Baltic republics of Lithuania, Latvia, and Estonia, evidenced by visits to Sweden of the Latvian and Estonian Presidents and a return visit to both countries by King Gustaf.

SWEDENBORGIANS. See NEW JERUSALEM, CHURCH OF THE.

SWEDISH LITERATURE. See SCANDINAVIAN LITERATURE.

SWIMMING. The American swimmers continued in 1929 to break world, national, col-

legiate, and scholastic records. Forty-seven new standards for men and women were established in the A. A. U. competition, with Eleanor Holm of the Women's Swimming Association of New York City heading the list with six new marks for back stroke and medley swimming to her credit. George Kojac, swimming for the Boys' Club of New York City, led the men with five international dorsal records. The New York Athletic Club and the Women's Swimming Association attained the highest aggregate tallies for the national A. A. U. indoor and outdoor senior championships, winning respectively, 55 and 76 points. The victory of the W. S. A. was more impressive as the points scored by the star, Martha Norelius, were forfeited because of a technical violation of the A. A. U. code. Miss Norelius then turned professional and won the \$10,000 prize in the Wrigley marathon at Toronto in September. Two other champions dropped their amateur status, Johnny Weissmuller and Ethel Lackie, and Weissmuller's loss was reflected in the scarcity of individual free-style records for men shattered. Walter Laner of Chicago, contributed the only new mark, 1:25 for 150 yards in a 75-foot pool.

Lauer and Miss Albina Osipowich, of Worcester, Mass., were the year's rating sprinters. The former returned the fastest times for 100 yards and 220 yards when he won the national fixtures in 0 51% and 2 12% in a 75-foot pool. Miss Osipowich brought down the international long-course standards for 100 meters, and 220 yards to 1 09% and 2 41%. The former mark for the 100 meters also was equaled or bettered during the year by the Misses Eleanor Garrati, of San Rafael, Monte Morgan of San Francisco, and Helene Madison of Seattle.

Other swimmers who featured the year with excellent performances were Clarence Crabbe of Honolulu, Miss Josephine McKim of Balboa, Canal Zone, Raymond Ruddy of the New York A. C., George Kojac, Miss Ethel McGary of the Women's S. A., Walter Spence of Philadelphia, Miss Agnes Geaghty, of the W. S. A. Michigan University swimmers reaped the lion's share of the laurels at the national collegiate championships held in March, no Yale men taking part, and the swimming team titles of the Eastern, Conference, and Pacific Coast Leagues were captured respectively by Yale, Northwestern, and Stanford, and the water polo honors by Yale, Illinois, and Stanford. Walter Medvell of Evander Childs High School of New York City, Fred Basset of De Witt Clinton High and the lads from Highland Park High School of Detroit were the outstanding interscholastic stars of the year.

SWINE. See LIVESTOCK

SWITZERLAND. A federated republic in the centre of Europe, bounded by Germany on the north, France on the west, Italy on the south, and Austria on the east. Capital, Berne.

AREA AND POPULATION. The area of Switzerland is 15,940 square miles, population, according to the census of 1920, 3,880,320, estimated in 1928, 4,018,000. In 1927 the estimated population of the principal cities was as follows: Zurich, 215,400; Basel, 141,650; Geneva, 126,700; Berne, 109,020. Births during the years 1924 to 1928 averaged 71,466 annually and deaths, 48,116, the excess of births being 23,348. German is the language of 70.9 per cent of the people, French of 21.2 per cent, Italian of 6.2 per cent, and

Romansch of 1.1 per cent. Dialects of the various languages spoken in Switzerland are numerous.

EDUCATION. School attendance is compulsory from 6 to 15 years of age. According to the school statistics for 1926-27, there were 4408 primary schools, with 16,818 teachers and 482,686 pupils, 599 secondary schools, with 25,250 boys and 24,034 girls, and 2353 teachers, 101 lower middle schools with 8413 boys and 6120 girls, and 826 teachers. The seven universities of Switzerland, at Basel, Zurich, Berne, Geneva, Lausanne, Fribourg, and Neuchatel, are organized on the model of those of Germany. In 1927-28 the total number of students in attendance at these universities was 6550 and the members of the teaching staffs numbered 988.

PRODUCTION. In 1926 there were in Switzerland 1,250,000 acres of arable land, or about 12 per cent of the total area, 4,143,000 acres of permanent meadow and pasture, 36,000 acres of trees, shrubs, and bushes, 2,225,000 acres of forests, 247,000 acres of uncultivated land, and 2,301,000 acres of unproductive land. In the same year there were 1,587,000 cattle, 635,000 swine, 169,000 sheep, 287,000 goats, and 139,000 horses. Dairying and cattle raising are the principal agricultural occupations.

In 1928 the total value of agricultural and livestock production was 1,460,180,000 francs (\$282,386,000), as compared with 1,395,400,000 (\$268,760,000) in 1927. The area and production of the leading crops in 1928 were as follows: Wheat (including mixed grains and spelt), 174,000 acres and 5,963,000 bushels, rye, 49,000 acres and 1,705,000 bushels, barley, 16,000 and 565,000, oats, 51,000 and 2,880,000, potatoes, 118,000 and 25,279,000, grapevines, 35,000 acres and 17,435,000 gallons of wine. Good crops in 1928 and 1929, together with Federal subsidies, improved the condition of the farmers, but the large crops resulted in price declines toward the end of 1929. In 1927 butter production totaled 28,660,000 pounds and cheese 144,600,000 pounds.

Mining in Switzerland is confined to the production of salt, iron ore, and manganese ore. There are numerous industries, the number of factories in 1927 being 8163. Machinery, textiles, watches, chemicals, aluminum, chocolate and other foodstuffs are the principal products. Industrial and commercial conditions were highly favorable in 1928 and 1929. The number of registered unemployed workers at the end of 1928 was only 10,668. There were 360,350 persons employed in manufacturing industries in 1927 and the motive machinery had 1,338,797 horse power.

COMMERCE. Total Swiss imports in 1929 were valued at 2,783,848,000 francs, and exports at 2,134,436,000 francs, as compared with imports of 2,653,734,000 francs and exports of 2,114,234,000 francs in 1928. The adverse trade balance increased to 649,412,000 francs from 539,500,000 francs in 1928.

Imports from the United States in 1929 totaled 291,179,000 francs, as against 243,859,000 francs in 1928, or an increase of 19 per cent, while imports from Germany increased 12 per cent and those from the United Kingdom declined by 35 per cent. Swiss exports to the United States in 1929 amounted to 207,506,000 francs, or 6 per cent more than in 1928, exports to France gained by 16 per cent and those to Germany and

the United Kingdom declined by 8 and 7 per cent, respectively.

FINANCE The first surplus in administrative accounts since 1913 was provided for in the Federal budget for 1929, which estimated revenues at 352,800,000 francs and expenditures at 350,800,000 francs. Both figures represented substantial increases over the comparative figures of 322,200,000 francs and 331,500,000 francs in the estimates for 1928. The cumulative net deficit of the Federal government was estimated in 1929 at 1,435,700,000 francs, a reduction of 30,100,000 francs during the year. The net deficit would be less, except for the fact that after 1926 the income from customs revenue on tobacco was applied to the accumulation of a special fund for social insurance, which had reached 60,000,000 francs at the end of 1928.

In the 1929 budget most of the expense items showed only slight increases, but subventions were increased by about 10,000,000 francs, including 4,800,000 francs for the relief of agriculture and 3,300,000 francs for work on water courses and similar improvements. Heavier duties on barley, malt, beer, and automobiles and a much higher return from stamp taxes were expected to more than offset the 10,000,000-franc increase in the expenditure budget over the budget for 1928.

The Federal budget for 1930 estimated an increase in expenditures over 1929 of 32,000,000 francs, but receipts were expected to provide a small surplus. After 20 years of successive deficits, the combined cantonal accounts for 1928 showed a surplus, with only two cantons recording a deficit. The total general debt at the end of 1927 was 2,184,142,000 francs (\$421,539,000), of which 2,059,933,000 francs represented the funded debt. The funded railway debt, which was separate, amounted to 2,675,975,000 francs (\$516,463,000) and the floating railway debt to 53,903,000 francs (\$10,403,000), making a total general and railway debt of 4,914,020,000 francs (\$948,405,000). The unit of currency is the Swiss franc, with a par value of \$0.1930 in United States currency.

COMMUNICATIONS There were about 3374 miles of railway line in Switzerland in 1928, of which 1828 miles were owned and operated by the Federal government. In 1928 the Federal Railways earned gross revenues of 420,100,000 francs (about \$84,020,000), as compared with operating expenses of 268,500,000 francs (about \$53,700,000), and carried 120,000,000 passengers and 19,000,000 metric tons of freight. About 67 per cent of the Federal system was electrified. In 1927 there were 21,920 miles of telegraph wire and 642,649 miles of telephone wire.

GOVERNMENT Both executive and legislative powers are vested in the Parliament of two chambers, the Council of State and the National Council, the first having 44 members elected by the cantons, two for each canton, the second has 198 members elected directly by the people. The two chambers united form the Federal Assembly, which is the supreme organ of government and exercises the chief executive authority to the exclusion of the cantons, whose seven members are elected for three years. The seven members of the Federal Council act as ministers for the departments of the government. The chief magistrates are the President of the Confederation and the Vice President of the Council, and are elected by the Federal Assembly for one year. President in 1929,

Dr. Robert Haab, Vice President of the Council, Karl Schleurer.

HISTORY Jean Marie Musy, a lawyer of Fribourg, was elected President of Switzerland for 1930 by the Federal Assembly on Dec. 12, 1929, receiving a majority of 89 votes. The election of a President causes little interest in the country, as his power is restricted to one vote in the Federal Council for one year. A bill to permit local option in regulating the sale of hard liquor was overwhelmingly defeated in all of the 24 Swiss cantons at a plebiscite on May 12. Communist demonstrations and disorders engaged the attention of the police on several occasions during the year. Forces of Federal and cantonal troops were concentrated in Basel on March 24 to preserve order during anti-Fascist demonstrations made by Communists. There were 26 arrests.

SYMPHONY ORCHESTRA. See Music

SYPHILIS. Of extreme interest is the result of a follow-up to the present time of more than 2000 syphilitic subjects who received no specific treatment of their disease in the Copenhagen Clinic for Skin and Venereal diseases during 1891-1910. These patients were therefore as good as untreated and only such syphilitics as were actually suffering from their disease were given the regulation mercury and iodide of potassium. The number of cases which could be traced to 1927 was 471 and of this number 164 were dead with a record of 40 autopsies, in but 10 of which were there evidences of syphilis. The number investigated clinically was 307, of whom 228 had been infected from 10 to 40 years previously. Of this number, 157 seemed in perfect health and only 39 gave a positive Wassermann. But 13 known cases of paresis developed in the entire 2181 patients, thus apparently discrediting the claim that paresis is due largely to insufficient treatment. Locomotor ataxia developed in 1.28 per cent of the 471 patients followed up. Aortitis and other affections of the blood vessels were comparatively common or at least 17.5 per cent of all patients clinically investigated presented them. Early neurosyphilis bore no relationship to paresis and tabes, and the patients with the latter affections showed skin eruptions. Nearly every modern claim seems to have been refuted by the above figures.

NEW DATA ON CONGENITAL SYPHILIS. Professor Erich Hoffman of Bonn, one of the great authorities on syphilis, read a paper on the congenital form before the German Dermatological Society on August 10 (see *Munchener medizinische Wochenschrift*, September 6, p. 1531) in which he showed the errors in some of our former conceptions of the disease. The virus of the disease does not attack the germ plasma of the fetus and cause physical degeneracy, but the spirochetes pass through the placenta from the mother to the fetus and thus the latter does not become infected until a certain definite period of development. Early abortion does not occur more frequently among syphilitic than any other group of mothers. It is only in the latter half of pregnancy that miscarriage, premature birth, and stillbirth point to the likelihood of syphilis. If the placenta in such cases is heavier than usual, there is additional cause for suspicion. Superinfection can occur and the child may show evidences both of congenital and acquired syphilis. For diagnosis, we must look for spirochetes in the umbilical cord, in artificial blisters, etc., must take a Wassermann, and a radio-

gram of the bones. After pregnancy is certain, we must first try to sterilize the mother and repeat the measures in the latter half of gestation, and finally give the newborn intensive treatment with salvasan and bismuth.

SERODIAGNOSIS Dr E Castens of Bremen City Hospital discusses very thoroughly the Kahn or American method of diagnosis of syphilis, contrasting it chiefly with the Wassermann. It is of course an accepted fact that some syphilitics will react negatively, even to the most delicate and dependable tests. No test should ever be depended on to the exclusion of all others, but cases arise in which the Wassermann techniques cannot be carried out owing to the exigencies of the occasion and in these exceptional cases we may feel justified in employing the Kahn test alone. The latter is superior to all of the numerous flocculation tests which have been introduced during the past twenty years and as a rule whenever we are in doubt as to the outcome of the Wassermann, the Kahn test should decide the matter, making allowance for the few cases which do not respond to any test. The author has made over 3000 blood tests in which both reactions were tested, the majority being in persons free from syphilis. About 1 per cent of this large group gave a weakly positive reaction, that is, a false diagnosis of syphilis. In the group of known syphilitics, the Kahn test was shown to be more dependable than the Wassermann although both failed to disclose the presence of the disease in some cases and the Kahn test was sometimes positive when syphilis was later shown to be absent.

SYRACUSE UNIVERSITY A non-sectarian institution of higher learning for men and women in Syracuse, N. Y., founded in 1870. The 1929 autumn enrollment was 5471, the extension-school enrollment was 2283, and the summer-session enrollment was 1765. The faculty numbered about 525 for the year 1928-29. The productive funds of the university amounted to \$3,648,821, while the income for the year was \$1,916,829. The library contained 186,000 volumes and more than 75,000 pamphlets. Chancellor, Charles Wesley Flint, D.D., J.L.D.

SYRIA Traditionally, the region lying between the Syrian Desert and the Euphrates River on the east and the Mediterranean on the west, and between the Taurus Mountains in the north and Egypt on the south. Formerly a province of the Turkish Empire, it was in 1920 recognized as an independent state under a mandatory power, the mandate being bestowed upon France. Capital, Damascus.

Syria, under the mandate, is bounded by the Mediterranean on the west, by Palestine and Trans-Jordan on the south, by Iraq on the east, and by Turkey on the north. Since Jan. 1, 1925, the country has comprised four territories: the Syrian Republic, Greater Lebanon, and the territories of the Almonites and of the Jebel Druze. The total area of the mandated region has been placed at 60,000 square miles, and the population in 1926 at 2,046,857, mostly Arabic-speaking, and of the Sunnite Mohammedan faith. The chief towns are Damascus, 170,000; Aleppo, 140,000; Beirut, 80,000; Homs, 60,000; Hama, 35,000. There were in 1927, 552 public elementary schools with 38,873 pupils.

Production The bulk of the population of Syria is engaged in agriculture and livestock breeding, the total area under crops being about

7719 square miles. Wheat, barley, maize, olives, fruit, silk cocoons, cotton, sesame, and tobacco are the principal crops, while hemp, sugar cane, chick-peas, lentils, and beans are also raised. Drought and damage from locusts reduced the crop yields in 1928 below those for 1927, the cereal crop being only one-fourth of the normal consumption. The cotton crop was estimated at 1200 metric tons, and the yield of silk cocoons at 3350 metric tons. Growing exports of wool indicate the importance of sheep raising. Iron and lignite are the only minerals mined on a commercial scale, although there are indications of petroleum, phosphates, lead, copper, antimony, nickel, and chrome. Gypsum is widely distributed. The small-scale industries produce mainly flour, oil, soap, silk thread, wine, and tobacco products. The textile and tanning industries are gradually developing.

Commerce The value of imports in 1928 increased slightly to \$51,782,000 from \$50,308,000 in 1927, while the value of exports declined to \$20,960,000 from \$21,486,000 in the previous year, leaving an adverse balance of trade of \$30,802,000, as compared with \$28,822,000 in 1927. The large unfavorable balance is partly offset by remittances from abroad, tourist expenditures, transit revenue and the outlays of foreign philanthropic institutions.

Finance According to preliminary returns for 1928, receipts totaled 21,639,000 Syrian-Lebanese paper pounds (\$16,943,300) and expenditures 18,177,000 (\$14,232,600). The estimated receipts and expenditures for the year 1928 balanced at 19,021,300 Syrian-Lebanese paper pounds (\$14,893,700). In the 1929 budget, receipts and expenditures were calculated to balance at 19,253,030 Syrian-Lebanese paper pounds (\$15,075,100). For the Syrian Republic alone, preliminary figures for 1928 showed receipts for \$9,356,800 and expenditures of \$7,790,800. The estimated 1929 budget balanced at \$8,816,200. A new Syrian silver currency, intended to replace the Syrian-Lebanese paper piaster notes, was decreed by the French High Commissioner in May, 1929.

Communications In 1928 there were about 500 miles of railway in Syria, 2240 miles of macadam highways, and 2754 miles of dirt and gravel roads. The use of motor transport was rapidly extending, particularly over the trans-desert route from Beirut to Bagdad. In 1928, 918 steam and 2859 sailing vessels of 1,923,593 aggregate tons visited Syrian ports.

Government Executive power is vested in the French High Commissioner, although the five territories exercise a certain amount of autonomy. A provisional government of the Syrian Republic was formed at Damascus in February, 1928, and a new constitution was submitted to France for approval. The capital of the Lebanese Republic, also known as Greater Lebanon, is Beirut. High Commissioner in 1929, Henri Ponsot, appointed Oct. 12, 1926.

History The attempt to reconcile Syrian nationalism with French imperialism in the proposed new constitution for the Syrian Republic continued unsuccessful throughout 1929. The constitution, as drafted by the Constituent Assembly, provided for the establishment of an independent and sovereign republic, with full control of foreign affairs, finance, police, and the army. It was proposed that after the constitution became effective, Syria would make a treaty with France defining the supervisory jurisdiction of the latter

country as the mandatory power. The French High Commissioner refused to approve the constitution in this form, however, and in January, 1929, proposed the insertion of reservations continuing France's control of Syrian foreign relations, public security, and defense. His suggestion was in turn rejected by the Assembly and on February 5 M. Ponsot ordered the adjournment of the Assembly *sine die*. Minor points of friction between the Syrian Nationalists and the High Commissioner were the decisions to transfer the Syrian parts of the Hejaz Railway to a French Company, and the establishment of the Bank of Syria as a French corporation. The Nationalists also insisted upon the inclusion in the constitution of a clause reserving the right of protest against the present boundaries of the country. The French asserted that the Mandates Commission of the League of Nations would not accept this proposal. Toward the end of 1929 there was a revival of the proposal sponsored by a number of leading sheiks for establishing a monarchical form of government.

The Assembly of Greater Lebanon on March 27 reelected Charles Debbas as President for a three-year term. Soon afterward the French High Commissioner decreed radical changes in the Lebanese constitution, increasing the term of the President to six years and greatly augmenting his powers. As parliamentary government in the Republic had become largely the tool of selfish personal interests, there was little protest against the change on the part of the people. The election of new members to the Lebanese Assembly in June was attended by bloodshed and evidence of bribery.

In the same month another decree of the High Commissioner set up a ministry in the Jebel Druse, with Frenchmen in the positions of responsibility. The apparent intent was to separate the region from the remainder of Syria.

TACNA-ARICA DISPUTE. See CHILE, under *History*. **ARBITRATION**, INTERNATIONAL.

TADZHIKISTAN. An autonomous Soviet republic in Central Asia, which, in October, 1929, became a constituent member of the Union of Socialist Soviet Republics. Occupying in part the high Pamir plateau to the north of the Hindu Kush Mountain range, it is bounded by Afghanistan on the south, China on the east, and Uzbekistan and Feighana on the west and north. The area is estimated at 52,110 square miles and the population at 824,000, most of whom are Mohammedans. Capital, Stalinsk, formerly known as Dyushambe, or Bushambey. The western part of Tadzhikistan supplies the Soviet Union with a large part of its cotton, the crop in 1929 being double that of pre-war times. Agriculture and the raising of livestock are the chief occupations of the people. The silk industry is developing. Gold, oil, and coal are produced by primitive methods. In 1929 a railroad was being constructed to link the capital with the Soviet Railway system, and an air line was in operation between Stalinsk and Tashkent. See RUSSIA and EARTHQUAKES.

TAFT, CHARLES PHELPS. An American editor, died Dec. 31, 1929, in Cincinnati, Ohio, where he was born Dec. 21, 1843. He was graduated from Yale in 1864, and he also studied at Berlin and Paris. Admitted to the Ohio bar in 1866, he practiced law in Cincinnati from 1869 to 1879. In that year he bought controlling interest in the Cincinnati *Times*, which the following year he consolidated with the *Star* and he edited the

Times-Star until his death. In 1871 he became a member of the Ohio House of Representatives. In 1895-97 he was a member of Congress from the first Ohio district, in 1904 he was presidential elector-at-large from Ohio, and in 1908 delegate-at-large from Ohio to the Republican National Convention. Mr. Taft was the half brother of William Howard Taft, former President of the United States and Chief Justice of the Supreme Court of the United States.

TAGGART, THOMAS. An American politician, died Mar. 6, 1929, in Indianapolis, Ind. He was born in County Monaghan, Ireland, Nov. 17, 1856, and was brought to America by his parents in 1861, settling first at Xenia, Ohio. In 1872 he went to Indianapolis and after working at a lunch counter established a small hotel, later becoming proprietor of the Grand Hotel at Indianapolis, and acquiring a major interest in the resort hotel at French Lick Springs, Ind. A Democrat, he entered politics in 1886 as the successful candidate for auditor of Marion Co., Ind., an office lucrative in fees and usually held by a Republican. This spectacular victory marked the beginning of his long leadership of the Democratic party in Indiana. He was reelected to the auditorship of Marion County in 1890, served as mayor of Indianapolis from 1895 to 1901, and was appointed to the U. S. Senate in 1916 to fill the vacancy caused by the death of Senator Shively. He was chairman of the Democratic State Committee of Indiana in 1892-94, district chairman of the 7th Congressional District for 12 years, and a member of the Democratic National Committee from Indiana from 1900 to 1916 (chairman in 1904-08).

TAHITI. See OCEANIA, FRENCH ESTABLISHMENTS IN.

TAIWAN, U'wan'. Official Japanese name for Formosa. See FORMOSA.

TALKING PICTURES. See MOVING PICTURES.

TANAKA, BARON GI-ICHI. A Japanese statesman and former army officer, died Sept. 29, 1929. He was born in 1863 at Yamaguchi. In 1886 he was a sub-lieutenant in the Japanese army, and was graduated from the Staff College in 1898. From 1910 to 1913, he was director of the Military Affairs Bureau, and in 1913 he was dispatched abroad. He was given the rank of lieutenant-general and vice chief of the General Staff of the Japanese army in 1915. In 1920 he was created a baron and made a general in the army, from which he retired the following year. Baron Tanaka became, in 1925, leader of the Seiyukai party, which represents landowner interests. As head of that party, having previously served in the cabinet as Minister of War, he became Prime Minister and Minister of Foreign Affairs in April, 1927. With his cabinet, he resigned the Premiership in July of 1929, but retained leadership of the Seiyukai, at that time the leading Opposition party.

TANGANYIKA (tan'gan-yē'ka) **TERRITORY.** A territory under British mandate, comprising the portion of German East Africa assigned to Great Britain after the conquest of the country by British and Belgian soldiers during the World War. Area, about 373,500 square miles. The native population (mainly of mixed Bantu race) was estimated at 4,885,000 in 1928 (4,107,000 at census of 1921), Europeans numbered 5300 (2447 in 1921), and Asiatics, 24,000 (14,991). Capital, Dar-es-Salaam, with a population

of 25,000. The capital and Tanga are the chief seaports.

The forest resources of Tanganyika in 1927 were given at a total of 2,713,700 acres. Of this figure, 2,564,700 acres were reserved forest, 114,000 unreserved. The chief agricultural products are cereals, coffee, manioc, peas and beans, groundnuts, oil products, sweet potatoes and other vegetables, fruits (chiefly bananas), and coffee. Sisal and cotton production also are important industries. The output of cotton in the 1927-28 season was estimated at 6,330,000 pounds. The principal minerals are coal, gold, mica, graphite, iron and copper ores, cobalt, and nickel, and are largely undeveloped. The imports in 1928 were valued at £3,737,000; domestic exports, £3,817,000. Revenue in 1927-28 totaled £1,904,107 and expenditures, £1,707,186. The estimates for 1928-29 were Revenue, £1,842,490, expenditure, £1,832,828.

The head of the administration is a governor, who is aided by a nominated executive council. Since Oct. 1, 1926, there has been a legislative council consisting of 13 official members and not more than 10 non-official members. Governor and Commander-in-Chief in 1929, D. J. Jardine, appointed January, 1929. See KENYA.

TANTEUXENITE. See MINERALOGY.

TARIFFS. See LEAGUE OF NATIONS, also under UNITED STATES.

TASMANIA. A state of the Australian Commonwealth, consisting of the island of that name and several small islands. Area, including the island of Macquarie (170 square miles) 26,211 square miles. Population, according to the census of 1921, 213,780, estimated on June 30, 1929, 212,512. In 1928, there were 4601 births, 2132 deaths, and an excess of 1858 emigrants over immigrants, making a net increase of 701. Capital, Hobart, with a population including suburbs (Jan. 1, 1929), of 56,896. The population of Launceston, including suburbs, in 1928, was 28,400.

The net value of " " and pastoral products in 1926-27 was £4,811,000, of manufactures, £3,593,000, and of mining products (1928), £1,404,448. Direct overseas imports in 1928-29 were valued at £1,767,395 and exports at £2,705,976. Total imports (1926-27), £9,406,273, total exports, £9,437,371. Wool, minerals, fruit, timber, grain, potatoes, hops, bark, and hides and skins are the principal exports. Revenue (1927-28), £2,962,687, expenditure, £2,867,605, public debt (June 30, 1929), \$116,625,000. In 1928-29 there was a budget deficit of \$475,000. The total registered shipping in 1927 was 178 vessels of 13,115 tons. In 1929 there were 654 miles of government-owned railway lines open to traffic.

The administration is under a governor, who acts through a responsible ministry, and the legislative power is vested in a Parliament of two Houses, the Legislative Council of 18 members, elected on the basis of property qualification, and the House of Assembly of 30 members, elected for three years by universal suffrage, including women, and with proportional representation. Governor in 1929, Sir James O'Grady, Prime Minister and Treasurer, J. C. McPhee.

TAUBMANN, OTTO A German composer, died in Berlin, July 5, 1929. He was born in Hamburg, Mar. 8, 1859. Abandoning a commercial career, he entered the Dresden Conservatory, where his teachers were Willner, Nicodé, and Rischbieter. During 1886-89 he was director of

the Conservatory in Wiesbaden, in 1891-92, opera conductor in Petrograd, and during 1892-95 conductor of the Capellenverein in Ludwigshafen. He then settled in Berlin as musical critic for the *Borsen-Courier* and professor of composition at the Staatliche Hochschule für Musik. The sensational success of *Eine deutsche Messe* at its Berlin performance, in 1910, won him general recognition as one of the foremost composers of great choral works. His other compositions in this field are *Tauwetter*, *Rangerweise*, *Siegmar und Helga*, *Kampf und Friede*, and *Psalm XIII*. He wrote also male choruses, *Symphony in A minor*, and an opera, *Portia* (Frankfort, 1916).

TAXATION. Important changes were made during the years 1928-29 in State legislation, as well as alterations, either actual or prospective, in Federal tax legislation, which may be regarded as of fundamental importance. State legislatures were in session in 1929 to the number of 43, and not only were alterations of importance made in law, but there was apparent indication that legislative bodies were likely to go considerably further in changing taxation in the early future than has been true in the past. Perhaps the outstanding event which sustains this general opinion was the fact that large appropriations were made by several States, and provisions for investigation and discussion on a less extensive scale were undertaken in several others, with a view to elaborate analysis of tax problems in the future. In addition, important changes of tax administration were made by several, among them the creation of a Board of Assessment and Review in Iowa holding office six years, and consisting of three members, and the establishment of a separate tax department in Kansas, while in Nebraska and Oregon, segregation and broadening of tax powers of administration were arranged. For moreover other administrative modifications of relatively minor nature have been undertaken in a number of States.

Important changes of taxation were made in several European countries, but no material progress has been effected toward international action designed to relieve double taxation along promised lines, although here and there individual States have taken preliminary steps in that direction.

STATE INCOME TAXES. New income tax laws were passed by Arkansas, Georgia, and Tennessee, the latter two States making the experiment for the first time. For the fourth time Oregon passed an income tax law, which was to be subjected to popular referendum. The Arkansas tax runs from 1 to 5 per cent on incomes ranging from \$3000 to \$25,000 and provision is made for the reduction of the general property tax rate by one-tenth of one mill for every \$60,000 income furnished by the income tax. The Georgia income tax has fixed rates, which are to be one-third of Federal income tax rates, while a gross income tax is imposed upon business varying according to the kind of business undertaken. In Kansas a constitutional amendment was before the voters, and if passed would authorize an income tax. In North Dakota, nonresidents were to be subjected to the same income tax as residents. The special Massachusetts Committee on Taxation, recommended important income tax changes. But these were held unconstitutional by the State. However, the State provided that those who became residents of Massachusetts were liable

to income tax in proportion to the number of months of the fiscal year of which they have been so resident. New York raised exemptions to \$2500 for individuals, and \$4000 for married persons. Taxes have been imposed by California upon the income of banks, and corporations and on intangibles, which although described as bank taxes, are really income taxes.

STATE INHERITANCE TAXES Inheritance tax changes were partly . . . during 1929 and were found in . . . Washington, North Carolina, Idaho, and West Virginia. In the first two of these States, rates were reduced, and in the last three they were increased. A revision of income "brackets" was made in West Virginia.

Complete revision of inheritance taxes, took place in Connecticut, Maryland, and Rhode Island. The new Connecticut law substantially follows the plan recommended by the National Tax Association. Reciprocity of tax relationships was materially extended during 1929 taking in 14 additional States, Arkansas, Idaho, Indiana, Iowa, Michigan, Missouri, New Mexico, North Carolina, South Carolina, Texas, Washington, West Virginia, Wisconsin, and Wyoming. During the year, the States of Iowa, Maryland, Michigan, and Nebraska, provided for taking advantage of the Federal income tax inheritance credit. Exemption from inheritance taxation in the case of insurance policy proceeds, has been provided in Colorado and Pennsylvania.

STATE CONSTITUTIONAL AMENDMENTS Reference already has been made to one or two constitutional amendments, affecting income taxation, but in addition, some important decisions were rendered. The United States Supreme Court in *Macaulum Co. v. Commonwealth of Massachusetts*, held invalid the Massachusetts statute levying an excise tax on corporations, the amount to be measured by all sums of interest received, including interest from tax-exempt securities. The court in *Flint v. Stone-Tracy* also permitted the measuring of the excise tax on banks, by including income from tax-exempt securities. This was thought to open the question whether the present income tax is unconstitutional as in its application to banks. Constitutional amendments permitting the classification of incomes were pending in North Carolina and Washington.

SPECIAL TAXES Among the special taxes which were widely under discussion during the year 1929, were those on transportation. Rates of taxation on motor vehicles were reduced in Vermont, Connecticut, and Oregon, while Maine and Wyoming levied a new excise tax similar to that of Massachusetts. South Dakota imposed a new 3 per cent tax, based on original purchase price. A constitutional amendment was imposed in Florida to eliminate the ad valorem tax on automobiles. Montana changed the basis of registration on pleasure cars from horse power to weight. Nebraska exempted fees on farm trucks in excess of \$8. Twenty-one States increased the gasoline tax, and New York has imposed it for the first time. The Massachusetts tax on gasoline, passed in 1928, went into operation Jan. 1, 1929, the Illinois tax on Aug. 1, 1929. Difficulty in collecting the tax was experienced in most States, and the expense of collection was increased. Taxes on motor busses were increased by a number of States, and in . . . were placed under the supervision . . . Service Commission, with a tax ranging from one-fourth to

three-quarters of one cent per mile travel. In Oregon, the \$4 per passenger tax on commercial carriers, outside of municipalities was repealed. The New Jersey excise tax on motor busses operating under interstate commerce was held unconstitutional. Arkansas imposed a tax of \$5 on automobiles sold in the State.

DIRECT TAXATION In Vermont the poll tax was increased from \$1 per head to \$2.50, while in Oregon, a flat direct rate of \$5 per acre, and a yield tax of 12½ per cent was imposed on forest land. In Idaho, the Forestry law, exempting a forest tract for a period of ten years, from taxation, was repealed, while in new reforestation districts, a rate of \$1 per acre was imposed, and when timber is cut a tax is laid of 12½ per cent of market value.

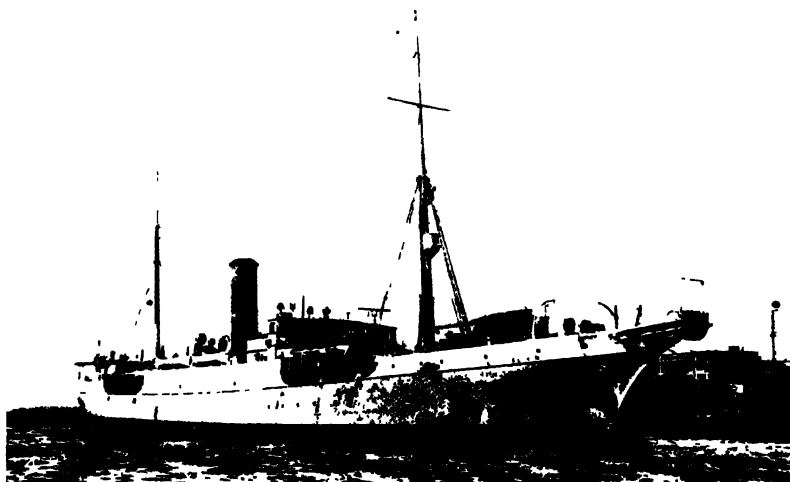
STATE TAX COMMISSIONS Reference already has been made to changes in Tax Administration, and to provisions for further investigation of the tax situation. A few words, however, as to the result of tax commission work may be added. New Jersey in 1928 appointed a special body to investigate the taxation of tangible personal property, but it did not report, and it was given another year in which to complete its work. In Iowa, a tax commission was directed to ascertain what would be done to eliminate the direct property tax, and another in Kansas was appointed to codify the State tax law.

FEDERAL TAX RECEIPTS During the year 1929 Federal receipts were (ordinary) \$4,033,250,225 as against \$4,042,348,156 in 1928, while expenditures were in 1929, \$3,848,463,190, as against expenditures in 1928 of \$3,643,519,875. Income tax receipts included in the foregoing, were \$2,331,000,000 as against \$2,174,000,000 in 1928, while miscellaneous internal revenue was \$621,000,000, as against \$607,000,000. Proceeds from government-owned securities, other than foreign obligations, were \$22,500,000, or \$151,000,000 smaller than in the preceding year.

Corporation taxes, which had been inclined to suffer a year earlier, were helped by the large corporate earnings accompanying a year of general prosperity. Income taxes paid by individuals were enlarged by stock market profits, which gave rise to large payments to the government and particularly tended to increase the number of high income recipients. The following table shows the distribution of revenue from income tax, as between corporations and individuals during the past two years as compared with earlier periods.

	Corporation Per cent	Individual Per cent
1922	47	53
1927	58	42
1928	59	41
1929	55	45

The same factors which had tended to keep corporation returns at a relatively high level in 1927 and 1928, were still operative in 1929, but the effect of large market and other profits in enhancing individual incomes made the change of proportion as compared with 1922 less extreme and less obvious than before. It was also a notable fact, as in former years, that a large number of corporations had no net income subject to taxation. The . . . of such reports in 1928 had been 45 and in 1929 it was 40, the reduction being the outcome of a year of exceptional prosperity in business. Inspection of the



Courtesy, Western Union Telegraph Company

- 1 Transatlantic Cable Repeater Station at Hammels, Long Island N. Y.
- 2 Buoy to Which Loose End of Cable is Attached
- 3 Tuxes Cutting Grapple Left—Open Position Right—Closed Position
- 4 Cable Repair Ship, "Lord Kelvin," Used to Pick up and Repair Transatlantic Cables Broken in November 1929

SUBMARINE TELEGRAPHY

detailed returns by classes of income, however, shows the tendency of the smaller corporations to decline, relatively, in income. The figures were somewhat distorted in 1927 and 1929 by the introduction of a new classification of "inactive corporations" which reported "no net income" and hence were formerly classed with the active corporations reporting no net income. Including them, the percentage without net income would be 45.

Concentration of income taxes paid by individuals continued, the figures for 1929 showing that of 4,050,959 returns, 1,574,091 were completely exempted as non-taxable, while 1,539,918 paid \$11,516,489 out of a total tax of \$1,142,250,780. It thus appears that 3,113,000 out of 4,050,000 or 76.5 per cent income-reporting recipients paid about 1 per cent of the entire tax, the other one-quarter or so of the recipients paying 99 per cent of the government's receipts. Numerically, there was no reason to change former estimates that from 98 to 99 per cent of all income recipients in the country were relieved of Federal income taxation entirely. This trend toward a high concentration and highly preferential quality in Federal income taxation, still further was enhanced by the Congressional Act of December, 1929, in which fresh reductions in taxes on incomes under \$5000 were made, the higher brackets, however, remaining unchanged.

For further information, see *FINANCE* and consult *Bulletins National Tax Association*, especially vol. XIV, "Review of Tax Legislation 1929."

TAXES. See PUBLIC FINANCE, TAXATION

TAXONOMY. See ZOOLOGY

TEACHERS' COLLEGES. See EDUCATION IN THE UNITED STATES, UNIVERSITIES AND COLLEGES

TEACHING. See EDUCATION IN THE UNITED STATES; UNIVERSITIES AND COLLEGES

TELEGRAPHY. By the end of 1929 the telegraph companies of the United States had installed 6000 new printing telegraph systems on the telegraph lines and 3000 on the telephone lines, so that 75 per cent of the messages of the Western Union Telegraph Company were sent by printing telegraphs. The messages are received either on a tape which is cut and pasted on blanks, or in the form of printed pages. These devices send at the rate of 368 characters per minute and are mostly of the start-stop systems. The telegraph systems in 1929 were using 60,000 miles of copper wire, of which about 10,000 were installed during the year.

The Western Union showed an increase of business of about \$5,000,000, or 4 per cent, while the International Telephone and Telegraph Company had grown so that its assets were \$390,000,000, and its earnings were at the rate of about \$100,000,000 per year. This company had grown so rapidly by the acquisition of other organizations that a comparison of its earnings from year to year had no meaning.

The new transatlantic cable of the Western Union Company, which was constructed with "Mu" metal instead of permalloy, showed impressive results as it could operate at a speed of more than 2000 letters per minute. The Western Union also opened its direct cable to Berlin.

The cable companies were encouraging the use of their facilities by offering special rates for messages sent outside of rush hours; thus one

can send a "week-end" cable of 100 words from New York to London for \$3, and special off-peak messages to Manila at the rate of \$140 for 10 words.

On November 18 a violent undersea earthquake off the New England Coast interrupted 10 of the 21 transatlantic cables, and the companies had some hurried and most difficult work in repairing them. It appeared that many of these cables had been covered for hundreds of miles by earth as a result of a landslide, and the cable repair ships had a most difficult time in raising the cables when found. It required months to repair all of them.

A notable repair undertaking was in connection with the high-speed cable of the Western Union Company laid in 1926. This was broken in two places 956 miles from Hammels, L. I., and 327 miles from Bay Roberts, N. F. By means of resistance measurement with the galvanometer the break in the cable was placed approximately and the cable repair ship, aided by the Sonic depth finder and other instruments, was able to determine on the ocean floor the position of the failure. A Lucas deep-sea cutting grapple was dropped to the bottom and dragged at right angles to the cable until it was hooked. The cable was cut and the end brought to the surface where it was attached to a buoy to mark the spot and the other end of the cable and the breaks were located. New cable was spliced at these points, and eventually communication was restored.

In December the Western Union started actual work on the installation of the new high-speed stock ticker which was designed to print 500 characters per minute and was to cost \$4,500,000 to install.

TEL. EL-AMARNA. See ARCHAEOLOGY

TELEPHONY. Estimates compiled shortly before the end of 1929 indicate that, on December 31, there were about 20,250,000 telephones in service in the United States, connected by more than 75,000,000 miles of telephone wire. About 4,350,000, or considerably more than 20 per cent of the total, were dial telephones. Telephone plant and facilities in the United States represented an investment at that date of approximately \$4,200,000,000. The operating telephone companies in the United States at the end of the year had more than 425,000 employees. The Bell Telephone Laboratories, Inc., employed 5600 persons in the furtherance of scientific research covering all phases of electrical communication for the development of the telephone art.

Telephone traffic showed a further increase during 1929, with an average of about 82,000,000 completed conversations per day, of which approximately 3,400,000 were toll conversations.

The use of the telephone for long-distance calls had been substantially stimulated by successive reductions in rates and improvement in the speed and quality of the service. Four substantial decreases in toll and long-distance telephone rates had been made in the United States during three and a half years. The third of these reductions became effective Feb. 1, 1929, and represented an estimated annual saving to the public of \$5,000,000. A fourth reduction, which was to take effect on Jan. 1, 1930, indicated an annual saving to American telephone users of an additional \$5,000,000. The speed of service had been improved by the completion at the end of 1929 of about 95 per cent of all toll and

long-distance calls, while the person making the call remained at the telephone, as against 90 per cent completed in this way at the beginning of 1928, and 70 per cent so handled in the year 1928.

The range of telephone service available to the American public was further extended during 1929 to include Luxemburg, Belfast in North-eirn Ireland, Dublin in the Irish Free State, the Isle of Man, Milan, Turin, and Genoa in Italy, all of Czechoslovakia (where only Prague had been reached before) and all of Austria (where service had theretofore been limited to Vienna). The transatlantic radio telephone at the end of 1929 connected the United States, Cuba, Ontario, Quebec, and important cities elsewhere in Canada and in Mexico, with practically all of western Europe and with one point in Africa—Centa, Spanish Morocco. Approximately 29,450,000 telephones, about 85 per cent of all the telephones in the world, could be reached from any Bell System telephone. The transatlantic service, which had previously been available only during certain hours, was placed on a 24-hour basis on Sept. 10, 1929. The long-wave and short-wave transatlantic radio-telephone channels, which were placed in operation in 1927 and 1928, respectively, were supplemented by two additional short-wave circuits opened during 1929, and radio-telephone service between the United States and Argentina was planned for early in 1930.

In December, 1929, ship-to-shore telephone service which had previously been only experimental, was opened for public use between the United States and the steamship *Leviathan*, the largest vessel flying the American flag, for such periods as the ship may be within range.

Two-way telephone communication between an ordinary Bell telephone and a flying airplane also was demonstrated during the year, but this remained on an experimental basis. The use of the telephone typewriter in the transmission of weather reports and other information along the routes of commercial airways was further extended in 1929.

Long-distance telephone lines continued to play an important part in the linking of radio stations for chain broadcasting, notably on the occasion of President Hoover's inauguration. This service was supplemented by special telephotograph facilities which transmitted pictures of the President by wire to the eight strategic cities throughout the country at which telephotograph service is regularly maintained, whence they were rushed to newspapers in surrounding territories. Television in color was experimentally demonstrated during 1929 by the Bell Telephone Laboratories, but no commercial application of television had been made up to the end of the year.

TELESCOPES. See ASTRONOMY.

TELEVISION. See PHYSICS.

TEMPLE UNIVERSITY. An institution for the higher education of men and women in Philadelphia, Pa., founded in 1884. The 1929 autumn enrollment was 10,283. There were 669 members on the faculty. The income for the year totaled \$1,485,245. The library contained 47,874 volumes. In 1929 Unit 2 of Conwell Hall, a 12-story building, was completed at a cost of \$500,000, and construction was begun of a medical school building to cost more than \$1,000,000. President, Charles E. Beury, LL.D.

TENNESSEE. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,337,885. The estimated population on July 1, 1928, was 2,502,000. The capital is Nashville.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Corn	1929	2,944,000	73,600,000	\$67,712,000
	1928	2,915,000	66,842,000	56,842,000
Cotton	1929	1,120,000	515,000	42,488,000
	1928	1,107,000	428,000	38,520,000
Hay	1929	1,520,000	1,986,000	34,454,000
	1928	1,321,000	1,750,000	29,287,000
Tobacco	1929	139,300	102,664,000	17,761,000
	1928	109,600	80,775,000	17,124,000
Wheat	1929	405,000	3,645,000	4,811,000
	1928	422,000	3,714,000	5,311,000
Potatoes	1929	39,000	3,585,000	4,840,000
	1928	43,000	4,086,000	3,677,000
Sweet potatoes	1929	44,000	4,400,000 *	4,180,000
	1928	41,000	3,895,000	3,700,000
Oats	1929	197,000	3,546,000	2,199,000
	1928	188,000	4,042,000	2,425,000

* Bales Tons Pounds

MINERAL PRODUCTION. Of the many sources contributing to the mineral industry of the State, the mining of coal is the greatest. In 1927 the value of the year's yield of coal made up more than one-fourth of the value of the total mineral product. The quantity of coal mined fell slightly to 5,610,000 short tons for 1928, from 5,783,367 tons for 1927. The value of coal mined in 1928 was \$9,694,000; of that mined in 1927, \$10,645,000. A relatively small part of the coal mined went into the making of coke, which, however, was on the increase. There was some return to the former predominance of the beehive system of coking in 1928. Coke production for 1928 was to the quantity of 113,134 short tons in by-product ovens and 145,000 tons in beehive ovens, the latter's product thus prevailing, as against 122,312 tons of by-product and 104,808 of beehive coke for 1927. The by-product coke of 1928 had a value of \$606,938, the beehive coke of that year, an approximate value of \$750,000. The value of the coke produced in 1927 was by-product, \$612,000, beehive, \$536,821. The manufacture of Portland cement was active in 1928, the shipments of the factories rising to 4,634,280 barrels, from 4,343,337 barrels for 1927; in value, the shipments of 1928 reached \$6,322,213, being less than that of 1927, which attained \$6,580,732. Clay products declined to \$3,728,380 for 1927, from \$5,105,827 for 1926. In the production of metals, iron held a minor but fairly stable position. There were mined in 1928, 128,478 long tons of iron ore, of which the value was \$286,524, as against 121,220 tons mined in 1927, valued at \$274,020. Shipments of pig iron from blast furnaces rose to 102,718 long tons for 1928, from 87,971 tons for 1927; in value, to \$1,920,901 for 1928, from \$1,911,380 for 1927. The two copper smelters in Tennessee, which handled ores not wholly of origin within the State, reported a marked increase of yield for 1928 over 1927, in 1927 the copper mined in Tennessee attained the quantity of 14,940,596 pounds and the value of \$1,957,217. The production of zinc was 10,400 short tons, or \$1,331,200, for 1927. The production of lime was estimated at 181,000 short tons for 1928, not far from the 181,385 tons of 1927; in value, \$1,113,000 (estimated) for 1928 and \$1,266,326

for 1927 Exclusive of pig iron and certain duplications, the value of the mineral product of the State was \$37,874,981 for 1927, \$39,296,668 for 1926

FINANCE State expenditures in the year ended June 30, 1928, as reported by the Federal Department of Commerce, were for maintenance and operation of governmental departments, \$20,356,372 (of which \$5,437,255 was aid to local education); for interest on debt, \$1,012,938, for permanent improvements, \$14,211,954; total, \$36,081,264 (of which \$19,605,820 was for highways, \$6,781,328 being for maintenance and \$12,824,492 for construction) Revenues were \$30,425,319 Of these, property and special taxes formed 15.5 per cent, departmental earnings and sums earned through the services of officers, 7.9, sales of licenses and taxation of gasoline, 47.2 Taxable property was valued at \$1,811,561,313, State taxes levied thereon totaled \$3,623,123 Funded State debt was \$22,371,026, gross and net

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 4007.54 There were built, in 1929, 2.50 miles of additional first track

MANUFACTURES According to the biennial Federal Census of Manufactures published by the U. S. Department of Commerce in 1929 and dealing with operations of 1927, there were in the State, in 1927, 2098 manufacturing establishments These employed 114,968 wage earners, whose wages for the year totaled \$101,197,846 Materials and supplies used in production cost \$351,436,325 Manufactured products combined attained the value of \$614,040,524

EDUCATION Appropriations of the Legislative session of 1929 for schools were \$9,969,341 for the ensuing two year period and exceeded by more than \$1,500,000 the receipts from corresponding appropriations during the biennium preceding The number of persons of school age in 1928 was estimated as 601,407 They were actually enrolled in the public schools of the State in that year, however, 676,421 pupils Of these, 610,914 were in elementary, and 65,477 in high-school grades The expenditures for 1928 for public-school education totaled \$24,501,171 Salaries of teachers in the public schools of Tennessee averaged \$827 a year

CHARITIES AND CORRECTIONS The administration of the State institutions of care and custody is under the authority of the Department of State Institutions, which also includes the Welfare Division, occupied with the supervision of child-caring and maternity homes, county institutions, almshouses, jails, and workhouses

LEGISLATION The sixty-sixth General Assembly of the State held a regular biennial session of 75 days, adjourning April 14 It passed appropriations to the total of \$31,518,639 It failed, however, to pass a necessary revenue bill and to abolish the State property levy in consonance with Governor Horton's previous pledge, leaving these matters to a later special session It provided for an extension of the State highway building programme by authorizing the issue of so called short-term notes to the total of \$25,000,000 for that purpose The note issue was designed to maintain the tradition of building highways out of income, while at the same time providing resources for more rapid construction than the immediate revenues would allow. A sinking fund for meeting the notes was provided in a separate

measure Both bills were to become law without submission to a referendum. A bond issue of \$1,000,000 was authorized for the purpose of improvements at the Tennessee Polytechnic Institute at Cookeville The State cigarette tax was increased and an income tax was adopted This, however, applied only to income derived from stocks and bonds not taxed ad valorem The rate of its levy was 5 per cent on such income In order to make the tax apply to securities generally, the Income-tax Act abolished the direct tax on notes, bonds, interest-bearing obligations, and certain classes of stock shares The legal department of the State was reorganized A recodification commission was created Malt and carbonic gas were subjected to special taxes The sales tax on gasoline was increased These increases and the new taxes were expected to raise the total yearly revenue by about \$4,700,000 All bus companies in Tennessee were made subject to the control of the Railroads and Public Utilities Commission and required to obtain of it certificates of convenience and necessity, the measure to this effect was passed over Governor Horton's veto

A special session called by Governor Horton passed in December measures authorizing the Highway Department to issue \$10,000,000 of short-term notes and to extend \$3,200,000 of notes maturing in 1930, so as to bring the resources of the department for highway work in 1930 up to \$35,000,000 Likewise, the session passed several measures to increase the tax revenue and avoid a State deficit, among these, the increase of the tax on cigarettes from 2 to 4 cents, and the increase of the tax on estates to the 80 per cent of the Federal inheritance tax that the Federal law undertook to return to States requiring it

POLITICAL AND OTHER EVENTS Tennessee, like North Carolina, was subject to considerable disorder and economic difficulty by reason of textile strikes in the course of the year Some 5000 workers of two rayon manufactories at Elizabethton started a strike in March, which lasted into September The National Guard was called out to protect the mills Two of the organizers were seized and driven out of town on April 4 In May, the strikers resorted to picketing to prevent the reopening of the plants, and some 250 of them were arrested on charges of intimidation The Elizabethton strike was organized by the United Textile Workers, affiliated with the American Federation of Labor

The State Income Tax Act of 1929 was declared unconstitutional on June 5 by a Chancery Court decision, but on appeal, the State Supreme Court reversed this decision and upheld the validity of the law with regard to its doing away with the ad valorem taxation of notes, bonds, and interest-bearing securities The State, however, found difficulty in selling short-term notes, required for keeping up its programme of highway construction until such time as the legislation of 1929 should begin to bring in revenue for carrying on construction upon the basis of current payment The State Public Utilities Commission settled a rivalry of interests seeking to develop hydroelectric power on the south fork of the Holston River by granting on June 17 a permit to the American Cyanamid Company to proceed with a \$35,000,000 project. A municipal airport was opened at Memphis on June 14. The annexation of four suburbs by Chattanooga, voted in

March, added an estimated 28,000 to the population of the city.

OFFICERS Governor, Henry H. Horton, Treasurer, John F. Nolen, Comptroller, Edgar J. Graham, Secretary of State, Ernest Haston; Auditor, P. H. Williams, Attorney-General, L. D. Smith, Commissioner of Education, P. L. Harned

JUDICIARY Supreme Court Chief Justice, Grafton Green; Associate Justices, A. W. Chambers, Colin P. McKinney, W. H. Swiggert, William L. Cook

TENNESSEE, UNIVERSITY of A State institution of higher education, nonsectarian and coeducational, in Knoxville, with colleges of medicine and dentistry and schools of pharmacy and nursing in Memphis, and a junior college in Martin, founded in 1794. The total enrollment was 5024 students in 1929. The faculty numbered 413. The endowment funds of the university amounted to \$426,755, the income for the year 1928-29 was \$2,436,236. There were 103,442 bound volumes in the libraries. President, Harcourt A. Morgan, LL.D.

TENNIS. The end of the year 1929 still found France leading the lawn tennis world in the men's classes, while the United States ruled the women's ranks, mainly because of the excellent play of Miss Helen Wills. France retained possession of the Davis Cup, emblematic of the world's title by defeating the United States 3 to 2 in July in Paris in the final challenge round. Henri Cochet was the star of the French victory, beating both William T. Tilden, 2nd, and George M. Lott, Jr., in the singles. Jean Borotra gave France the needed point of victory when he vanquished Lott in the other single match after having been downed by Lott on the first day of play. The other United States point came in the doubles when Wilmer Allison and John Van Ryn scored a notable and clean-cut triumph over Cochet and Borotra.

Cochet also won the all-England championship singles at Wimbledon in June, and Mrs. Maude Holcroft-Watson and Mrs. L. R. C. Michel won the Wimbledon women's doubles honors. Van Ryn and Allison brought the Wimbledon doubles title to the United States, and Miss Wills and Francis T. Hunter annexed the mixed doubles title there. None of the French aces competed in the quest for the national singles crown in September at Forest Hills, N. Y., and it was won for the seventh time by Tilden. The doubles title, contested at Boston, was garnered by a new combination, Lott and John Hope Doeg. Allison and Van Ryn, who had performed so brilliantly all season, were eliminated in an early round. Miss Betty Nuthall of England paired with Lott to capture the national mixed doubles crown.

René La Coste won the French championship defeating Borotra in the final, while Lacoste and Borotra conquered Cochet and Brugnon in the doubles event. The American girls made a clean sweep of the matches they played in, defeating England in the Wightman Cup contest 4 to 3. Miss Wills downed Miss Helen Jacobs, of Berkeley, California, in the final round of the Wimbledon singles, and won the United States championship by defeating Englishwoman, Mrs. Maude H. in the final.

Miss Sarah Palfrey, Boston schoolgirl, Frank Shields of New York, Gregory Mangin of Georgetown University, and W. Barry Wood, also of New York and Harvard all-around athlete, were

some of the younger players who gave exceptional promise as being able to contest with the French on even terms in a few years.

Jack Wright of Canada captured the Canadian singles title, Emmett Pare of Chicago, the national clay courts men's singles, Jean Borotra of France, the national indoor singles crown, Tilden and Hunter, the national indoor doubles title, Berkeley Bell, of the University of Texas, the intercollegiate championship, and Ben Gottchakoff and Arthur Kussman of Occidental, the intercollegiate doubles title.

Karel Kozeluh of Czechoslovakia captured the national professional singles tourney at Forest Hills in September, while he teamed with Vincent Richards, of the United States to take the doubles title. There was much talk of an "open" tournament being held in 1930, in which amateur players would not lose their status if they competed against the professionals.

TEXAS POPULATION According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 4,663,228. The estimated population on July 1, 1928, was 5,487,000. The capital is Austin.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Cotton	1929	17,879,000	3,950,000	\$116,000,000
	1928	17,741,000	5,106,000	416,775,000
Corn	1929	4,533,000	86,127,000	73,208,000
	1928	4,722,000	99,162,000	77,146,000
Wheat	1929	2,520,000	37,800,000	19,690,000
	1928	2,016,000	22,176,000	24,794,000
Grain sorghum	1929	2,760,000	46,920,000	32,844,000
	1928	2,760,000	69,000,000	41,400,000
Oats	1929	1,682,000	47,096,000	24,019,000
	1928	1,402,000	35,751,000	18,271,000
Hay	1929	899,000	990,000	12,552,000
	1928	856,000	941,000	11,891,000
Sweet potatoes	1929	104,000	7,884,000	7,753,000
	1928	109,000	8,284,000	8,284,000
Rice	1929	171,000	7,524,000	7,298,000
	1928	184,000	8,086,000	7,124,000
Potatoes	1929	31,000	2,393,000	3,590,000
	1928	39,000	2,690,000	2,690,000
Barley	1929	203,000	5,075,000	3,146,000
	1928	156,000	3,276,000	2,391,000

* Bales * Tons

MINERAL PRODUCTION. In spite of the adverse effect of heavy production on price evident in the petroleum industry in 1927, the State's yield of petroleum again increased in 1928, rising to 256,888,000 barrels for that year, from 217,389,000 barrels for 1927. The total value of the year's product of petroleum rose but slightly, to \$249,800,000 (estimated) for 1928, from \$248,550,000 for 1927. Next in magnitude, the production of natural gas, for 1927, the latest year for which this had been reported, attained the value of 254,063,000 M cubic feet and the value of \$424,800, for 1926 the quantity was 175,392,000 M feet and the value, \$28,165,000. Gasoline was made from natural gas to the quantity of 331,000,000 gallons in 1928 and of 320,723,000 in 1927, and to the value of \$22,905,000 in 1928 (estimated) and \$18,347,000 in 1927. The cement industry of the State shipped in 1928, 6,231,083 barrels of Portland cement, valued at \$10,938,646, in 1927, 5,692,350 and \$10,232,908. The production of gypsum was for 1927, 508,382 short tons, valued at \$4,003,450, for 1927, 533,150 and \$4,120,400. Coal production, which encountered the competi-

tion of cheap petroleum, fell off to 1,182,034 short tons for 1928, from 1,326,385 tons for 1927, for 1928 the value of the product was \$1,589,000 and for 1927 it was \$1,998,000.

Mines in Texas produced in 1929, in terms of recovered metals, some \$28,000 in gold, 1,050,000 ounces of silver, 1,000,000 pounds of lead, and 400,000 pounds of copper.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 16,771.05. There were built, in 1929, 158.82 miles of additional first track.

MANUFACTURES According to the biennial Federal Census of Manufactures published by the U. S. Department of Commerce in 1929 and dealing with operations of 1927, there were in the State, in 1927, 4005 manufacturing establishments. These employed 116,763 wage earners, whose wages for the year totaled \$130,408,661. Materials and supplies used in production cost \$842,927,286. Manufactured products combined attained the value of \$1,206,570,962.

EDUCATION The age for free-school education was extended to include those between the ages of 6 and 21 years, it had previously covered the period from 7 to 21. The central educational authority of the State was altered by the State Board of Education of nine appointive members, replacing the former board of ex-officio members. The Legislature appropriated \$2,000,000 as an equalization fund and \$400,000 a year to guarantee payment of tuition in high schools for students from rural districts. The number of persons of school age in the State in 1928 was given as 1,103,293. There were enrolled in the public schools, in the academic year 1927-28, 1,370,080 pupils. Of these, 587,783 were in common schools and 782,297, in independent district schools. Expenditures for public school education in the year 1926-27 totaled \$51,653,612. Salaries of teachers in 1927-28 averaged \$1010 a year, superintendents, supervisors, and principals included.

CHARITIES AND CORRECTIONS The State Board of Control, a statutory body created in 1925, manages some 17 institutions maintained by the State for the care of custody of individuals. The average total population of the inmates of these institutions for the year ending Aug. 31, 1928, was 12,987.

LEGISLATION Four consecutive sessions of the Forty-first Legislature were held. The first was the regular biennial session, convening in January. At its close on March 15, because of the failure of major bills, Governor Moody called a special session to convene on April 22. At its adjournment, and for like reason, he called a second special session, which met on June 3, a third special session met on July 2 and ended July 21. The enactments of the regular session included constitutional amendments to increase the bench of the State Supreme Court to nine members and to raise the salary of the governor to \$10,000 a year, both later defeated at a referendum. The statute governing marriage was amended so as to require that both intending parties to a marriage give written notice of intention at least three days before the issue of the marriage certificate and that the man furnish a satisfactory certificate of health from a physician. A bill, virtually to regulate membership in the Democratic party, by giving its executive committee power to determine the qualifications of all persons for voting in the Democratic pri-

maries, was passed, largely through the votes of the stalwarts who had condemned the "Hoover-crut" desertions of 1928, Governor Moody vetoed the measure.

The special-session legislation included enactment of an increase in the State tax on gasoline from 3 to 4 cents. An act for the relocation of the prisons was passed, it created a prison-centralization commission to work out a plan of a new and centralized system of prisons, to be submitted to the next Legislature. The maximum legal speed for motor vehicles was increased to 45 miles an hour. A measure designed to provide a means of enforcing payment from defaulting cities was enacted. Credit unions were placed under the supervision of the State Banking Department. State bank directors were required to possess at least \$1000 of their bank's capital stock. The cash surrender value of life-insurance policies was exempted from liability for debt. The benefits of the law protecting posted land were withdrawn from landowners charging in excess of 25 cents an acre for their hunting privileges.

POLITICAL AND OTHER EVENTS An approach to the settlement of the boundary dispute of Texas with Oklahoma, respecting the eastern border of the Panhandle, was made by the submission of a report on the subject, on July 15, by a commissioner appointed by the United States Supreme Court to survey the line. This report found a number of discrepancies in the existing line, as based on the 100th meridian and while granting some accession to Oklahoma at certain points, found for Texas to the extent of some 28,500 acres previously under the jurisdiction of Oklahoma.

An effort on the part of authorities at Laredo to arrest ex-President Calles of Mexico on his passage through the city at the beginning of December, on criminal charges connected with treatment of a Mexican insurgent at the border, brought a reprisal in the closing of the Mexican customs opposite Laredo, thus putting an end to the city's border trade. Dallas annexed the neighboring municipality of Lashon on July 12, thus adding an estimated 10,000 to its population.

The boom town of Borger, in Hutchinson County, continued to be the scene of lawlessness and was placed under State control by act of Governor Moody on September 29, after the murder of the district attorney. The mayor was arrested by Rangers and State troops took charge of the town. The discovery of petroleum near Van and West Saline, in western Texas in the course of the summer, brought into existence new boom towns at these places, with populations of several thousands each. A natural-gas field in Bee County, near Pettus, was discovered in May. Investigation by the State concerning the Buffalo Cave, near L., revealed that it led into an extensive system of caverns, possibly as great as the recently discovered Carlsbad caverns of New Mexico.

OFFICERS Governor, Dan Moody, Lieutenant-governor, Barry Miller, Secretary of State, Jane Y. McCallum, Treasurer, W. Gregory Hatcher, Comptroller, S. H. Terrell, Attorney-General, Claud Pollard (resigned and was succeeded by Robert Lee Bobbitt).

JUDICIARY Supreme Court, Chief Justice, C. M. Cuerton, Associate Justices, T. B. Greenwood, William Pierson.

TEXAS, UNIVERSITY OF A State institution of higher education in Austin, with a medical branch at Galveston and a college of mines and metallurgy at El Paso. For the autumn term of 1929, the enrollment totaled 6238 and for the summer session, 3449. There were 439 members on the faculty, an increase of seven over 1928. The endowment resources of the institution amounted to \$12,000,000 and the income from legislative appropriation, fees, and income from endowment was estimated at \$3,709,949. The library contained 419,499 volumes. President, Harry Yandell Benedict, Ph.D., LL.D.

TEXAS FEVER. See VETERINARY MEDICINE

TEXAS TECHNOLOGICAL COLLEGE. A State coeducational institution in Lubbock, Tex., opened in 1925. The enrollment for the summer session of 1929 was 1298 students and for the autumn of 1929, 2052 students. The faculty numbered 127 members. The appropriations for the year 1929-30 amounted to \$567,650. There were 20,000 volumes in the library. President, Paul Whitfield Horn, M.A., LL.D.

TEXTILE INDUSTRY. The American textile industry, during 1929 was marked by a greater consumption of wool than in any year since 1923. Cotton consumption, on the other hand, though greater than in 1928, was less than in 1927, the year of greatest previous consumption. There was a larger consumption of silk in 1929 than in any previous year, while the rayon industry showed a continued growth. These leading industries are discussed under their respective heads elsewhere in the YEAR BOOK.

NEW MILL CONSTRUCTION. According to the *Textile World* (New York) in an annual review, 550 concerns in the United States erected, enlarged, or improved their plants in 1929, as compared with 533 in 1928. The largest construction was of knitting mills, which numbered 194. These were followed by 162 cotton mills, 74 woolen and worsted mills, 52 silk mills, 18 rayon mills, and 50 dyehouses and finishing plants. Pennsylvania led all the other States, with 99 mills built or enlarged during the year. North Carolina was next with 87 mills, New Jersey with 45, Massachusetts with 43, South Carolina with 37, New York with 30, Georgia with 20, Alabama, Rhode Island, and Tennessee with 21, Virginia with 18, Connecticut with 12, Wisconsin with 10, Maine and Ohio with 5 each, Indiana, Mississippi, Texas, and Washington with 3 each, California, Illinois, Maine, Michigan, and New Hampshire with 2 each, and Arkansas, Iowa, Kansas, Oregon, and West Virginia with 1 each.

Knitting-mill construction in 1929 remained about on a par with the previous 12 months. In Pennsylvania 57 knitting establishments were built or expanded, in North Carolina, 35, in New York, 18, in Tennessee, 13, in Massachusetts, 10; in New Jersey, 8, in Alabama, 6, in Georgia and Wisconsin, 5 each, in Virginia, 4, in Maryland, 3, and in California, Indiana, Michigan, Iowa, New Hampshire, Ohio, Oregon, South Carolina, and Washington, 1 each. Cotton-mill construction, on the other hand, showed an appreciable gain over 1928, especially in the South. North Carolina led with 40 new plants, units, and improvements, being followed by South Carolina with 32, Georgia with 19, Alabama with 14, Massachusetts with 13, and Pennsylvania with 12.

Among the woolen mills erected and enlarged during the year were 18 in Massachusetts, 12 in

Pennsylvania, 6 in New Jersey, 5 each in Wisconsin and Connecticut, 4 in Virginia, and from 1 to 3 each in Illinois, Indiana, Maine, New Hampshire, New York, North Carolina, Ohio, South Carolina, Tennessee, and Washington. Silk-mill construction fell off somewhat during 1929, while the increased expansion in the manufacture of rayon led to the erection or improvement of 18 plants. Pennsylvania showed the largest increase in silk-mill construction with 13 mills built or expanded. New York and New Jersey had 5 mills each; Connecticut, North Carolina, and Virginia, 4 each, Massachusetts, 2, and Rhode Island and Tennessee, 1 each. Virginia ranked highest in rayon-mill construction with 4 mills. New York, North Carolina, Ohio, and Pennsylvania reported 2 mills each, and Georgia, Maryland, Rhode Island, and West Virginia 1 each.

TEXTILE LABOR DIFFICULTIES. See STRIKES AND LOCKOUTS

TEXTILE MANUFACTURING. See COTTON

THEATRE. Theatre seasons do not run by the calendar in that each completed year sees both the months of one season and the opening of another adding records to its achievements, with the hot-weather hiatus dividing them.

The division was a bit more conspicuous in 1929 than usual because the concluding months of the 1928-29 season found the American theatre at a particularly low ebb in fortune and popularity, which the opening months of the 1929-30 season helped in considerable degree to correct.

Thus a reference to the records goes to show that although it was in January, 1929, that Elmer Rice's vivid drama, *Street Scene*, was produced, later to be awarded the Pulitzer Prize as being "the original American play performed in New York that shall best represent the educational value and power of the stage," but there were also produced that same month no less than twenty-two plays that failed of popular success and critical endorsement. Twenty-two failures out of twenty-six plays produced.

There was one other palpable hit, the Schwall and De Silva musical comedy, *Follow Thru*, a quasi-success won by a smartly sophisticated satire by H. N. Behrman called *Serena Blandish*, and a second musical comedy, *Lady Fingers*, adapted from Owen Davis's farce comedy, *Easy Come, Easy Go*, by the comedian, Eddie Buzzell, for his own use, which managed to hold on for 132 performances.

Yet not all the plays that failed that first month of 1929 were as impossible as entertainment as the statement might seem to indicate. One of them, for instance, was *The Guinea Pig*, written by the Preston Sturges who was later to win the following season's palm with *Strictly Dishonorable*. Another was the play *Vermont*. A. E. Thomas's honest but theatrical study of what the bootleg industry was doing to character in upper New England. It was Mr. Thomas's hope and belief that in this play he had exposed the effect of rum running and bribery on the type of American citizens, but there was no audience-response to *Vermont* and it lasted but 14 performances.

It was in January also that Maxwell Anderson's *Gypsy* was produced to meet a divided reception in the press, later to spurt promisingly



Photo by Vandamm, New York

"TOURNEY'S END"

COLIN KATH JOHNSON AS CAPTAIN STANHOPE AND JACK
HAWKINS AS SECOND LIEUTENANT HIEBERT



Photo by Moutime, Oghes, New York

"THE KINGDOM OF GOD"

ETHEL BARRYMORE AS SISTER GRACIA

TWO PLAYS OF 1920

toward success only to falter finally and be retired after 40-odd performances. During half of these, the heroine died in expiation of having lived a muddled life, while during the other half she was permitted to live and continue her pursuit of a happiness that should mean serenity and contentment to her. Having been cursed with a gypsy heart she was one who moved from husband to lover, and on to other lovers, with high motives but a weak will.

Another failure of this particular period was that of a comedy written by Lewis Beach who gave considerable promise some years back, first with a one-act play called *The Clod* and later with a " " " " drama called *The Goose Hangs High*, earliest younger-generation studies and a success of its season. The new Beach play was called *Merry Andrew* and detailed amusingly the unhappiness of a small-town druggist who is affectionately forced by a doting family to give up business in his early old age. He all but dies of boredom, drives everybody frantic in their effort to keep him interested, and is finally made happy again when his wife and daughter secretly buy back his old drug-store business for him. Despite excellent performances by Walter Connelly and Effie Shannon, the comedy was withdrawn after a few weeks.

It was experiences such as these that gave the producers pause. When plays had what play reviewers were pleased to speak of as popular story values, were well cast and well played, and still could arouse little or no interest, the showmen were free to confess that something must indeed be happening.

Blanche Yurka started February with a revival of Ibsen's *Hedda Gabler*, following her previous Ibsen success with *The Wild Duck*. Earl Carroll, having recovered from one thing and another, came forward with an elaborately produced music play called *Fioretta*, which he and his backers hoped would do something toward replacing a demand for jazz scores with one for music of a little better quality. Two newcomers, George Bagby and G. Romilly, wrote the music for *Fioretta* to a libretto furnished by Mr. Carroll, and the cast was studded with the names of Leon Erroll, Fannie Brice, Lionel Atwill, and other stage celebrities. The piece held on for 111 performances but was generally accepted as a sort of overstuffed failure.

The Theatre Guild, having enjoyed an unprecedented and quite unexpected success with Eugene O'Neill's nine-act *Strange Intruder* the season before, approached the production of the same author's *Dynamo* with high hope. *Dynamo*, it was explained, was to be the first of a dramatic trilogy that might, the playwright thought, clarify man's thought in his search for a satisfying religion and an understandable God. The play seemed to have a contrary effect, serving to muddle more completely such convictions as its audiences had acquired. A struggle primarily between a fundamentalist father and a son who becomes an atheist, it ended with the son's declared acceptance of electricity as the great generative force of the world.

Dynamo struggled hopelessly against a rising tide of controversy and attack, and when so many of the Theatre Guild subscribers as were interested had been taken care of in the first six weeks' run, it was withdrawn, a costly but interesting failure.

Rachel Crothers, who had not been particularly

active of recent months, came forward about this time with a social comedy called *Let Us Be Gay*, fashioned along the lines happily followed by Philip Barry with *Holdon*. Her story of a divorced pair who meet at a house party, neither knowing the other is to be there and the fact of their marriage unknown to the other guests, pleased the smart crowd and played through the season and the succeeding summer at the Little Theatre.

Mary Ellis, having deserted opera for good following her first success in *Rose Marie* and her later dramatic successes co-featured with Basil Sydney, appeared again with Mr. Sydney in a fluffy but amusing A. A. Milne comedy, *Meet the Prince*. The Ellis-Sydney popularity and a modest pay roll carried the comedy through 96 performances. Then the stars called it a season, got married and went to Europe on a honeymoon.

From this point on the season meandered a little disgustedly toward its close. There was an interesting experiment at the Provincetown Playhouse in Greenwich Village which brought forth a new playwright, Virgil Geddes, and an interesting first play, *The Earth Between*. Aarons and Freedley produced a piece called *Spring Is Here*, which boasted the first musical comedy book ever written by Owen Davis, dramatist and one-time Pulitzer Prize winner with the drama *Icebound*, and someone thought it would be amusing to revive Dion Boucicault's *The Octoroon*, which it was, even though it did not pay.

And then, on the 22d of March, Gilbert Miller and Maurice Browne produced *Journey's End* at the Henry Miller Theatre. Suddenly, out of a muddled sky, there sprang a revived interest in the living theatre. The humming typewriters of discouraged critics of the drama sang the praises of the new play. Crowds again besieged a box office (or the nearest broker) and all was again well along the Rialto. At least for a short distance along the Rialto.

A few weeks later, as the newly awakened interest began again to subside, another play of English authorship, John Drinkwater's comedy farce, *Bird in Hand*, was brought over and this, too, caught the fancy of the crowd and was a cheering adventure.

Mrs. Fiske revived Harry James Smith's *Miss Bumpsted-Leigh* successfully, Jane Cowl won what might graciously be termed a *success d'estime* with a revival of the Stephen Phillips *Paolo and Francesca*, Sir Guy Standing appearing as the Giovanni and Philip Merivale as Paolo, and the Theatre Guild suffered a failure with a slightly dated younger-generation play written by Bruce Gould and Beatrice Blackmar and called *Man's Estate*. A few weeks later the Guild partly recovered a slipping prestige with the production of *Camel Through the Needle's Eye*, a Philip Moeller dramatization of the Hungarian original written by Frantisek Langer.

But there was nothing much to arouse the cheering section of the theatre's defenders in any of these events. Not yet in Ethel Barrymore's addition of Zoe Akim's adaptation of Lili Hutvany's *The Love Duel* to her earlier production of Sieria's *The Kingdom of God* as a second foundation stone in the repertory she hoped to establish. A goodly number of the intelligent minority (who unfortunately go mostly on passes) were properly thrilled by an actors' revival of Anton Chekhov's *The Sea Gull*, which had not

previously been done in English in America. Leo Bulgakov directed the revival and it was probably because of its success at special matinees that Eva Le Gallienne decided to make the play a feature of her following season at the Civic Repertory Theatre.

Early in May, Walter Hartwig directed the annual Little Theatre Tournament in which twenty amateur and semi-professional groups contest through the week for the honor of winning four cash prizes, a banner, and a small cup known as the Belasco trophy. The tournament this year was held in the Waldorf Theatre and attracted more than the usual attention. There were no foreign entrants, as there had been the two previous years (The Androssan and Saltcoats Players of Saltcoat, Scotland, won in 1928 and the Welwyn Garden City Players of Welwyn Garden City, England, in 1927.) But competing troupes were sent from as far west as Denver and as far south as St. Augustine, Fla.

At the conclusion of the tournament, prizes were awarded the Gardens Players of Forest Hills Gardens, L. I.; the Guild Play Shop of Denver, Colo.; the Anniston Little Theatre of Anniston, Ala.; and the Sunnyside Playhouse of Sunnyside, L. I., the Belasco trophy going to the Forest Hills group for its competent revival of James M. Barrie's *Shall We Join the Ladies?*

The first half of the theatre year was then brought to a close in early June by the Players' club revival of Langdon Mitchell's *Rocky Sharp*, one of those annual all-star affairs that stimulate the interest of older playgoers, the blood pressure of the older players, and the interest of so many of the younger group as are drafted for the performance. This particular revival enlisted in principal rôles the services of Mary Ellis and Basil Sydney, Patricia Collinge, Cecilia Loftus, Ida Mülle, James T. Powers, Donald Brian, Fraser Coulter, A. G. Andrews, Bruce Burnside, the artist, and literally hundreds of others.

In early July, on the night of the 1st to be specific, Earl Carroll produced a revue called *Earl Carroll's Sketch Book*, to distinguish it, no doubt, from his *Vanities* of other years.

On July 2, Florenz Ziegfeld, who was indulging another period of abandoning an annual *Follies* production, produced a musical comedy called *Show Girl*, at his opera house in Sixth Avenue. It proved the first Ziegfeld money failure in five years, partly because it was too expensively staged and cast—the principals including the favorite night-club trio, Clayton, Jackson, and Durante, and Ruby Keeler Jolson—and partly because it was not particularly enlivening entertainment. The experts found this a little difficult to explain, saying that the book from which it was taken by William Anthony McGuire was written by J. P. McEvoy and that George Gershwin was responsible for the score.

David Belasco struck oil in August. He had suffered the worst defeat of his recent career when *Alma* and Lenore Ulric cost him financial losses of some \$250,000, the season before. Now he produced a funny little comedy called *A Wise Child*, written by a practically unknown playwright, Laurence E. Johnson, and scored an overnight success with it. John Murray Anderson, coming back to play production from years devoted to a school for acting and the training of units for moving-picture houses, offered a revue called *Almanack* to considerable printed applause but not to consistent profits.

The last week in August, George Cohan may be said to have definitely opened the new season with a production of his own melodrama called *Gambling*. Both Mr. Cohan, who returned to the stage to play the principal part—that of a gambling man who runs down the murderer of his adopted daughter, and meets romance on the way—and his play were acclaimed and ran on through the holidays. Arthur Hammerstein, representing another of the leading American stage families, followed Mr. Cohan's lead with the production of a musical comedy of the better and bigger variety called *Sweet Adeline*. This one, written by Oscar Hammerstein 2d, staged by Reginald Hammerstein, and boasting a score by Jerome Kern, began in a beer garden in Holoken back in the nineties, and came no farther forward than 1906.

Now the new plays began to pile in quite as though periods of depression in the theatre were unknown. There were thirty-three plays newly produced or revived in repertory in September, thirty-four more in October and an additional thirty-four in November. Miss Le Gallienne added Chekhov's *The Sea Gull* to the Civic Repertory Theatre plays on September 16, thus getting things started in Fourteenth Street, and the *Sea Gull* hit uptown was a comedy by Preston Sturges called *Strictly Dishonorable*. It was Sturges' second play, his *The Gunpowder* was noted, having been a cut-rate success the season before. *Strictly Dishonorable* recites the adventure of a naive Southern girl who finds herself deserted in a New York speakeasy by a hot-headed Jerseyite to whom she has become engaged. It is midnight and the young woman has no money. Betrayed by a convivial judge and offered the freedom of the apartment of a handsome opera singer whose intentions, he confesses, are strictly dishonorable, the heroine decides to chance the adventure and suffers no greater harm than comes of a bruised vanity. Muriel Kirkland, an actress of little previous experience, scored a personal success in the rôle of the girl, as did an Italian actor named Tullio Carminati in that of the singer.

Successes and near successes the next few weeks included another of George White's *Scandals*, with Mr. White taking some little part in the proceedings—a mystery play, *Subway Express*, by Eva Kay Flint and Martha Madison, in which the entire action, murder and all, takes place in a single car of a subway train, Moncton Hoffe's *Many Waters*, an importation from London that brought Ernest Truex home after many months and several hits abroad, *Candlelight*, adapted by P. G. Wodehouse from the German of Siegfried Geyer, which introduced Gertrude Lawrence, the English musical comedy star, as a straight comedienne, and *The Criminal Code*, a sombre drama of prison life which was credited with an excellent chance of winning the Pulitzer Prize. Elmer Rice, hoping to prove again that his judgment in plays was superior to that of most, produced a comedy of his own writing and staging called *See Naples and Die*, but it proved a failure and the author went back to nursing his still successful *Street Scene*.

The Theatre Guild, starting as bravely as may be with two new members added to its chief acting group, Alice Brady and Otto Kruger, came a cropper with its first two plays. Leonard Frank's *Karl and Anna*, adapted by Ruth Langer, and Romain Rolland's *Game of Love and*

Death, translated by Eleanor Stimson Brooks. The spirits of its six directors picked up a bit a little later when a Soviet drama, *Red Rust* produced by the younger associates of the Guild (now become a Theatre Guild studio, after the Moscow Art pattern) proved at least a play that threatened to build into a success, and when Alfred Lunt and Lynn Fontanne, the chief favorites of the first acting company, came back to the home theatre with S. N. Behrman's *Meteor* and achieved at least a personal triumph of familiar proportions, the season looked much brighter than it had looked before.

The Messia Shubert, hopeful, yet fearful, that a revival of Victor Herbert operas might not win favor, financed such a revival at the Jolson Theatre under the auspices of an organization known as the Jolson Theatre Musical Comedy Company. Greatly to their surprise (and delight), the venture proved a success. The first revival was that of *Sweethearts*, with the prima donna who had first sung it to success, the lovely Christie MacDonald, sitting demurely in a stage box. A few weeks later *Mlle Modiste* followed with Fritz Scheff again singing the rôle of Fifi which she had made her own, and again scoring a personal triumph with it. After that came *Naughty Marietta* and *The Fortune Teller*, with Alice Nielson present and smiling sweetly. By this time, thanks to the new interest in the old operas and a succession of cleverly organized theatre parties, the venture was commercially profitable. Now De Koven's *Robin Hood* was revived, and Lehar's *Merry Widow* and again Herbert's *Babes in Toyland* for the holidays. *Mlle Modiste*, with Mme Scheff was taken touring. *Robin Hood* was given two extra weeks at the Casino and *Babes in Toyland* an extra week at the Jolson.

In early October the second "smash hit," as the profession classifies them, was scored with Ring Lardner and George Kaufman's *June Moon*, a brightly amusing satire of the Tin Pan Alley that houses and stimulates the song-writing game. Thanks to a happily chosen cast, headed by Norman Foster, including a popular pianist of Broadway, Harry Rosenthal, and clever direction by Mr. Kaufman, *June Moon* promised to shine on indefinitely.

Now came a series of misadventures common to every theatre season. A new organization hoping to grow into at least a baby Theatre Guild, called the Theatre Assembly, started with a drama called *Lolly*, which did not amount to much, and followed with another, *A Lodge*, which amounted to less. Arthur Hopkins produced Alexander Woolcott's first play, in the writing of which the well-known critic had George Kaufman as collaborator. *Channel Road* was the title and De Maupassant's *Boul de Ruis* the inspiration. It was, experts agreed, an excellently written drama (albeit a bit overwritten,) and well produced, but the general public would not follow the lead of the special public that liked it. Vincent Youmans spent something like \$300,000 on a musical play called *Great Day* and then closed it up. George Kelly came home after a year or two abroad and brought a drama called *Maggie the Magnificent* with him. Great expectations were again dashed to earth when *Maggie* failed quickly and, many mistimed, unreasonably. *Abraham Lincoln* was revived by William Harris, Jr., and lived but a week. The newly organized Irish Theatre produced Sean O'Casey's *The Silver*

Tasse and that failed. Those who liked the play did not like the company's somewhat clouded speech, and those who liked the company cared not for the play.

But there were compensating adventures in playgoing, too. Mrs. Ivisko, supported by that other veteran, Wilton Lackaye, was affectionately welcomed in *Ladies of the Jury*, a comedy written by Fred Ballard (who once wrote a Harvard Prize play called *Believe Me, Antipope*), a finely imaginative drama, *Brickley Square*, was brought over from London and produced at the Lyceum by Gilbert Miller and Leslie Howard. This play was written by John Balderston, an American for many years London correspondent of the New York Morning World, and had been successfully produced abroad. It relates with a charming delicacy the adventure of one Peter Standish, a New Yorker of today, who, visiting his ancestral home in Berkeley Square, London, projects himself back into the eighteenth century and sees himself as the first Peter Standish of his line.

A day later a second London success, Noel Coward's *Bitter Sweet*, was offered in Mr. Ziegfeld's theatre by Mr. Ziegfeld and Arch Selwyn in association with the London producer, Charles B. Cochran. Because of the presence in the cast of Evelyn Laye, one of London's loveliest prima donnas, *Bitter Sweet* overcame definite native repugnance, due, apparently, to its lack of snap.

The Provincetown Players, having moved up from MacDougal Street to the Garrick Theatre, the cradle of the Theatre Guild, and having started bravely but unsuccessfully with Michael Gold's play, *Fiesta*, turned to a seriously and well-written drama called *Winter Bound*, by Thomas Dickenson, which the reviewers proceeded to sneer out of the theatre by reading into it a suggestion of Lesbianism neither text nor action justified.

William Gillette, restless at 74, accepted George Tyler's invitation to revive *Sherlock Holmes*, and did so with great éclat and pronounced financial success at the New Amsterdam Theatre. The veteran was introduced the opening night by President Nicholas Murray Butler of Columbia University and presented with a souvenir of the occasion by William Lyon Phelps of Yale at the end of the performance.

Pleasant events followed. Frank Craven reappeared as a protesting husband in *Salt Water*, by Dan Jarrett, the Warner Brothers put some of their movie profits into the production of *Fifty Million Frenchmen* under the direction of Ray Goetz, the book being by Lew Fields's son, Herbert, and the music by Cole Porter, a new firm of producers, Bobby Connelly, dance director, and Arthur Sawston, song writer, produced a musical comedy for Jack Donohue called *Sons o' Guns*, which proved enormously popular, although clean as a whistle should be, the Shuberts duplicated without imitating the seduction scene of *Strictly Dishonorable* in a comedy by Elmer Harris called *Young Sinners*, and Charles Hopkins, at 49th St., imported another A. A. Milne murder mystery comedy, *Michael and Mary*, which threatened to prove as popular as the same author's *The Perfect Alibi*.

Finally the year slipped toward its close with repeated reports from the field that the legitimate theatre was slowly dying, a statement it would be easier to believe if it were not so difficult to obtain seats to anything anyone really

wanted to see. The play producers, disturbed by the failure of both the weak and the not-so-weak plays, took steps to curb the speculators by agreeing not to sell them seats in blocks after March 1.

In December, Walter Hampden revived a new version of *Kuchelru*, which proved to be the Bulwer-Lytton original tightened up by Arthur Goodrich. Lee Shubert brought Philip Merivale and *Death Takes a Holiday* to town. Grace George offered *The First Mrs. Fraser*, a brightly written marital comedy by St. John Ervine, the English drama critic, and Arch Selwyn imported another Cochran revue, *Wake Up and Dream*, with Jack Buchanan as its star. Miss George's public received both her and the Ervine play with a warmth approaching enthusiasm. Mr. Hampden was moderately successful, the English revue drew in the usual society rush that greets most English revues, and *Death Takes a Holiday*, welcomed courteously by the press, but suspiciously by the public, later became widely popular.

The English theatre season was moderately eventful. Though the production of R. C. Sheriff's famous war play, *Journey's End*, by the Stage Society in London in December, 1928, technically places that play in that year, its transfer to the commercial theatre by Maurice Browne early in 1929, its importation to America by Mr. Browne and Gilbert Miller in March of that year, and its later reproduction in practically every theatre centre in Europe made it the most outstanding play of the year in Europe. This play's success in Europe, as well as in America, continued and seemed likely to go on for several seasons to come. Another play with a war-time background that met with some London success but failed later in America was Sean O'Casey's *The Silver Tassie*. The fact that the American performances were undertaken by the newly organized and partly amateur Irish Theatre of New York may have helped to do with the play's failure in the U. S. A.

George Bernard Shaw came audaciously forward with a play showing a British King in conflict with his ministry a hundred years or more from now and achieved an admitted success with "audiences ready to be amused by preposterous nonsense," as one of his critics described it. The reviewers were generally pained by Mr. Shaw's success.

John Galsworthy enjoyed his usual *succès d'estime* with another of his episodic studies of character reactions called *The Roof*. The Stage Society, a little proud of its success with *Journey's End*, also placed to its credit introductions of other successful plays, notably those of Norman MacOwen's *The Infinite Shoeblick*, Patrick Hamilton's gruesome "murder for art's sake" drama, *Rope*, and *The Lady With a Lamp*. The number of plays that came to the West end theatres in London from both provincial and suburban houses, as well as stage society premières, caused comment and gave courage to the younger writers who for years fought the West End tradition unsuccessfully.

William Somerset Maugham had the gratifying experience of seeing his serious drama, *The Razor's Edge*, succeed in London despite the condemnation of the Bishop of London. This story of a mother's promise to an invalid son that she would help him shuffle off his mortal coil once his life should become intolerable, ran for seven months, thanks to the indorsement of

the intelligent minority. It was unfortunately a quick failure in New York.

Bibliography. Published works on the theatre, of greatest significance include a bulky but highly informative volume, *The Theatre*, by Sheldon Cheney, *Footlights Across America*, in which Kenneth Macgowan traces the somewhat amazing expansion of the Little Theatre movement, Ashley H. Thorndike's *English Comedy*, Andrew Malone's *Irish Drama, 1896-1928*, Roy Mitchell's *Creative Theatre*, and Pierre Du-chartre's *The Italian Comedy*. That current history of the theatre in America, Burns Mantle's *The Best Plays*, reached its tenth anniversary volume, and a sketchy biographical review of the outstanding American playwrights of contemporary interest was contained in the same writer's *American Playwrights of Today*.

See also FRENCH LITERATURE, GERMAN LITERATURE, ITALIAN LITERATURE, SCANDINAVIAN LITERATURE, SPANISH-AMERICAN LITERATURE, and SPANISH LITERATURE for discussion of dramatics and theatrical activities in other countries.

THEOSOPHICAL MOVEMENT. The Theosophical Movement, having the whole of nature for its object and concerning itself with evolution in all its aspects, physical, intellectual, and spiritual, has been found in all times and among all peoples. It is moral, ethical, spiritual, universal, invisible save in effect, and continuous. It is to be discerned wherever thought has struggled to be free, wherever spiritual ideas, as opposed to forms and dogmatism, have been promulgated. All the truths uttered by the great seers, sages, poets, and writers, existing in every land and extending back from modern times into the prehistoric past, are a part of Theosophy and have their place in the Theosophical Movement.

The basic propositions of Theosophy, which is the body of truth underlying the religions and philosophies of the world, are (1) an impersonal divine principle, inconceivable in its essence but symbolized for finite intelligence by absolute, abstract space and absolute, ceaseless motion, (2) the universally operative law of action and reaction, whose action is seen in the ebb and flow of tides, the succession of seasons, and the alternation between sleeping and waking, and life and death, and (3) the identity of all souls with the universal Oversoul, all pursuing their way toward ultimate perfection through evolution on earth, in which each reaps the exact harvest of his own sowing.

THEOSOPHICAL SOCIETY, AMERICAN. The American division of the Theosophical Society, a world-wide organization founded in 1875 by Mme. Helena P. Blavatsky and Col. Henry S. Olcott. World headquarters were later established at Adyar, India. In 1929 branches existed in 43 nations, on five continents. The American Theosophical Society, which was known formerly as the American Section of the Theosophical Society, had, in 1929, 257 local lodges. The president of the society was L. W. Rogers. The headquarters are in Wheaton, Ill.

THESSALY. See GREECE under *History*.
THOMPSON, SIR EDWARD MAUNDE. A British palaeographer, died Sept. 14, 1929, in Mayfield, Sussex. He was born May 4, 1840, in Jamaica, the West Indies, and was educated at Rugby and at University College, Oxford. Appointed an assistant in the British Museum in 1861, he became in 1878 Egerton Librarian and Keeper of the Manuscripts. Sir Edward was called to the

Middle Temple in 1867, but did not practice law. From 1888 to 1900, he was director and principal librarian of the British Museum. He was a corresponding member of the Institute of France and of the Royal Prussian Academy of Sciences, and he was one of the original members of the British Academy founded in 1902, becoming its president in 1907.

THRACE. See GREECE under *History*.

THUCHOLITE. See *MINERALOGY*.

THURINGIA. A federated state of the German Republic, created at the end of 1919, comprising the following states of the former German Empire: Eisenach, Gotha, Reuss, Saxe-Altenburg, Saxe-Meiningen, and Saxe-Weimar, with Schwartzburg-Rudolstadt and Schwartzburg-Sonderhausen. Area, 4669 square miles, population, according to the census of 1925, 1,607,339 (capital, Weimar, with a population in 1925, of 45,957). Other large towns with their populations at that date were Gera, 81,402, Jena, 52,649, Gotha, 45,780, Eisenach, 43,385. Governmental power is vested in the Diet, which acts through a state council. President of the state council in 1929, Dr. Leuthesser. In the elections held in January, 1927, the following parties were returned: Conservative bloc, 19, Socialists, 18, Communists, 8, and all other parties, 11.

TIBET. *ti-bét* or *tibet*. A region extending eastward from the Pamirs to the border of China, between the Himalaya and Kwen-lun Mountains, nominally under the suzerainty of China. Area, estimated at 463,200 square miles, population, variously given at 1,500,000 to 6,000,000, the probable figure being about 2,000,000. Capital, Lhasa, with a population of 15,000 to 20,000. Lamaism is the prevailing religion. The chief pursuits are pastoral and the animals raised include sheep, yak, buffaloes, pigs, and camels. Of the minerals, gold, borax, and salt are mined to some extent. Trade is chiefly with India and China. The head of the government is the Dalai Lama, who is appointed by a regent appointed from ranks of the Tibetan lamas and assisted by a council of 14. *See* **CHINA**.

TIDAL THEORY. See *ASTRONOMY*.

TIKHVINITE. See *CHEMISTRY*, under *Mineralogical Chemistry*.

TIMBER. See *FORESTRY*.

TIME. See *ASTRONOMY*, *PHYSICS*.

TIN. Progress made in the technology of tin probably was responsible for the phenomenon of steadily increasing production and lower prices. In 1929 world output was about 190,000 long tons, compared with 178,000 long tons in 1928 and the price averaged 45 cents a pound on the New York market, compared with 50 cents a pound in 1928. At the close of the year, the price was only 38 cents a pound. The descent of 7 cents a pound occurred entirely in the last four months of the year, and reflected largely the curtailed demand from automobile manufacturers in the United States. Efforts to check the falling price were repeatedly made by the British Tin Producers' Association, but the lack of co-operation from Bolivian, Dutch East Indies, and Chinese-owned Malayan mines proved a formidable stumbling block. Costs in the Malayan tin fields, which were the most important, had been reduced greatly by the adoption of dredging and other modern electrically-operated equipment. These lowered costs were probably the basic reason for the decreasing prices. Malayan

output increased about 5000 tons to 67,000 tons. Production in Bolivia was about 43,000 tons and in the Dutch East Indies, about 34,000 tons.

TINGLEY. *ting'li*, **KATHERINE**. An American humanitarian and Theosophist, died in Visingsö, Sweden, July 11, 1929. She was born July 6, 1852, in Newburyport, Mass., the daughter of James P. Westcott, and was educated in the public schools and by private tutors. In 1889 she was married to P. B. Tingley. Having an interest in humanitarian work, she went to New York City and established the Emergency Relief Organization and the Do-Good Mission. She also founded in 1897 the International Brotherhood League for humanitarian work. In New York, she became associated with the Theosophical Society, and on the death of W. Q. Judge in 1896, she succeeded him as head of the Theosophists. In 1898 she became leader and official head for life of the Universal Brotherhood and Theosophical Society. She conducted theosophical crusades around the world in 1896-97, and again in 1903-04. During the Spanish-American War, she organized relief corps in New York and established at Montauk Point, L. I., emergency hospitals for returning soldiers, later doing the same work in Cuba. Moving the headquarters of the Theosophical Society from New York to Point Loma, Calif., in 1900, she established there the Raja Yoga Academy, a School of Antiquity, and a home for orphan children. She also acquired educational sites at San Juan Hill, Cuba, at Visingsö, Sweden, and at Fleet, Hampshire, England. In 1924 she established a summer school for children at Visingsö and in 1925 organized seven new Theosophical centres in Europe. Under her leadership, the Theosophist Movement spread around the world and gained many converts. She was often engaged in law suits with relatives of deceased members who had willed large sums of money to the society. She edited the *Theosophical Path* in Point Loma and directed the publication of theosophical magazines in Holland, Germany, and Sweden.

TOBACCO. The production of tobacco in the United States in 1929 was reported to be 1,500,891,000 pounds, an increase of 9 per cent over the previous year. The larger total acreage, 2,016,400 as compared with 1,894,100 in 1928, combined with an increase in the average acre yield, accounted for the larger production. Notable increases in acreage and production in 1929 were made in the bright flue-cured, burley, dark-fired, and dark air-cured districts. Although the average price per pound was 19 cents, a decrease of 1 1/2 cents from 1928, the total farm value in 1929 amounted to \$283,583,000, about \$8,000,000 more than in 1928. States producing more than 100,000 pounds were North Carolina, 1,100,000 pounds, Kentucky, 361,845,000, Virginia, 118,320,000, Tennessee, 102,664,000, Georgia, 89,870,000, South Carolina, 82,992,000, Pennsylvania, 47,601,000, Wisconsin, 45,140,000, Ohio, 39,782,000, Connecticut, 27,636,000, and Maryland, 25,600,000 pounds.

The world tobacco production, as reported in November, 1929, by the International Institute of Agriculture, with available statistics, amounted to 1,741,671,000 pounds as compared with 1,625,213,000 pounds in 1928. The United States provided about 85 per cent of the world crop and was followed by Japan with an estimated production of 138,065,000 pounds, Bulgaria, about 55,050,000, and Canada, 29,786,000 pounds. The

Canadian crop was expected to be about 12,000-000 pounds less than in 1928.

Collections from internal revenue taxes on tobacco in the United States for the fiscal year 1929, as reported by the Commissioner of Internal Revenue, continued their steady upward trend, reaching a new high level of \$434,444,543 21, an increase of \$37,994,502 18 over 1928. Receipts from taxes on small cigarettes accounted for 78.71 per cent of the total tobacco taxes, establishing another record, \$341,951,551 22, or an increase of \$40,198,962 88 over the previous year. The taxes collected on chewing and smoking tobacco declined to \$61,159,178 09 in 1929 from \$62,774,542 43 in 1928, on snuff, to \$7,126,008 99 in 1929 from \$7,461,351 90 in 1928, and on large cigars to \$22,548,507 59 in 1929, a decrease of \$330,807 34 from the previous year.

The prominent position of the tobacco industry was shown by the fact that of Internal Revenue who reported that in the calendar year 1928 nearly 109 billions of cigarettes weighing 3 pounds or less per thousand were manufactured, an increase of about 9 per cent over 1927. This was also evident in the estimated per-capita consumption of 940 cigarettes during the fiscal year 1929.

Leaf tobacco exported from the United States during the fiscal year 1929 totaled 557,899,000 pounds and during the 12 months ending December, 1929, 555,415,450 pounds. Exports of flue-cured tobacco, now constituting nearly three-fourths of the American leaf-tobacco exports, increased 26 per cent over the previous year, almost wholly because of shipments to China during the latter half of 1928, in anticipation of higher tariff duties. The total exports of this class in the 1929-30 season were expected to exceed the 414,000,000 pounds exported in 1928-29.

TOBAGO. A West Indian island, included administratively in Trinidad See **TRINIDAD**.

TOGO, tōgō, or TOGO-LAND A former German protectorate in West Africa, after the World War, divided between Great Britain and France as mandated territory of the League of Nations, situated between Dahomey and the Gold Coast. Total area, 33,700 square miles, total population estimated at 747,000, of whom 418 were Europeans. Hamitic tribes make up the population of the North, while in the South the chief stock is the Ewe. To France was allotted about two-thirds of the total area, namely, 21,200 square miles, including all the coast. The British part bordering the Gold Coast has an area of 12,600 square miles, with a population, according to the census of 1921, of 188,265.

In French Togo, in 1927 the imports were valued at 100,715,688 francs, exports, 82,242,712 francs. The local budget for 1927 balanced at 33,478,000 francs. From Lome, the seat of the government, there are railway connections with Anehoé, Palime, and Atakpame, with a total length of 204 miles. In 1927, 382 vessels cleared from the two ports of Lome and Anehoé.

TOLEDO, UNIVERSITY OF THE CITY OF. An institution of higher education in Toledo, Ohio, founded in 1872. The enrollment for the autumn of 1929 totaled 2165, including 1044 day students and 1121 late afternoon and evening students. President, Henry John Doermann, Ed D.

TOLEDO MUSEUM OF ART. See **ART EXHIBITIONS, ART MUSEUM**.

TOLL BRIDGES. See **BRIDGES**.

TOMBS, ANCIENT. See **ARCHAEOLOGY**.

TONGA or FRIENDLY ISLANDS. Three groups of islands, together with small, outlying islands, to the east of Fiji in the Pacific Ocean, between 15° and 23° 30' S latitude and 173° and 177° W longitude since May 19, 1900, a protectorate of Great Britain. Total area, approximately 385 square miles, population, estimated in 1920, 25,918 Tongans, 365 other Pacific islanders, 530 Europeans, and 234 half-castes, total, 27,048. Capital, Nukualofa. The government is under the High Commissioner of the Western Pacific, who acts by the advice of the local ruler and a legislative assembly of 23, seven of whom are elected by the people. Queen in 1929, Salote, who succeeded Apr. 12, 1928, High Commissioner for the Western Pacific, Sir Eyre Hutson.

TONGKING, tōn'kēn A French protectorate, constituting the northern chief division of the colony of French Indo-China, situated south of the Chinese provinces of Kwangsi and Yunnan. Area, 40,530 square miles, population in 1926, 7,401,912, of whom 0143 were Europeans, exclusive of military forces. The chief city is Hanoi, which is the capital of French Indo-China, with a population of 103,235 in 1926. Imports in 1927, 805,815,128 piastres, exports, 573,198,000 piastres (one piastre exchanged for \$0.5025 in 1927). The local budget for 1928 balanced at 18,200,670 piastres. The government is under a resident superior, who in turn is under the Government-General of French Indo-China. See **FRENCH INDO-CHINA**.

TORONTO, UNIVERSITY OF. An institution of higher education in Toronto, Ont., Canada, founded in 1827 and supported by the provincial government. The 1929 autumn enrollment was 6617. The faculty numbered 712 members. The total expenditure for the year 1928-29 for salaries and maintenance was \$2,415,809. Total benefactions received during the year amounted to \$505,056. The library contained 230,463 volumes and 83,541 pamphlets. President, Sir Robert A. Falconer, K C M G, D Litt, LL D, D D C L.

TORPEDO BOAT. See **NAVY, PROGRESS**.

TOSCANINI. See **MUSIC**.

TOUT, tout, THOMAS FREDERICK An English historian, editor, and authority on medieval life, died Oct. 23, 1929, in London, where he was born Sept. 28, 1855. He was educated at St. Olave's School, Southwark, and at Balliol College, Oxford. He was a fellow at Pembroke, Oxford, from 1883 to 1890, and after 1881 was also professor of history at St. David's College, Lampeter. In 1890 he was appointed professor of history at Manchester University, remaining in the post until his retirement in 1925. He was a Ford's lecturer in English History at Oxford University in 1912-13, and a Merton's lecturer at Cornell University in 1927. His books on medieval history include "Edward the First" (Twelve English Statesmen, 1893), *The Empire and the Papacy* (1898), "History of England, 1216-1377" (Longman's Political History of England, vol. III in 1905), joint edition with Prof. H. Johnstone of *Select Trials of the Judges and Ministers, 1289-92* (Camden Series, Royal Historical Society, 1900), *The Place of the Reign of Edward II in English History* (1914), *Chapters in the Administrative History of Medieval England* (vols. I and II, 1920, vols. III and IV, 1928, vol. V, 1929), *France and England, Their Relations in the Middle Ages and Now* (1922).

TOWN PLANNING. See **CITY PLANNING**.

TRACK AND FIELD ATHLETICS. See ATHLETICS, FIELD AND TRACK

TRACTORS. See AGRICULTURE

TRADE, INTERNATIONAL See FINANCIAL REVIEW

TRADE FAIRS See EXPOSITIONS

TRADE UNIONS. The *Monthly Labor Review* of July, 1929, published the accompanying table to show the number of organized workers in various countries of the world on Jan 1, 1925, and again on Jan 1, 1928

NUMBER OF ORGANIZED WORKERS IN VARIOUS COUNTRIES, JAN 1, 1925, AND JAN 1, 1928

Country	Total membership 1925	1928
Argentina	120,000	164,874
Australia	729,155	911,652
Austria	1,044,068	961,550
Belgium	726,126	762,886
Bolivia		5,000
Brazil	104,000	22,562
British Guiana		1,072
Bulgaria	49,803	2,425
Canada	201,981	209,282
Ceylon		40,000
Chile	162,000	204,000
China	300,000	2,800,000
Colombia		11,400
Costa Rica		250,000
Cuba	100,000	250,000
Czechoslovakia	1,669,456	1,696,897
Denmark	306,158	309,885
Dutch East Indies	60,000	21,021
Egypt	12,000	60,000
Estonia	30,000	14,311
Finland	47,312	75,846
France	1,068,046	1,218,487
Germany	6,900,000	6,217,923
Great Britain	5,511,000	4,908,000
Greece	56,680	98,470
Guatemala		3,000
Holland	517,914	407,665
Honduras		6,000
Hungary	267,885	185,737
Ireland	4,000	4,540
India	195,800	300,000
Ireland	148,501	111,921
Italy	2,214,520	2,768,710
Japan	230,000	316,906
Latvia	18,667	31,032
Lithuania	28,230	18,146
Luxembourg	14,087	15,437
Mand. Territory	3,894	1,024
Mexico	878,000	2,119,117
Mongolia		5,000
New Zealand	96,821	80,000
Nicaragua		6,000
Norway	94,567	101,152
Palestine	14,815	21,871
Panama		3,000
Paraguay		8,000
Peru	25,000	25,000
Philippines		67,000
Poland	539,089	577,581
Porto Rico		18,000
Portugal	36,000	40,000
Rumania	46,861	46,811
Russia	6,604,684	10,238,000
Salvador		10,000
South Africa	27,670	82,660
South West Africa		600
Spain	451,678	262,000
Sweden	451,050	529,874
Switzerland	261,713	254,982
Uruguay		28,484
United States	3,606,738	4,241,542
Yugoslavia	64,000	57,717
Total	36,062,711	46,106,060

NATIONAL WOMEN'S TRADE UNION LEAGUE The eleventh convention of this organization was held in Washington, D C, May 6-11. For the most part, the discussions concerned themselves with the conditions of labor in the new industrial centers of the South

The recommendations and resolutions adopted by the League included the following (1) That

support be given to a national policy for the elimination from industry of children up to 16 years of age, for agitation for a shorter work-day, for the five-day week, and for in-crease of the theory of higher wages as a preventive of unemployment (2) For the investigation of the Tennessee textile industry by the United States Senate (3) For cooperation with other organizations engaged in workers' education (4) A demand for the use of union labor on shoes in order to . . . the manufacture of American-made shoes M . . . Schneiderman of New York was reelected president, and Miss Elizabeth Christman of Chicago, secretary-treasurer Miss Raymond Rohrer was unanimously elected honorary president

MOND CONFERENCES The 1928 YEAR BOOK referred to the efforts, largely as a result of the activities of Lord Melchett (Sir Alfred Mond), to set up machinery for the purpose of bringing together in amicable relations the capital and labor of Great Britain In 1928 a continuing body for conference and discussion had been formed by a group of employers in conjunction with representatives of the Trades Union Congress This group invited the two important employers' . . . the country to sit with them, h . . .

In April, 1929, however, a further conference was held, made up of representatives of the Trades Union Congress and of these two employer organizations The conference ended in the adoption of a resolution to appoint a committee to examine the best methods "for consultation and cooperation between the three organizations"

BRITISH TRADES UNION CONGRESS. The British Trades Union Congress met at Belfast, Ireland, September 2, with 600 delegates assembled to listen to the opening presidential address of Ben Tillet The affiliated membership of the Congress continued to show a decline, the total reported being 3,600,000 members, as compared with the more than 4,000,000 reported at Edinburgh in 1927 It was expected, however, that the readmission of the Seamen's Union would increase the strength of the Trades Union Congress by about 60,000

CANADIAN TRADES AND LABOR CONGRESS The forty-fourth annual meeting of this body was held at St John, New Brunswick, August 26-30, more than 500 delegates being in attendance The paid-up membership represented, at the close of the fiscal year 1929, a total of 126,638, an increase of 7395 over the preceding year The Congress adopted, among others, the following resolutions: The enactment of legislation for the further protection of workers, particularly against spray painting, and the protection of workers employed in the erection and the operation of hoisting machinery, the institution on all railways of a regular weekly pay-day, and the approving of the six-hour day and the five-day week for all miners of Canada, the further development of Federal and provincial employment services, the passage by the Federal government of sickness and unemployment insurance measures Tom Moore was reelected president of the Congress, and Regina, Saskatchewan, was chosen as the city of the convention for 1930

SOUTH AFRICA In the Union of South Africa in 1928, there were 87 registered trade-union associations with a total membership of 64,844, as compared with 47 nonregistered associations,

with a total membership of 49,672. In 1927 the figures for the registered trade unions were 83 with a membership of 58,356, and for the non-registered, 26, with a membership of 155,264.

QUEENSLAND, AUSTRALIA. In the light of the success of the Labor party in Australia, it is interesting to observe the programme of Australian trade-unions' groups. The following is a list of the immediate demands adopted at its fifth annual session by the Queensland Trade Union Congress in October, 1928: (1) the immediate reduction of the 44-hour week; (2) the establishment of a basic wage equal to £5 16s. weekly, plus an amount equivalent to the average yearly increase in the productivity of the workers since the creation of this standard; (3) the abolition of all piece work; (4) the engagement of all labor through unions; (5) the repeal of the State and Federal Arbitration Acts; (6) the immediate socialization of all banking and insurance; (7) the socialization of medical services.

JAPAN. At the close of 1928, the total number of workers engaged in industrial activity in this country was 4,824,780. Of these, one-third were female. In 1928, 308,900 workers were members of 501 trade unions, an increase of 60 per cent over 1923. Thus, only 6 per cent of the workers of the country had trade-union affiliations. It is important to note that, of the 308,900 trade-unionsists, only 4 per cent were women.

See **LABOR, AMERICAN FEDERATION OF, LABOR ARBITRATION AND CONCILIATION, LABOR LEGISLATION, UNEMPLOYMENT, WELFARE WORK**

TRAFFIC, HIGHWAYS. See **AUTOMOBILES, ROADS AND PAVEMENTS**

TRAMWAYS. See **ELECTRIC RAILWAYS**

TRANSFORMERS. See **DYNAMIC ELECTRIC MACHINERY**

TRANS-JORDAN. An Arab territory in Asia Minor, under British protection as a part of the Palestine Mandate, although governed by a local Arab administration under Amir Abdullah Ibn Hussein, elder brother of King Feisal of Iraq. It is bounded on the north by Syria, on the west by Palestine, on the south by the Gulf of Akaba and the Hejaz, and on the southeast and east by Iraq. The area is uncertain, the partly nomadic population is estimated at 260,000, of whom 220,000 are Arab Moslems, 30,000 Arab Christians, and 10,000 Caucasian elements. Capital, Amman.

Occupying a barren and partly desert area, the country has a limited future, although the region to the west of the Hejaz Railway line is potentially of high agricultural value. Police and military forces are under British officers and the Royal Air Force maintains headquarters for both Trans-Jordan and Palestine at Amman. A surfaced road connects Amman with Jerusalem and unsurfaced highways link the capital with the chief towns of the country. The British High Commissioner for Palestine is also (since 1928) High Commissioner for Trans-Jordan under a separate commission. A British Resident is the High Commissioner's agent in Amman. Resident in 1929, Lieut.-Col. C. H. F. Cox.

HISTORY. The legislative assembly instituted in accordance with the terms of the treaty signed between Great Britain and Trans-Jordan, Jan. 20, 1928, was officially opened Nov. 2, 1929, by Amir Abdullah. The Amir in his address voiced the hope of the country for complete independence. Protests against the limitations upon the

national sovereignty imposed by the treaty continued during the year. The nationalistic movement in Trans-Jordan was stimulated during the year by the Jewish-Arab riots in Palestine and agitation increased for the formation of a federated Arab state, with Trans-Jordan as a constituent unit.

TRANSJORDANIA. See **TRANS-JORDAN**

TRANSMISSION LINES. See **DYNAMOS, ELECTRIC MACHINERY**

TRANSPORTATION. See **RAILWAYS**

TRANSVAAL. See **SOUTH AFRICA, UNION OF.**

TRAVEL. See **LITERATURE, ENGLISH AND AMERICAN**

TREASURY FINANCE. See **PUBLIC FINANCE**

TREATIES. See **ARBITRATION, INTERNATIONAL**

TREES. See **FORESTRY**

TRENTON, N. J., ANNIVERSARY. See **CYCEBRATIONS**

TRICHINOSIS. McDonald and Waddell report one of the largest epidemics of this infection which has ever occurred in the United States (*Jl Am Med Asso.*, February 9). The cases developed in and near Albany with 43 known victims, 13 of them studied by the authors in the Albany Hospital and Albany Medical School.

TRIESTE. Trieste. A former crownland of Austria, occupied by Italy after the World War, and retained by Italy under the peace settlement, including the port of Trieste and surrounding regions. Area, 47 square miles; population, at the census of Dec. 1, 1921, 283,655; estimated June 30, 1928, 252,517.

TRINIDAD. A West Indian island north of the mouth of the Orinoco River, constituting, with Tobago, a British colony. Area of Trinidad, 1862 square miles, of Tobago, 114; total population, according to the census of 1921, 365,913; estimated in 1928, 391,705, of whom 342,523 were on the island of Trinidad. Capital, Port of Spain, with a population in 1926 of 65,916. The white population is chiefly made up of French, British, Spanish, and Portuguese. Trinidad ranks second as an oil producer in the British Empire, the output in 1928 reaching 7,750,000 barrels of crude oil. Petroleum exports in 1928 totaled 6,363,000 barrels, as against 4,458,000 in 1927; asphalt exports, 152,000 tons. In 1927 total imports were valued at £5,082,871; exports, £6,018,861; revenue, £1,086,053; expenditure, £1,497,024; public debt, £3,281,854. The colony of Trinidad is under a governor who is aided by an executive council and a legislative council. Governor in 1929, Sir Horace Archer Byatt, who was succeeded in December, 1929, by Sir Alfred Claud Hollis.

TRINITY COLLEGE. An institution for the higher education of men in Hartford, Conn., founded by members of the Protestant Episcopal Church in 1823 as Washington College and changed to Trinity College in 1845. For the autumn term of 1929, the enrollment was 302. There were approximately 100,000 volumes and 40,000 pamphlets in the library. President, Remsen B. Ogilby, Litt. D., LL.D.

TRINITY COLLEGE, OF DUKE UNIVERSITY. See **DUKE UNIVERSITY.**

TRIPARTITE CLAIMS COMMISSION. See **ARBITRATION, INTERNATIONAL.**

TRIPOLITANIA. An Italian territory on the north coast of Africa, until 1919 a part of Italian Libya. In that year, for administrative purposes, Libya was divided into Tripolitania and

Cyrenaica. Area, estimated at 900,000 square miles; population, according to the census of 1921, about 550,000 natives, and 20,716 Europeans, of whom 18,093 were Italians. Colonization by Italians was proceeding rapidly in 1929. In 1927 production totaled 40,250 kilos, valued at 3,513,300 lire. Imports in 1927 were valued at 246,056,377 lire, exports, 24,259,201 lire, estimated colonial revenues for 1928-29, 73,300,000 lire, state contribution, 150,419,250 lire, civil expenditure, 56,163,000 lire, military expenditure, 167,556,250 lire. The chief means of transportation is along caravan routes to the interior. There are also about 138 miles of railway. Tripoli, with a population of approximately 60,000, is the capital. Governor in 1929, Marshal Pietro Badoglio, appointed December, 1928. See CYRENAICA.

TRONDHEJEM. City of Norway, named changed to Nidaros. See NORWAY, under *History*.

TMOTSKY, LEON. See RUSSIA, under *History*.

TROTTLING. See RACING.

TRUCK FARMING. See HORTICULTURE.

TRUCKS, MOTOR. See AUTOMOBILES.

TRUE, ALFRED CHARLES. An American agriculturist, died Apr. 23, 1929, in Washington, D. C. He was born June 5, 1853, at Middletown, Conn., and was graduated from Wesleyan University in 1873, studying at Harvard University in 1882-84. From 1875 to 1882, he was instructor at the State Normal School in Westfield, Mass., and during 1884-88, at Wesleyan University. He entered the U. S. Department of Agriculture as editor in the Office of Experiment Stations, becoming assistant director in 1891, and director in 1893. In this office, he conducted agricultural investigations in Alaska, Hawaii, Porto Rico, and Guam, and made surveys of agricultural education, food and nutrition, irrigation and drainage throughout the United States. He was dean of the first graduate school of agriculture in the United States held at Ohio State University in 1902, and later of several similar schools in other States. From 1915 to 1923, he was director of the States Relations Service in the Department of Agriculture and after 1923, counselor to the Secretary of Agriculture on States relations. In 1923 he began the preparation of a series of publications on the history of education and research in agriculture. He contributed to the *NEW INTERNATIONAL ENCYCLOPEDIA* and, with Dr. Edwin West Allen (qv), organized and directed the agricultural department of the *NEW INTERNATIONAL YEAR BOOK* from its foundation in 1899.

TRUST COMPANIES. See BANKS and BANKING.

TUBERCULOSIS. On July 3, the distinguished Berlin surgeon, Prof. F. Sauerbruch, read a paper before the Berlin Medical Society on the treatment of certain forms of tuberculosis by the so-called Geison-Herrmannsdorfer salt-free or salt-poor diet as carried out at the Geison Sanitarium. He stated in his address that remarkable results had been secured in certain local forms of tuberculosis, notably lesions of the bones and joints and the skin disease known as "lupus." Results here were quite uniformly favorable and limited to the diet. In the case of pulmonary consumption, no such sweeping optimistic statements were made, although Sauerbruch did affirm that certain sufferers from this affection had derived much benefit from the diet.

CHANGING VIEWS ON THE STAGES OF PULMONARY CONSUMPTION. For many years, consumption was divided into three stages of which the

first was an infiltration of one of the apices of the lung. Dr. O. Wild of St. Gallen, Switzerland, calls attention to the radical departure in our outlook on the disease, though which this lesion is regarded as a late stage, even though the patient may have no symptoms and appear in perfect health. The actual first stage is a very small focus in the apex without tendency to diffuse itself save through the lymphatic glands, successive chains of the latter undergoing engorgement. In certain cases, the bacilli enter the circulation through the small veins and then the second stage appears. The toxin of the bacillus may bring about an immunity through the formation of anti-substances, but at the same time some of the tissues may develop an allergy or special sensitiveness and be rapidly attacked by the bacilli. These two antagonistic processes may even exist side by side although mostly one predominates.

THE ACTUAL VIRUS OF TUBERCULOSIS. Apparently, it is not the bacilli of Koch nor its excretions which are responsible for the formation of the tubercles which are at the bottom of tuberculous diseases, but some of the chemical substances which can be recovered in bulk from large aggregations of the bacilli. Dr. Florence Sabin of the Rockefeller Institute has recently isolated a germ-free fat similar in composition to ordinary food fats which is able unaided to cause the formation of tubercles. Dr. R. J. Anderson of Yale has isolated from the bacilli a sugar which is harmless to the sound individual but poisonous to the sufferer in the grip of tuberculosis. Injected into a tuberculous animal, it causes death in a few hours. As a result of these finds, Yale professors have sought to obtain these fats and sugars in large quantities and several manufacturing drug houses have made use of large amounts of cultured bacilli for the purpose. Thus far, it has been shown that different species of bacilli manufacture specific forms of sugar, this applying to human, bovine, and fowl tuberculosis. The research has been extended to other microorganisms, such as the pneumococcus, and of the several forms each gives rise to its own specific sugar. So significant is this discovery that it threatens seriously to revolutionize much of our knowledge of biology and disease.

TUBERCULOSIS, ANIMAL. See VETERINARY MEDICINE.

TUFFIER, THÉODORE. A French surgeon, died Oct. 27, 1929. He was born Mar. 26, 1857, at Bellême, in Orne, and was educated in medicine at the University of Paris. He was surgeon in l'Hôpital de la Cité du Midi, Paris. Dr. Tuffier held membership in the honorary medical societies of many countries.

TUFTS COLLEGE. A nonsectarian institution for the higher education of men and women in Medford, Mass., founded in 1852. The registration for the autumn term of 1929 was 1892. There were 390 members on the faculty. The productive funds of the college amounted to \$8,177,011, and the income for the year was \$893,709. The library contained 95,000 volumes. President, John Albert Cousens, LL.D.

TUBE, HENRY SCOTT. An English artist, died May 13, 1929, in Falmouth. He was born in York, June 12, 1858, and was educated at a private school, Weston-super-Mare. Following this, he studied at the Slade School, spent one year in Italy, and two years in Paris at the studio of J. P. Laurens. He first exhibited his work at

the Royal Academy in 1879. For the most part, he painted pictures of sea life, portraits, and figures in the nude. In 1900 he was elected an associate in the Royal Academy and in 1914 was given full membership. He became a member of the Royal Society of Painters in Water Colors in 1904.

TULANE UNIVERSITY OF LOUISIANA. THE An institution of higher education in New Orleans, founded in 1834. Although the professional schools are coeducational, there is a separate undergraduate department for women. The total enrollment for the autumn of 1929 was 3109. The faculty numbered 416. The productive funds of the university for the fiscal year ending Aug. 31, 1929, amounted to \$10,214,025, the income for the year to \$1,253,014, and gifts and bequests to \$1,370,713. The library contained 134,260 volumes. The construction of the new medical clinic, estimated to cost \$1,250,000, was begun July 11, 1929. President, Albert Bledsoe Dinwiddie, Ph.D., LL.D.

TULAREMIA. This malady is sometimes spoken of as a purely American disease first isolated and formulated by native physicians, but the statement is erroneous for its existence was recognized in Japan quite independently. Recently, according to an editorial in the *Journal of the American Medical Association* for August 31, 1929, evidence begins to point to the possibility that the disease is of world-wide incidence.

TULAREMIA IN MINNESOTA. Hanson and Green report nine cases of this malady from Minnesota, several others having been previously published. The disease goes back only to 1924, as far as the State is concerned and the case first reported ended fatally. The focus of infection is the area south of Itasca State Park. The diagnosis in two cases was in doubt, the agglutination test being negative. Two of the patients were infected as a result of dressing rabbits while the others were thought to have received the disease from insect bites as no other form of transmission seemed possible. This includes the two doubtful cases, in which, by the way, wood-tick bite could be proved. It is evident that more than one disease may be comprised under the term "wood-tick fever." In two cases, it seemed reasonable to accuse the deer fly. See **VETERINARY MEDICINE**.

TUNGSTEN. Curtailment of production by Chinese mines to maintain and, if possible, increase tungsten prices, successfully accomplished its aim in 1929. Price of tungsten concentrate in China was advanced from \$3 per unit to \$8 per unit during the year. The tungsten unit consists of the percentage of metal contained in the concentrate. Thus concentrate containing 60 per cent tungsten would sell for \$480 a short ton with the price at \$8. In the New York market, prices are about \$8 higher per unit because of the tariff of 50 cents a pound on metal contained in imported concentrate. At the end of the year, Chinese mines were exporting only 250 tons of concentrate a month, although in 1928 production was 6600 tons. Totals for world production in 1929 were not available, but it was probably slightly lower than in 1928, when about 13,000 tons of concentrate was produced. Mines in the United States, Burma, and South America took advantage of the higher prices to increase their output. See **METALLURGY**.

TUNIS. A French protectorate in North Africa, known as the Regency of Tunis, situated on the Mediterranean coast east of Algeria,

bounded on the south by the Sahara and Libyan deserts. The area is estimated at 48,300 square miles; population at the census of 1926, 2,159,708. The total European population was 173,281, composed of 71,020 civilian French, 89,216 Italians, 8396 Maltese, 517 Spaniards, 646 Greeks, and 3486 other foreigners. The total native population was 1,986,427, of whom 1,932,184 were Arabs and Bedouins, and 54,243 Jews. The capital is the City of Tunis, with a population in 1926 of 185,996, other towns are Sfax, 27,723, and Bizerta, 20,593.

Agriculture, the primary industry, is carried on mostly on large estates. Oranges and other citrus fruits are grown in the northeastern part of the country, olive trees in the Sahel region, dates in the southern oases, and cereals in the fertile valleys of the north, while the central table lands are devoted mainly to stock raising. Of the total area in 1928, 7,282,500 acres were under cultivation, and there were 2,550,000 acres of cork and pine forests, 68,490 acres of vineyards (production in 1928, 20,145,136 gallons of wine), and 11,435,000 acres of pasture land.

According to provisional figures, the total foreign trade in 1928 amounted to 3,294,300,000 francs, as against 2,798,300,000 francs in the previous year, imports totaling 1,937,328,000 francs and exports 1,356,987,000. Despite a decline in the average prices of wheat and wine, the value of exports increased 30 per cent and of imports 10.5 per cent over 1927. Imports in 1927 were valued at 1,771,629,439 francs and exports at 1,026,673,482 francs. France and Algeria supplied 71 per cent of the imports in 1928. Algeria, Italy, the United Kingdom, Malta, the Netherlands, and the United States were other leading customers and sources of imports. Revenue for 1928 totaled 439,542,956 francs, and expenditure 439,430,489 francs. Up to 1927 the French administration had constructed 1258 miles of railroads and 3290 miles of good highways in the country. A total of 9435 vessels entered the ports of the Regency in 1927.

The government is under the direct supervision of a French Minister Resident-General, acting on behalf of the French Foreign Office, and a Ministry of 11 department heads, eight of whom are French and three Tunisian. The Resident-General is also Minister of Foreign Affairs. The nominal ruler in 1929 was Mohammed Bey, who succeeded to the throne Feb. 11, 1929. French Resident-General, M. Manceron, appointed Jan. 2, 1929.

TUNNELS. With the opening of the longest (almost 8 miles) American work, the Cascade Tunnel on the Great Northern Railroad, on January 12, a new record was established in tunneling which will probably hold for a number of years. See 1928 YEAR BOOK. During 1929 attention has centered on subaqueous works for vehicular traffic rather than land tunnels, which offers another instance of the effect of the motor car on engineering construction.

NEW YORK. Mayor Walker proposed vehicular tunnels under 38th Street from Tenth Avenue across mid-town Manhattan to Long Island City with a branch exit to Brooklyn. At the same time the New York and New Jersey Tunnel Commission proposed a second Hudson River vehicular tube—their first work, the Holland Tunnel, having shown remarkable traffic growth and returns. A Narrows tunnel also was proposed as the joint effort of the engineers of the Department of Plant and Structures and the Board of Transport-

tation of New York City. The plans submitted advise twin vehicular tubes from the foot of 97th Street, Brooklyn, to a point on Staten Island just north of Fort Wadsworth. The proposed tubes would be 31 feet in diameter under the Narrows, a distance of 4700 feet, and would be built either by shield or in a trench. The approaches would be shield-driven. Provisions for ventilation, etc., were similar to those of the Holland Tube.

TAMPA, FLORIDA. A vehicular tunnel to cost \$6,500,000 was proposed for Tampa. The underwater section, under Tampa Bay, was to be 4155 feet long, and with approaches the total length of the work would reach 7 miles.

CHANNEL TUNNEL. The British government again expressed an interest in this long-proposed undertaking and during the year appointed a commission "to conduct an impartial inquiry into its economic aspects." French assent to the proposal seemed assured.

LARGEST UNDERWATER TUNNEL. Work was begun in 1925 on a preliminary or exploratory tunnel driven under the River Mersey between Liverpool and Birkenhead on what was to be the largest underwater tube in the world. The tunnel was to have a total length of 2.16 miles with 5204 feet, just short of a mile, between the shafts from which the under-river section was to be built. The entire tunnel is in sandstone but will be lined throughout with the usual cast-iron rings sealed with cement grout both inside and out. When it is remembered that the railroad tunnel built under the Mersey in 1879-86 was one of the notable engineering achievements of its day and a comparison of its brick-lined section, of 26 feet interior width, is made with the huge circular cross-section of 46½ feet inside diameter of the new work, there is evident a clear demonstration of engineering advance in recent years. The new tunnel to be completed in 1932, has a roadway 3½ feet wide resting on a concrete construction at about the center of the section. Below, space is provided for two large air ducts for ventilation and a space for street cars. The cost of the work estimated at \$25,000,000 was being met by a grant of \$12,000,000 by the British government, by funds provided by the city and by loans secured by toll charges to run for 25 years.

DETROIT-CANADA VEHICULAR TUNNEL. This work, described in the 1924 Year Book, was generally hailed as the third great tunnel of its type to be built in America—the two predecessors being the Holland Tunnel in New York and the Oakland Estuary Tube in California. As construction progressed on the new tunnel, various changes and differences developed which marked perhaps new trends in tunnel technique. The river portions of the tube were being built by sinking structural steel tunnel sections in a dredged trench and then lining and encasing these forms with concrete. These subaqueous sections are nine in number, the first being 220 feet long and the remainder each 248 feet. The steel shell of ¾-inch plates is 31 feet in diameter and is lined inside with 18 inches of reinforced concrete. After being placed, they were encased with tremie concrete. At 12-foot intervals along the shell octagonal-shaped diaphragms were placed outside and at right angles to the tunnel tube. These diaphragms supported the outside timber forms for the tremie concrete and the outside section of the tube is therefore octagonal.

WATERVILLE HYDROELECTRIC DEVELOPMENT. No better illustration could be found of the importance of tunnel operations in modern hydroelectric practice than this 6½-mile bore on the Pigeon River development near Waterville, N. C. The main tunnel is 14 feet in diameter and is unusual in that the grade is not uniform, indeed a vertical shaft 552 feet deep connects the two levels of the tunnel.

EAST RIVER SUBWAY, NEW YORK. The rapid progress made in the construction of the twin 18-foot diameter tubes of the Fulton Street crossing, under the East River, again showed how well perfected the shield and an method had become. In one of these tubes a new average record of 17½ feet of progress per day through sand and clay was attained.

TURBINES, STEAM. See STEAM TURBINES.

TURBINES, WATER. See WATER POWER.

TURKEY. A republic since Oct. 29, 1923, formerly the Ottoman Empire, occupying a portion of the Balkan peninsula—Turkey in Europe—and a large part of Asia Minor with contiguous territory—Turkey in Asia. Capital, Ankara (formerly Angora).

AREA AND POPULATION. The area of the present Republic of Turkey is estimated at approximately 494,538 square miles. The first general census in history, taken in October, 1927, showed 13,600,275 inhabitants, of which 6,584,474 were males and 7,075,801 females. The population of the principal cities in 1927, including suburbs, was: Istanbul (Constantinople), 699,869; Izmir (Symrna), 190,291; Balikesir (Karasi), 134,617; Bursa (Bursa), 127,139; Ordu, 113,004; Adana, 108,957; Ankara (Angora), 107,641.

EDUCATION. In 1926-27 there were 417,500 children in the primary schools and 12,700 in the secondary schools. In 1925-26 the attendance at higher schools and universities was 3524.

PRODUCTION. Primarily an agricultural country, the economic condition of Turkey is determined almost entirely by the amount and quality of the agricultural products available for export. A succession of poor crops resulted in a continuation of economic depression from 1927 through 1929, and in December of the latter year led to a serious financial crisis. The estimated production of the leading crops in 1928, with the comparative figures for 1927 in parentheses, was as follows: Wheat, 611,000 metric tons (1,333,000); tobacco, 79,365,000 pounds (148,384,000); raisins, 99,207,000 pounds (105,821,000); figs, 63,933,000 pounds (62,831,000); wool, 11,365,000 pounds (11,300,000); mohair, 4500 metric tons (3700); cotton, 85,000 bales (105,000); valonea 45,000 metric tons (42,000); barley, 900,000 metric tons (629,280); corn, 417,090 metric tons (129,560); millet, 51,290 metric tons (78,120); rice, 20,640 metric tons (10,080); potatoes, 19,580 metric tons (20,740).

Turkey's important mineral resources remain largely undeveloped, chiefly due to the lack of transportation facilities. Mineral production in 1926 (the latest figures available) was as follows: Coal, 1,222,387 metric tons; emery, 6000 tons; chrome, 6445 tons; borax, 18,300 tons; argil (clay), 57,630 tons; merchaum, 323 cases; mercury, 161 flasks; lead, 17,670 tons; copper, 7530 tons. The relatively unimportant manufacturing industries include textile mills, sugar factories, fig and raisin-packing establishments, cotton ginneries, and carpet factories. In 1927 there were in all 65,245 manufacturing plants,

employing 256,855 workers. Exports of carpets, nearly half of which went to the United States, were valued at \$2,271,140 in 1928 and \$2,276,910 in 1927 (including reexports of Persian and other carpets). A protective tariff, levying high duties on goods which Turkey can produce, became effective, Oct. 1, 1929.

COMMERCE. Official Turkish statistics have shown a continuous adverse balance of foreign trade for more than 20 years. In 1927 imports were reported to total \$108,490,000 and exports \$81,302,000, while for the first six months of 1928 (the latest figures available) imports totaled \$57,568,000 and exports \$44,327,000, as compared with imports of \$56,147,000 and exports of \$39,054,000 during the same period in 1927. In 1929, however, the Turkish customs statistics were declared unreliable by M. Jaquart, a Belgian employed by the Turkish government to supervise the census.

In 1926 Italy furnished 15.8 per cent of the general imports, followed by the United Kingdom with 14.1 per cent, Germany with 13.8 per cent, France with 13.6 per cent, and the United States with 3.5 per cent. In the same year Italy purchased 27.8 per cent of the exports; the United States, 13.3 per cent, Germany, 12.6, France, 12.3, and the United Kingdom, 11.4.

FINANCE. Although general economic conditions have failed to improve, budget estimates have continued to show a steady expansion. The budget for the fiscal year ending May 31, 1930, anticipated receipts of 220,298,000 Turkish pounds (\$107,351,000 converted at the January, 1929, exchange rate of \$0.4873) and expenditures of 220,297,000 (\$107,351,000). For 1928-29, receipts and expenditures were estimated at 207,173,000 and 207,169,000 Turkish pounds respectively. The budget for 1930-31 totaled 222,334,330 Turkish pounds, of which 25 per cent was to be used for national defense, 25 per cent for education, public health, and social service, 15 per cent for public works, and 14 per cent for the service of the debt. The new tariff which went into effect Oct. 1, 1929, was expected to produce the increased revenues anticipated in the budgets.

At the close of the World War the public debt of the Ottoman Empire was 121,684,000 Turkish pounds gold (\$548,618,000). Turkey's share in the debt was fixed at 107,528,000 Turkish pounds gold (\$473,123,000) under an agreement reached with the bond holders in June, 1928, and ratified by the National Assembly Dec. 1, 1928.

A crisis in Turkish exchange developed late in 1929 when the exchange value of the paper Turkish pound fell to \$0.44 on December 1, as compared with an average of \$0.5085 for 1928 and of \$0.5133 for 1927. The decline was attributed partly to the heavy imports in anticipation of the new tariff which became effective October 1, and to the failure of a number of the leading export crops, which reduced normal receipts of foreign currencies. The government intervened on December 4 by releasing £10,000 (sterling) on the Istanbul (Constantinople) bourse, prohibiting speculation, and restricting the sale of exchange to those persons who presented documentary evidence of their need for it.

COMMUNICATIONS. In May, 1929, the length of railway lines in operation in Turkey was placed at 3240 miles, with an additional 795 miles under construction. In January, 1929, the National Assembly ratified the agreement for the purchase of the Anatolian Railway (see 1928 YEAR BOOK).

A law passed by the National Assembly in 1929 authorized a loan of \$115,200,000 for railway and irrigation construction over a period of 10 years, of which \$67,200,000 was set aside for railway development. The government's public-works programme included the construction of a modern port at Mersina in the Cilician district.

GOVERNMENT. As a result of the revision of the constitution in April, 1924, the Turkish state was declared to be a republic, the religion, Islam, the official language, Turkish, and the capital, Angora (changed in 1929 to Ankara). The Assembly was to be elected every four years. While, according to Article 7, the Assembly exercises the executive power through the President elected by itself and through the council of ministers chosen by him, there is a proviso that the Assembly may at any time control the actions of the government. President in 1929, Mustapha Kemal Pasha. The cabinet was constituted as follows: President of the Council, Ismet Pasha, Interior, Shukri Kaya Bey, Finance, Sarrajoğlu Shukri Bey, Public Works, Rejeb Bey, Foreign Affairs, Dr. Tewfik Rushdi Bey, Justice, Mahmud Essad Bey, Public Instruction, Wasif Bey, Public Health, Dr. Refik Bey, Agriculture and Commerce, Rahmi Bey, Defense and Marine, Mustapha Abdul Halik Bey.

HISTORY

The "westernization" of Turkey in accordance with the nationalistic views of President Mustapha Kemal proceeded steadily, and for the most part peacefully, in 1929, despite the difficulties imposed by the economic depression and the foreign exchange crisis late in the year (see above under Finance). There were some evidences of restiveness at Mustapha Kemal's attempt to destroy the old social structure and to convert Turkey into a strictly secular republic. A number of clergymen, soldiers, and others were tried at Bursa in February on a charge of plotting to overthrow the government and to establish a régime in which the Moslem religion would again be preeminent. Four were condemned to death, and seven others received prison sentences ranging from six months to four years. In July, 24 Turks convicted of carrying on Communist propaganda were sentenced to prison for from one and one-half to four and one-half years. Objections raised to the adoption of the Latin, in place of the Arabic, alphabet and to other innovations decreed by the government were treated with scant consideration by government officials, although the sales of newspapers printed in the new alphabet were reported to have declined 50 per cent.

INTERNAL PROGRESS. Active opposition to the government's programme, however, was a minor obstacle compared with the indifference and inertia of the masses of the population. Apparently despairing of converting Turkey overnight into a modern state, the Nationalist leaders concentrated their efforts more and more on the education of children along democratic lines, while religious observances, though not forbidden, were actively discouraged. By 1929 Islam had virtually disappeared as the national religion, according to a competent British observer. Nationalism found further expression in the substitution of Turkish names for existing names of numerous cities and localities, such as Istanbul for Constantinople, the exclusion of more foreigners from various professions and businesses,

and the announcement by government authorities that Turkish women were soon to be granted the franchise. The new tariff bill, effective October 1, was intended to help make the country self-sustaining. It increased the duties on all imports by an average of 25 per cent. A modern penal code, based on the German code and including among its provisions the abolition of imprisonment for debt, became effective August 20. The study of Latin, Greek, and English was reported to have been substituted for the study of Arabic and Persian in the schools.

The government's determination to effect the economic rehabilitation of the country was stressed by Mustapha Kemal in his address, broadcast, by radio, at the opening of Parliament on November 1. Labor legislation, mine and forest laws, railway construction, land grants to farmers, and the creation of a national bank were the outstanding items in the government's immediate programme which he recommended for consideration. Direct election of members of the National Assembly, and the changing of the day of rest from Friday, as fixed by the Moslem religion, to Sunday were other proposals. The establishment of a national bank, with a capitalization of 50,000,000 Turkish pounds, was immediately authorized by Parliament. A great fire swept Ankara (Angora) on July 19, destroying 500 homes and leaving 2000 homeless. It was not unwelcome to the government, however, as it greatly facilitated plans for the rebuilding of the most unsightly part of the city.

FOREIGN RELATIONS. The signing at Ankara June 22 of a general agreement settling points of difficulty between Turkey and France, the adoption of a naval building programme which seemed destined to result in an armament competition with Greece, and evidences of a trend in Turkish government circles toward friendly relations with Great Britain and away from the Soviet Union, were the outstanding developments in the field of Turkish foreign relations during the year. In the treaty with France, Turkey was reported to have secured a favorable revision of the proposed Turkish-Syrian frontier line and an agreement that the Mersina-Adana railway was to be transferred promptly to the Turkish government.

In October Turkish authorities greeted with elaborate ceremonies a strong British squadron which paid a visit to Istanbul. The admiral of the fleet accompanied the British Ambassador to Ankara, where a lengthy conversation with Mustapha Kemal took place. The growing coolness toward Russia was attributed to the government's resentment at Communist propaganda in Turkey. Nevertheless, a provisional treaty of commerce was signed with the Soviet government in December. The treaty of neutrality and conciliation, signed between Turkey and Italy in May, 1928, was examined with interest by Greece and other interested powers when it was registered with the League of Nations on October 17. The treaty aroused some apprehension in France and among her Balkan allies. It was held by some to contain provisions in conflict with the Covenant of the League of Nations. Indications were not lacking during the year that Turkey was ready to join the League of Nations, if given assurances of a semi-permanent seat on the Council. The hope that Turkey's membership in the League would serve to weaken Soviet influence in that country apparently caused some of the

League members seriously to consider the proposal.

TURNER, EDWARD RAYMOND American historian and educator, died Dec. 31, 1929, in Baltimore, Md., where he was born May 28, 1881, and was graduated from St. John's College in 1904, receiving the Ph.D. degree from The Johns Hopkins University in 1910. He was an associate in history at Bryn Mawr College in 1910-11, professor of European history at the University of Michigan during 1911-24, professor of English history at Yale University in 1924-25, and after 1925 professor of European history at The Johns Hopkins University. He wrote *The Negro in Pennsylvania* (1910), *The New Market Campaign* (1912), *Ireland and England* (1919), *Europe, 1789-1920* (1920), *Europe since 1870* (1921, 1927), *Europe, 1450-1789* (1923); *Europe since 1789* (1924), *The Prvy Council of England in the 17th and 18th Centuries* (2 vols., 1927, 1928).

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE A nonsectarian normal and industrial school for the higher education of Negro men and women in Tuskegee, Ala., founded in 1881 by Booker T. Washington. The institute gave regular and systematic instruction during the year to a total of 3414 persons. There were 274 members on the faculty, of whom 150 were men and 124 women. The endowment amounted to \$7,772,106 and the income for the year, to \$552,604. There were 40,000 volumes in the library. President, Robert Russa Moton, LL.D.

TUTUILA See SAMOA.

TWINS. See ZOOLOGY.

TYLER, JOHN MAXON An American biologist and author, died April 12, 1929, in Amherst, Mass., where he was born May 18, 1851. He was graduated from Amherst College in 1873, and during 1876-79 studied at the universities of Göttingen and Leipzig. He became an instructor in biology at Amherst College in 1879 and in 1882 was made Stone professor of biology. After 1917 he was emeritus professor.

TYPHOID FEVER. The subject of oral immunization with typhoid vaccine is not really new, for a quarter-century ago Sir Almroth Wright tested it on seven patients, but the preponderance of negative results dissuaded him and others from a further trial. Some years later, Besedka took up the subject anew, but the World War interrupted his research and it was not until 1922 that he sought to immunize two parallel series of military students who had been exposed to infection using respectively the usual method of injection of vaccine and administration by the mouth. The protection was as good—really somewhat better—with the latter form of immunization. Since that time it has been tested in a few other localities—one for example is the city of Opicek in Czechoslovakia—with apparently favorable results. Recently in the United States, the method has been tested by Hoffstadt and Thompson (*American Journal of Hygiene*, January, 1929).

TYPHUS FEVER. Dr. Kenneth F. Mavey of the U. S. Public Health Service strives to give autonomy to a special form of typhus which may have been derived originally from the classic malady of the Old World, but which differs from the latter in not being louse borne and in having a very low death rate. It is endemic in certain Southern States, namely, Georgia, Alabama, North Carolina, Virginia, and Florida, and is presumably identical with Mexican typhus or

tabardillo There is no mention of the mild form of typhus originally found by Brill in New York City, but inferentially it should be the same affection.

TYSON, LAWRENCE DAVIS A United States Senator and former army officer, died Aug. 24, 1929, in Stafford, Pa. He was born in Greenville, N. C., July 4, 1861, and was graduated from the U. S. Military Academy in 1883. He was second lieutenant in the 9th Infantry in 1883-84, and a first lieutenant during 1889-91. From 1891 to 1895, he was professor of military science and tactics at the University of Tennessee. Admitted to the bar in 1895, he resigned from the army the following year and began the practice of law in Knoxville, Tenn. At the time of the Spanish-American War, he was commissioned colonel of the 6th U. S. Volunteer Infantry, serving in Porto Rico. In the World War, he served as brigadier-general of the 59th Brigade of the 30th Division, and was awarded the Distinguished Service Medal. He was elected United States Senator from Tennessee for the term 1925-31.

UBANGI-SHARI. See FRENCH EQUATORIAL AFRICA.

UGANDA, GO-gan'da. PROTECTORATE. A protectorate of Great Britain in East Africa lying north of Tanganyika and Lake Victoria and south of the Anglo-Egyptian Sudan. For administrative purposes it is divided into four provinces, namely, Eastern Province, Northern Province, Western Province, and Buganda Area, 94,204 square miles, population, estimated in December, 1927, at 3,157,008, of which 2,544,070 natives, 11,464 Asiatics, and 571 Europeans.

The chief product is cotton, which is grown almost entirely by the natives. Imports for consumption into the customs union of Kenya and Uganda, exclusive of government stores and construction materials, totaled 18,748,000 in 1928, while exports of domestic products amounted to £6,662,000, of which raw cotton from Uganda, estimated at 140,000 bales was valued at £2,486,000. Revenues of Uganda, in 1927 totaled £1,292,306 and expenditure £1,430,976. The public debt in the same year was £1,107,595. The protectorate is directly under the British government, represented by a governor and commander-in-chief, but the native rulers are supported in the management of their own subjects. Governor and commander-in-chief in 1929, Sir W. F. Gowers. See KENYA.

UKRAINE. A region in southwestern Russia known officially as the Ukrainian Socialist Soviet Republic, and since July 6, 1923, a constituent part of the Union of Socialist Soviet Republics, including the autonomous Moldavian Socialist Soviet Republic (formed in September, 1924). Area, 174,367 square miles, population, in 1926, 20,020,304. Capital, Kiev, with a population, in 1926, of 513,789. Ukrainian industries are among the most important in the Soviet Union, the republic producing 75 per cent of the total Russian coal output, 70 per cent of the pig iron, 85 per cent of the sugar, 50 per cent of the steel, and 95 per cent of the manganese ores. The budget in 1926-27 was 274,000,000 rubles (par value of ruble is \$0.515). There were 10,130 miles of railways in Ukraine at the end of 1925 and about 2500 miles were reported under construction. At the head of the administration is a council of people's commissars. See RUSSIA.

UMANGITE. See CHEMISTRY, under *Mineralogical Chemistry*.

UNDERWOOD, OSCAR W. (JEDER) An American statesman, died in Woodlawn, Va., Jan. 25, 1929. Born in Louisville, Ky., May 6, 1862, he studied law at the University of Virginia. Admitted to the bar in 1884, he practiced at Birmingham, Ala., also becoming interested in the mining industries of that district. He was made chairman of the Democratic executive committee of the ninth Alabama district in 1892, and he was also chairman of the committee which adopted the Alabama Constitution. Elected to the Federal House of Representatives in 1894, he served continuously until 1915.

Although the Representative of a manufacturing district, he stood consistently for a revenue tariff, and as chairman of the Ways and Means Committee, 1911, became Democratic leader of the House. Mr. Underwood led the fight for Canadian reciprocity and he framed a series of tariff measures revising separately various schedules of the Payne-Aldrich Law. His skill in leadership brought him wide notice, so that as a candidate for the presidential nomination at the Baltimore Convention in 1912, he ranked third, receiving at one time 130 votes.

In 1913 Mr. Underwood was largely responsible for the important Underwood-Simmons Tariff Act. He was elected United States Senator in 1914, having defeated Richmond P. Hobson in the primary election by more than 20,000 votes. Becoming Democratic leader of the Senate in April, 1920, he took an active part in important legislation, including the Federal Reserve Act and the war-time appropriation bills, and he tried to gain ratification for the Versailles Treaty. He served as an American delegate to the Conference for the Limitation of Arms at Washington, 1921-22. Mr. Underwood was again an unsuccessful candidate for the presidential nomination in 1920 and 1924. After his retirement in March, 1927, he was appointed by President Coolidge to the International Commission between France and the United States, Sept. 12, 1927, and to the Pan-American Conference at Havana in 1928.

UNDERWRITING. See INSURANCE.

UNDULANT FEVER. See MALTA FEVER, VETERINARY MEDICINE.

UNEMPLOYMENT. It will be recalled (see 1928 YEAR BOOK) that the question of unemployment had agitated the United States, as well as Europe, for some time and that considerable public and official attention was paid to the matter. On May 3, 1928, the United States Senate authorized the Senate Committee on Education and Labor to make an investigation of the causes of unemployment and to report on methods of relief. On February 25, 1929, Senator Coughens, for the committee, submitted a report. The following were the general findings of the committee:

(1) It was imperative that private industry recognize its responsibility in order to aid the stabilization of employment. It was the duty of the Government to aid such endeavors in every way through the sponsoring of national conferences, through the publication of information and through publicity efforts among employers. (2) Insurance plans against unemployment should be confined to the industry itself. In other words, the committee saw no necessity and no place for Federal interference. Public insurance schemes, when and it considered, belonged in the province of State legislation. (3) It was the duty of the States and municipalities to build up efficient unemployment exchanges. As for the Federal Gov-

enment, its proper place was the coordination of the work of the States in order to make possible the exchange of information and the rapid movement of unemployed persons from one section of the country to another. (4) The existing U. S. Employment Service should be reorganized and every employee should be placed under the Civil Service. (5) Efforts should be made to provide an efficient system of obtaining statistics of unemployment. The committee recommended that the Bureau of the Census in 1930 take steps to ascertain the number of unemployed persons as of a certain date. (6) The Government should adopt legislation for the purpose of providing a system of planning public works in order to furnish a reserve against unemployment in times of depression. Similar programmes were recommended to the attention of States and municipalities.

PROSPERITY RESERVE. On Apr. 23, 1929, Senator Jones re-introduced his bill for the purpose of creating a prosperity reserve by the expansion of public works during periods of unemployment. This bill provides that, in addition to the amounts usually appropriated, the Government set aside: (1) The sum of \$75,000,000 to be used in the aiding of the States in the construction of rural post roads, (2) the sum of \$50,000,000 for the maintenance of existing river and harbor works, and such other projects desirable in the interests of commerce and navigation, (3) a sum of \$10,400,000 for work on flood control, (4) the sum of \$15,000,000 for public building. Such a reserve fund had been in operation in Great Britain since December, 1920. From 1925 to 1928, the size of government aid was curtailed with the result that the schemes underwritten fell sharply. From June, 1925, to June, 1926, 1240 such schemes, involving a cost of £17,566,000, were approved, from June, 1926, to June, 1927, 63 schemes, involving a cost of £792,000, were approved. In the year June, 1927, to June, 1928, 28 schemes, involving a cost of £319,000, were approved. In November, 1928, however, the policy was changed again, with the announcement that the Government was prepared to offer further assistance. The proviso made was that such assistance would be rendered on the condition that at least 50 per cent of the men employed on the jobs were brought from the areas of heavy unemployment. The result of this change in policy was that, between Nov. 9, 1928, and June 10, 1929, 657 new public-works schemes were submitted, of which 320 were approved at an estimated cost of £5,550,000. Employment was to be given for 224,916 man-months.

EUROPE. The International Labor Office reported an increase of unemployment in eight of 18 European countries in December, 1928, as compared with December, 1927. In Germany, 16.7 per cent of the trade-unionists were wholly unemployed in 1928, as compared with 12.9 per cent in 1927. In 1928, 1,702,000 persons were in receipt of unemployment benefits as compared with 1,188,000 in 1927. In the United Kingdom, 11.2 per cent of the compulsorily insured persons were unemployed in 1928, as compared with 9.8 per cent in 1927. In 1928 the number of injured persons out of work in the United Kingdom was 1,333,611. In the Scandinavian countries, where the number of trade-unionists unemployed was not so great in December, 1927, the percentages of the unemployed among trade-unionists was still very large. Thus, in Denmark, 25 per cent of the trade-unionists were out of work and over

17 per cent in both Norway and Sweden. In Italy, in December, 1928, 363,000 persons were registered as being wholly unemployed.

In 11 of 18 European countries, unemployment figures were lower in 1929 than for the corresponding period in 1928. In Denmark, Norway, Great Britain, and Northern Ireland, there were sizable reductions, however, increases were to be found in Czechoslovakia, Estonia, Finland, Germany, Hungary, Latvia, and Sweden.

GREAT BRITAIN. In the British Parliament, it was expected that the chief centre of attack of the Opposition would be on the Labor government's unemployment policy which, up to the end of 1929, had borne no fruit. Mr. Thomas's first announcement to the House in November showed an impressive list of public works contemplated or already under way. In fact, on the latter, the plans called for the expenditure of \$200,000,000, almost the whole of which was to go out in wages. It was estimated that Mr. Thomas's whole programme indicated the employment of about 150,000 men for a solid year. See **GREAT BRITAIN**, under *History*.

GERMANY. That unemployment had been on the increase in Germany over the winter of 1928-29 was indicated by the figures collected by the central office of the State Employment Service and Unemployment Insurance. The following number of persons was in receipt of unemployment relief on the date specified: Dec. 31, 1928, 1,702,342, Jan. 15, 1929, 2,046,269, Jan. 31, 1929, 2,287,872, Feb. 15, 1929, 2,355,823, Feb. 28, 1929, 2,400,760, Mar. 5, 1929, 2,324,667.

See **LATVIA** and **IRISH FREE STATE**, under *Production*; **GERMANY**, under *Industry*.

UNION COLLEGE. A nonsectarian college for men in Schenectady, N. Y., founded in 1765. The 1929 enrollment of regular students totaled 819. The faculty numbered 80. The amount of endowment and income for the year was more than \$3,000,000. The library contained 75,000 volumes. President, Frank Parker Day, LL.D.

UNION OF SOUTH AFRICA. See **SOUTH AFRICA**.

UNITARIAN CHURCH. Unitarianism, as a type of belief, is ancient. The Unitarian Church in the United States developed as a modification of Congregationalism in New England, which led to the formation of the American Unitarian Association in 1825. This association is the executive organization of the Unitarian churches to-day.

The one hundred and fourth annual meeting of the American Unitarian Association was held at Tremont Temple, Boston, May 21, 1929. On Jan. 1, 1929 the denomination had 415 churches, 375 of which were active. The Unitarian constituency was reported to number 128,181. There were 3223 Sunday-school officers and teachers and 20,720 pupils. Receipts for current church activities, as presented in the treasurer's statement for 1929, amounted to \$400,236. Denominational publications are the *Christian Register* (weekly), the *Deacon* (weekly), and the *Unitarian Word and Work* (monthly). The officers of the association in 1929 were: President, the Rev. Louis C. Cornish, D.D., secretary, Parker E. Marean, treasurer, Henry H. Fuller. Headquarters are at 25 Beacon Street, Boston.

UNITAS FRATRUM. See **MORAVIANS**.

UNITED BRETHREN IN CHRIST. A denomination which resulted from the religious awakening of Philip William Otterbein, Martin

Boehm, and their coworkers. Formally organized in Frederick County, Md., in 1800, its theology is Arminian, while its beliefs are those of the earlier evangelical denominations.

The church is divided into 34 annual conferences, including those in China, Japan, the Philippines, Porto Rico, and West Africa. In 1929 there were 1688 charges, 2973 organized churches, 1855 active ministers, 403,708 church members, 2784 Sunday schools with an enrollment of 426,899, including teachers and officers. The amount raised by the church for all purposes in 1929 was \$6,553,880. Conference missionary appropriations amounted to \$106,989 and general home missionary appropriations to \$207,287, a gain of \$21,988 in the latter item. The valuation of church buildings was estimated at \$30,821,637. The church maintains numerous educational institutions.

The General Conference of the Church of the United Brethren in Christ met in its quadrennial session in Lancaster, Pa., May 19, 1929. After due consideration of the plan of union between the United Church in the United States, the United Brethren in Christ, and the United Synod of North America, and the United Brethren in Christ, the general conference gave approval to the general plan and appointed a committee of 20 to consider other aspects of the union. The Board of Bishops in 1929 included Bishop H. H. Fout of Indianapolis, Ind. (northwest district), Bishop A. R. Chippinger of Dayton, Ohio (central district), Bishop A. B. Statton of Kansas City, Mo. (southwest district), Bishop G. D. Batdorf of Harrisburg, Pa. (east district), and Bishop I. D. Warner of Portland, Ore. (Pacific district).

UNITED CHURCH OF CANADA. See CANADA, UNITED CHURCH OF.

UNITED FREE CHURCH OF SCOTLAND

See PRESBYTERIAN CHURCH.

UNITED METHODIST CHURCH See METHODISTS.

UNITED MINE WORKERS. See STRIKES AND LOCKOUTS.

UNITED PRESBYTERIAN CHURCH See PRESBYTERIAN CHURCH, UNITED.

UNITED STATES. AREA AND POPULATION

The area of the United States, exclusive of Alaska, is 3,026,789 square miles. The area of the non-contiguous lands, which include Alaska, Guam, and certain Pacific islands, Hawaii, the Panama Canal Zone, the Philippine Islands, Porto Rico, American Samoa, and the Virgin Islands (American), is 711,582 square miles, making a total area of 3,738,371 square miles. The estimated population of the United States on July 1, 1928, was 120,013,000. The population, according to the census of 1920 was 106,418,175. This does not include the population of the territorial possessions, which is given in separate articles on each.

AGRICULTURE. The results of the year 1929 in the cultivation and harvesting of crops, as reviewed by the crop-reporting board of the Department of Agriculture in December, were marked by a moderate gain in the total value of the year's crops, as compared with those of 1928, and likewise by the relatively slight alteration in the quantities and values of most of the chief crops (potatoes excepted), as compared with those of the year previous. The aggregate farm value of the 50 leading crops was estimated at \$8,580,526,000, and consequently as exceeding by about \$85,000,000 the aggregate value for 1928. The proportion of this excess, about 1 per

cent of the total of 1928, was slight, but more than made up the deficiency of the 1928 total over that for 1927. The production of corn in 1929 was below that of 1928 both in quantity and in farm value; that of winter wheat was approximately the same for both years, as to quantity, but a trifle higher as to value for 1929, the production of spring wheat was again small, owing to the renewed setback of unfavorable weather in the course of the growing season, but the value to the farmer, though far below the figures of 1924, 1925, and 1927, was a trifle above that of 1928. Less oats were produced, as to quantity, but the estimated value of the product of 1929 exceeded that of 1928. Cotton was produced in excess of the crop of 1928 and at estimated prices was cheaper to such a point as to total less in farm value. The estimates, the value of the hay considerably surpassed that of the cotton crop and exceeded the value of the hay of 1928 by about \$109,000,000. The most remarkable improvement in farm value was in that of the potatoes grown in 1929, which exceeded by about \$219,000,000 that of the 1928 crop. Better hay and potato crops offset the unfavorable grain and cotton crops.

The total production of farm crops and value based on December 1, or seasonal prices, as reported by the Department of Agriculture, follows (production in bushels except where otherwise stated).

	Crop	Production Value
Corn	2,622,189,000	\$2,018,134,000
Winter wheat	578,336,000	616,128,000
Durum wheat	52,180,000	46,217,000
Other spring wheat	175,782,000	178,576,000
All wheat	806,508,000	\$840,921,000
Oats	118,654,000	518,445,000
Barley	307,105,000	168,807,000
Rye	40,629,000	45,371,000
Buckwheat	11,505,000	11,241,000
Flaxseed	40,217,000	39,346,000
Grain sorghums	100,845,000	71,617,000
Cotton, bales	14,919,000	1,225,032,000
Cottonseed, tons	6,610,000	201,096,000
Hay, tame, tons	101,715,000	1,244,256,000
Hay, wild, tons	12,924,000	104,797,000
All hay, tons	114,639,000	1,349,053,000
Clover seed	2,157,000	21,922,000
Sweet clover seed	961,800	1,595,000
Alfalfa seed	717,800	7,672,000
Timothy seed	1,407,200	3,110,000
Soy beans	18,146,000	33,799,000
Cowpeas	10,149,000	21,142,000
Velvet beans, tons	838,000	
Peanuts, pounds	1,360,277,000	49,217,000
Beans, dry edible	19,397,000	72,905,000
Potatoes	357,451,000	469,701,000
Sweet potatoes	84,661,000	80,015,000
Tobacco, pounds	1,500,891,000	285,581,000
Sugar beets, tons	7,672,000	57,679,000
Sugar cane (except for sirup), tons	3,040,000	11,593,000
Cane sirup, gals	21,458,000	62,705,000
Sorghum sirup, gals	26,181,000	24,126,000
Broom corn, tons	43,800	5,739,000
Hops, pounds	33,220,000	3,788,000
Apples, total	139,754,000	181,107,000
Apples, commercial, barrels	28,973,000	108,281,000
Peaches	45,998,000	62,705,000
Pears	20,903,000	28,952,000
Grapes, tons	2,032,417	59,387,000
Oranges, boxes	33,100,000	120,525,000
Grapefruit (Fla.), boxes	6,500,000	19,825,000
Lemons (Calif.), boxes	5,900,000	22,420,000
Cranberries, bbls	541,500	7,088,000
Pecans, pounds	27,588,000	4,120,000

See also AGRICULTURE, AGRICULTURE, U S Department of, AGRICULTURAL LEGISLATION; and articles on separate crops, as CORN, WHEAT, etc.

INDUSTRY AND COMMERCE Activity in both industry and commerce in the course of nine months of 1929 was considerably above that for the corresponding periods of 1928. In the closing three months of 1929, it fell increasingly below the corresponding months of 1928, both for the chief divisions of business activity severally and for sections of the United States, separately considered. This decline, the sharpest in a number of years, was the most striking feature of business and industrial operation for the year. It was associated with the catastrophic fall of October and November in the prices of speculative stock shares, but whether mainly as a result of the latter or rather as one of its latent causes, estimates disagreed. See **BUSINESS REVIEW**, **FINANCIAL REVIEW**.

A long-established indicator of economic activity, the weekly totals of freight-car loadings published by the American Railway Association, yielded 52,789,780 revenue freight-car loadings for the calendar year 1929, a considerable increase over the 51,589,887 of 1928, as well as over the total for 1927. More than the entire year's increase was made in the first nine months. For the last three months, decreases in loadings from those for 1928 cut down the year's total increase by some 250,000 loadings, almost half the loss being scored in December. Another indicator, the *Electric World's* incomplete total of electric consumption among manufacturing plants, bore out the above indications, it marked a decrease of 8.6 per cent for December, 1929, from December, 1928 while the consumption for the entire year 1929 exceeded that for 1928 by 6.6 per cent. A third indicator, the *Annalist's* computation of index percentages of industrial activity, scored for December, 1929, the figure of 90.1 (preliminary), the lowest point subsequent to August, 1924.

Among the influences aggravating the business let down in the closing months of 1929 distress caused by the collapse of the speculative market in stocks was the most conspicuous. Another influence of earlier application but of generally accepted force was the high level of interest rates that had for some months prevailed, not as the result of speculative collapse, which they preceded, but because of credit sought for the strenuous backing of the upward course of speculative securities previous to their tumble. A third influence frequently cited but less demonstrable was the abnormally high rate of consumption in the earlier part of the year among the population of the country.

It could not be said that anything resembling price inflation in commodities occurred to disturb the course of trade. The general level of wholesale prices for all commodities, whether agricultural or industrial, raw or partly manufactured materials or finished products, averaged, for 1929, according to the Federal Bureau of Labor Statistics, 96.5 per cent of that for the year 1926, it was lower than the level for 1927, which had been 97.7 per cent of the 1926 figure. In December, 1929, after the business let down had gained headway, the average of wholesale prices was 94.2, for November, 1929, it was 94.4. Changes in the general monthly price average were at no time of the year conspicuous.

With regard to the distribution of the changes in business activity, both excess of activity in the earlier part of the year and its fall at the close were especially marked in the automobile in-

dustry. The *Annalist's* index of automobile production by months placed it at 115.5 per cent of the norm as late as October and at but 51.5 (preliminary) for December. No other major branch of manufacturing showed a like fall. The production of steel ingots, the steel industry being closely associated with automobile production, fell from 104.5 per cent for October to 78.4 for December. In so far as the steel and automobile industries were localized in the area between Pittsburgh and the Great Lakes, the regional distribution of business rise and fall during the year showed particularly great fluctuation in this area, but save as certain industries were localized, the fluctuations of production were fairly evenly felt throughout the country. As to automobiles, the Department of Commerce reported that the monthly production, after reaching the remarkable high of 621,910 for April and running as high as 498,628 for August, sank to 119,950 for December, or barely half the output for December, 1928.

Wholesale distribution was exceedingly active in the early part of the year and contrastively below recent totals in the closing months. Dry goods, men's clothing, shoes, and furniture, for the country as a whole, made some of the most conspicuous recessions. In retail trade, the department stores in New York and some other cities and the mail-order merchants continued to do good business up to the end of the year. Mercantile failures in the course of the year were not numerous. Dun's insolvency index placed them at the yearly ratio of 103.5 to every 10,000 firms in business, as compared with 108.4 for 1928 and 119.4 for 1922. Trade depression, however, was admittedly still recent when the year 1929 ended.

The extent of employment in manufactures was greater, according to the Federal Bureau of Labor Statistics, by 3.9 per cent for the entire year 1929 than for 1928, although for the month of December, employment was 3.8 lower for 1929 than for 1928. The heaviest of the numerous reductions in employment in the closing period of 1929 were in the piano, radio apparatus, automobile, tire, millwork, brick and cement industries. The employment situation was favorably affected by the fact that the year was relatively free of major labor troubles, save in the Southern cotton mills. See **UNEMPLOYMENT**, **STRIKES AND LOCKOUTS**.

FOREIGN TRADE Both the exports and the imports of the United States attained higher totals for 1929 than for 1928. As the imports of merchandise increased to a greater extent in point of total value than did the exports, the balance of trade in favor of the United States was distinctly lower for 1929. The domestic exports, as reported by the Federal Department of Commerce, totaled \$5,157,409,000 for 1929, and \$5,030,099,000 for 1928. Those for 1929 thus exhibited an increase of \$127,310,000 over those of 1928. The imports of 1929 totaled \$4,400,126,000, those of 1928, \$4,091,444,000. Thus, the imports of 1929 exceeded by \$308,682,000. The balance of domestic exports over imports attained \$737,283,000 for 1929, the corresponding balance for 1928 was \$938,655,000. The total of all exports from the United States in 1929, somewhat higher than that of those of domestic origin alone, was \$5,248,483,000.

Exports by months in 1929 fell behind those of corresponding months in 1928 in May, October,

November, and December. In all other months, an excess occurred. Imports of 1929 exceeded those of 1928, month for month, in every case save for December. Uncertainties as to tariff legislation at Washington extended through a great part of the year and tended to expedite imports in certain cases where there might appear some risk that consignments if made later would be unfavorably affected as to duties.

In the movement of gold in foreign trade, 1929 resembled 1926 and several preceding years, rather than 1928, in which year the United States had exported \$391,863,000 more of gold than it imported, despite the attractiveness of high rates of interest in the New York market, or than in 1927, when gold imports and exports nearly balanced. The amount of the gold exported in 1929 was \$116,583,000, that of the gold imported, \$291,649,000, and the balance of gold importations, \$175,066,000.

SHIPPING For statistics and other information in respect to the shipping of the United States during the year, see articles **SHIPPING** and **SHIPBUILDING**.

RAILWAYS See separate articles on **RAILWAYS** and **RAILWAY ACCIDENTS**.

MANUFACTURES All the leading manufacturing industries are discussed under separate articles, such as **AUTOMOBILES**, **BOOTS AND SHOES**, **IRON AND STEEL**, **PAPER**, **RUBBER**, **SILK**, **TEXTILE MANUFACTURING**, **ELECTRICAL INDUSTRIES**, etc. For engineering works, see **BRIDGES**, **CANALS**, **PORTS AND HARBORS**, **SHIPBUILDING**, etc. See also **CHEMISTRY**, **INDUSTRIAL**.

MINERAL PRODUCTION The article **MINERAL PRODUCTION AND RESOURCES** gives the latest available official figures for mineral production in the United States. The more important minerals mined in the United States are treated in separate articles. There are also paragraphs on mineral production in the articles on the individual States.

FINANCE For a discussion of Federal finances in 1929 see the article **PUBLIC FINANCE**.

See the articles **EDUCATION** in the **UNITED STATES** and **UNIVERSITIES AND COLLEGES**. Separate articles on the most important universities and colleges also are given under their respective titles. Sections on education are included in the articles on the several States.

PENSIONS As reported by the Commissioner of Pensions for the fiscal year 1928-29, the disbursements for pensions for that year were \$229,889,986. Of this amount, \$57,095,811 was paid to Civil War veterans; \$86,474,400 to Civil War widows, \$65,202,617 to Spanish War veterans, and \$11,383,880 to Spanish War widows. In the year, the payments to veterans of the war with Spain exceeded, for the first time, those made to veterans of the Civil War. To pensioners receiving domiciliary care in Soldiers' Homes, \$5,991,902 was paid, and \$1,358,995 was paid to pensioners residing in foreign countries.

The disbursements on account of Civil War service were \$143,594,089, a decrease of \$5,074,886 from the previous year's total. On account of Spanish War service, \$70,845,704 was paid, an increase of \$6,171,285 over 1928.

Pensioners at the close of the fiscal year numbered 477,915, as against 491,194 on June 30, 1928. Of the pensioners, 59,945 were Civil War veterans; 181,235, Civil War widows; 178,804, Spanish War veterans; 28,643, Spanish War widows; 5574, Indian war veterans; 4000, Indian

war widows; 730, widows of soldiers who served in the war with Mexico. On June 30, 1929, there were yet 11 widows of soldiers who served in the War of 1812 on the roll, and one soldier who served in the war with Mexico. This veteran, Owen Thomas Edgar, died Sept. 3, 1929, at the age of 98.

PATENTS The number of applications for patents made to the Commissioner of Patents in the fiscal year ending June 30, 1929, was slightly lower than in the high year, 1928, but was none the less remarkably high. There were received 92,029 applications for patents on inventions or on designs and for issues of patents. The applications for registration of trade-marks, labels or prints numbered 22,667. The applications for patents on inventions alone numbered 87,039, as against 88,482 for 1928 and 84,511 for 1927. The Patent Office granted, in the fiscal year 1929, 43,617 letters patent for inventions.

Post Office Postmaster General Walter F. Brown in his first annual report represented the reductions in certain of the postal rates that had gone into effect on July 1, 1928, as having occasioned a loss of receipts in the course of the fiscal year ensuing, to the total of \$21,527,896. He reckoned that the decreased rate on post cards had reduced receipts from that source by \$1,497,000, the reduced rates on second-class matter had cost \$6,708,896, the lower charges on bulk mailings of third-class matter had resulted in another cut of \$12,200,000, in receipts, and the lower rates, for long trips on fourth-class mail had been accountable for a loss of \$2,160,000. Allowance was made in these estimates for the considerable increase in volume that had resulted from the reduction of the postal card rate. The lower parcel-post rates for distant zones were reported not to have induced any appreciable growth of business. The pound rate for mailings of third-class matter in bulk had brought about an enormous increase in the habit at large post offices of mailing under permit or with preanceled stamps, but the mailings by other methods had suffered so heavily as to cause the Postmaster General to account more than one-half of the entire loss in one year's operation under reduced rates to this class of reduction alone.

FINANCE The yearly postal deficit made an upward bound to \$85,461,176 for the fiscal year 1929, as against \$32,121,096 for the fiscal year 1928. The chief occasions of this rise in the excess of expenditure over revenue, apart from the losses of receipts arising from the reduced postal rates already mentioned, were increased payments to railroads for transporting mails, the Interstate Commerce Commission had ordered these increases at the beginning of the fiscal year. For the year ending June 30, 1929, revenues from all sources attained \$696,947,578, and thus exceeded those of the year previous by \$3,313,656. Expenditures of the fiscal year totaled \$782,343,648, payments to the railroads on some claims for past fiscal years included, and a relatively small loss by fire, burglary, etc., of \$65,106 excluded. The deficit as adjusted to a basis of accrued obligations of the fiscal year yet, instead of discharged obligations, was yet greater, being \$86,309,514.

POSTAGE Although revenue as a whole for 1929 exceeded that for 1928, the receipts from the sale of stamps for postage and allied special services fell to \$575,439,622 for 1929, from \$576,-

437,171 for 1928. This change reflected, mainly, the shift away from postage purchases occasioned by the new postal rates. Postage paid in money on matter carrying no stamps totaled \$91,553,907, for the fiscal year 1929. All postage paid totaled \$619,260,697, which was 88.85 per cent of the total revenue. Postage paid came to \$6.05 for each individual of the population.

Air Mail. Growth of the air-mail service took the form of increase in poundage carried and miles flown, as well as that of the establishment of new routes. Six routes established in the course of the fiscal year were: No. 16, from Cleveland to Louisville, via Akron, Columbus, Cincinnati, etc.; No. 27, Bay City to Chicago, via Saginaw, Lansing, South Bend, etc., with spurs reaching Detroit, Cleveland, and other Michigan and Ohio points; No. 25, Atlanta to Miami, via Macon and Jacksonville, with a spur to Tampa; No. 28, St. Louis to Omaha, via Kansas City; No. 29, New Orleans to Houston, via Beaumont; No. 30, Chicago to Atlanta, via Evansville, Nashville, Chattanooga, etc., with a spur to St. Louis. All these were contract air-mail lines. Expenditures of the air-mail service for the fiscal year were \$11,207,957. Service miles to the total of 10,212,511 were flown. On the combined flights, 5,635,680 pounds of mail and equipment were carried. See **AERONAUTICS**.

Rural Mail Service. Although 145 new rural mail routes were created, a much greater number, 594, were discontinued, so that the number of rural routes in operation fell by 448 for the fiscal year, or to 43,840 by June 30, 1929. In virtually all cases where routes ceased to be operated separately, they were consolidated with other routes or, as in a few cases, supplanted by city delivery systems. The extension of 7906 routes benefited 124,869 families, and on 142 routes, reaching 19,134 families, service was increased from twice weekly to six days a week. At the end of the fiscal year, the routes reached 6,831,000 families, or an estimated 24,812,000 persons. The length of all routes combined was 1,316,420 miles. Carriers numbered 43,724 at the close of the fiscal year, or 444 fewer than at its start. The appropriation for rural mail service for the fiscal year was \$106,000,000.

Mail Matter. First-class domestic mail handled in the fiscal year reached the total weight of 4,471,038 pounds, it numbered 17,169,597,132 pieces, and it paid postage of \$365,470,919, or nearly 54 per cent of the year's entire postal revenue. Second-class mail attained 1,621,249,604 pounds, consisted of 4,833,738,538 pieces, and paid postage of \$29,873,081. Third-class mail weighed 351,371,318 pounds, consisted of 1,311,142,570 pieces, and paid \$61,807,798. Fourth-class, or parcel-post, matter weighed, in all, 4,062,610,693 pounds, was made up of 770,397,277 pieces, and paid postage of \$122,178,482. It contributed somewhat over 60 per cent of the total weight of mail matter handled. The foreign mail originating in the United States and outgoing included 350,193,480 pieces, making 80,560,437 pounds, and paying postage of \$16,986,723.

JUDICIARY

The O'Fallon Case. The United States Supreme Court in 1929 disposed of a number of actions of importance to the country as a whole. One of the most important of these was the action of the St. Louis & O'Fallon Railway Co. against the Interstate Commerce Commission over the latter's

method of attaining the valuation of the company's property for the purpose of determining the statutory fair return to which companies might lay claim. Although the railroad was one of the minor lines, the case involved were those that had been at issue between the Commission and many of the greater railroad systems for years. The action, on which a Federal statutory court had previously passed, came before the Supreme Court on appeal.

The Supreme Court decided substantially in accordance with the court of original jurisdiction on the main point at issue, the question whether the commission had given proper weight to the cost of reproduction as a basis in determining the value of railroad property. The Supreme Court held that due consideration to cost of reproduction was required under the law by which the Commission held its authority to fix valuations for the purpose in question, and that the Commission had in this case failed to give such due consideration. The Court did not, however, lay down the rule that valuation should be reached solely by the employment of the standard of cost of reproduction, but insisted only that this standard receive "due" consideration. Five justices supported the decision, three dissented, and one did not take part. Justice McReynolds wrote the majority decision, which was rendered on May 30. See **RAILWAYS**.

Interborough Fare Case. The tendency of public utilities, when at odds with State rate-making bodies, to carry their contentions before Federal courts in the effort to find by this means a detour past the difficulties of litigation within State jurisdictions, had for some time been in progress in some States, when the Interborough Rapid Transit Company of New York City endeavored by this means to break the provisions by which it was restricted to the 5-cent fare. Its action having secured a favorable decision from a Federal statutory court on May 10, 1928, the Transit Commission and the City of New York appealed from the grant of an injunction against the Commission's interfering with the company's applying a 7-cent fare. The United States Supreme Court rendered a decision on this appeal on Apr. 8, 1929, whereby it vacated the injunction and indicated that the inferior court had acted prematurely in dealing with the matter before the resources of action in the courts of the State of New York had been exhausted.

The Pocket Veto Problem. In the Okanogan Indian case, the United States Supreme Court took the ground, in a decision rendered on May 27, that the failure of the President either to sign or to return to Congress within 10 days (Sundays excepted) a measure passed and sent to him by Congress left the measure inoperative as a law, provided Congress were not in session to receive a veto communication, and even though the adjournment of Congress was merely between sessions and not at the termination of a two-year term of Congress. The issue related to Article I, Section 7, of the Constitution, as to which the contention had been advanced that it applied only to the termination of a Congress. Bills previously had perished between sessions by the failure of the President to act upon them, but the contention had, oddly, never before been carried through the courts.

Other Decisions. The Supreme Court decided adversely to the Chicago Sanitary District on January 14, in the action of several of the States

bordering on the Great Lakes to prevent this body's diverting from Lake Michigan, for the purpose of flushing away the refuse of the City of Chicago, an amount of water in excess of the 4167 cubic feet a second allowed it by the permit of the Federal Secretary of War. The opinion, written by Chief Justice Taft, was unanimously supported by the Court. It maintained that Chicago had too long neglected to provide for its health by erecting proper plants for sewage disposal, and was not entitled to the plan of the decision on the score of sanitary conditions.

In the matter of the application of Rosika Schwimmer, a widely known Hungarian woman pacifist, for American citizenship, the Supreme Court on May 27 upheld an inferior court's refusal to grant naturalization papers. The Supreme Court took the ground that the applicant for citizenship in this case had stated that she would not take up arms personally for the defense of the United States, and that the Constitution required this as a duty of citizens.

The Oil Cases. The first criminal conviction to come of the several prosecutions brought by the government in the Federal courts against those charged with bribery in the matter of the leases of Naval Petroleum Reserve lands by Secretary of the Interior Albert Bacon Fall in 1921 was secured against Fall himself in the Supreme Court of the District of Columbia on October 24. In spite of testimony of Edward L. Doheny, who controlled the interests benefiting from the Elk Hills lease, that his payment of \$100,000 to Secretary Fall while the negotiations for the lease were in progress had been naught but a friendly loan, the jury found Fall guilty of accepting a bribe, and he was sentenced to a year in prison and a fine of \$100,000. The case was appealed.

Harry F. Sinclair, the oil operator chiefly concerned in the leasing of the Teapot Dome Naval Petroleum Reserve, another of the Fall leases, was committed to prison in the District of Columbia, but not for the bribery of Fall, with which he had been charged. He was convicted on two charges, one of contempt of the Senate, which occurred when he refused to answer the Senate committee investigating the leasing scandals, the second charge was that of having, through persons in his employ, followed and kept watch upon jurors sitting in his trial for conspiracy. The former charge had been fought through the courts for years and had finally been sustained. Sinclair went to jail on May 6, served terms on the two convictions concurrently, and remained in prison until November 20.

VETERANS' BUREAU. As reported by the Director, Frank T. Hines, the Veterans' Bureau, charged with the administration of compensation for war service, had received 1,130,870 claims for adjusted compensation up to the end of the fiscal year 1929. There had been adjudication of all claims except 9883, and of the claims adjudicated, 560,919 had been allowed. Veterans receiving compensation on June 30, 1929, numbered 266,498, and beneficiaries of veterans who had died, 88,529. Current payments to these veterans and beneficiaries were running at the rate of about \$16,000,000 a month. The total that had been paid such persons on account of compensation from the United States government since the Compensation Act went into force and up to the end of the fiscal year 1929 was \$1,438,751,961.

The hospital activities of the Veterans' Bu-

reau continued in 1929 on a vast scale. There were under treatment in the hospital system of the Veterans' Bureau on July 1, 1929, 27,784 patients, as against 25,899 a year earlier. The Bureau was at that time utilizing 96 hospitals owned or controlled by the Federal government, and of these the Bureau itself controlled 49.

The number of those carrying Government life insurance, administered by the Veterans' Bureau, on July 1, 1929, was reported as 649,837, all ex-service men or women. One of the Bureau's functions was to advance loans on the security of adjusted service certificates; the total of such loans made up to the end of the fiscal year was \$133,653,489, and the borrowers, past or still indebted, numbered 1,429,946.

The disbursements of the Veterans' Bureau from the beginning of its operation up to June 30, 1929, totaled \$4,773,858,880. This was partly offset by receipts of \$883,991,425 from insurance premiums and deductions from pay allotments. Of the disbursements, \$1,438,751,961 had gone to compensation payments; \$1,333,311,544, to term insurance payments; \$644,993,468, to vocational training of veterans, and \$351,076,920, to hospital and medical service.

ARMY AND NAVY. The Army and Navy are treated separately in the articles **MILITARY PROGRESS** and **NAVAL PROGRESS**. See also article on **AERONAUTICS**.

DIPLOMATIC SERVICE. Several changes occurred during the year in the personnel of the American diplomatic service. Leland Harrison, who had been Minister to Sweden, succeeded Ulysses Grant-Smith as Minister to Uruguay, while another change in South America was the appointment of George T. Sumner, former Minister to Honduras, as Minister to Venezuela to succeed Willis C. Cook. Walter K. Edge was appointed Ambassador to France to fill the vacancy caused by the death of Myron T. Herrick, Charles G. Dawes succeeded Alanson B. Houghton as Ambassador to the Court of St. James's, and John W. Garrett was appointed Ambassador to Italy to succeed Henry P. Fletcher. Harry F. Guggenheim succeeded Noble B. Judah as Ambassador to Cuba, and Gerrit John Dieken was appointed Minister to the Netherlands on the retirement of Richard M. Tobin.

The following list gives the names of the diplomatic representatives from and to the United States in 1929.

EMBASSIES AND LEGATIONS OF THE UNITED STATES

Albania—Charles C. Hart, minister
 Argentina—Robert Woods Bliss, ambassador
 Australia—Arthur D. Little, Washington, minister
 Belgium—Philip S. Gibson, ambassador (Also minister to the Netherlands)
 Bolivia—Evan E. Acheson, minister
 Brazil—Edwin W. Paoli, minister
 Canada—Charles G. Deneen, minister
 Chile—William S. Culbertson, ambassador
 China—Nelson T. Johnson, minister
 Colombia—Jefferson Caffery, minister
 Costa Rica—H. F. Arthur Schoenfeld, minister
 Cuba—Harry F. Guggenheim, ambassador
 Czechoslovakia—Lewis Einstein, minister
 Denmark—H. Percival Dodge, minister
 Dominican Republic—Charles B. Curtis, minister
 Ecuador—Gerhard A. Harding, minister
 Egypt—Franklin Mott Gunther, minister
 Estonia—Frederick W. B. Coleman, minister (Also to Latvia and Lithuania)
 Ethiopia (Abyssinia)—Addison E. Southard, minister resident and consul general
 Finland—Alfred J. Pearson, minister
 France—Walter K. Edge, ambassador
 Germany—Jacob Gould Schurman, ambassador

President Hoover's first official action of importance was the appointment of a cabinet. The cabinet chosen by him was composed as follows: Secretary of State, Henry L. Stimson, Secretary of War, James W. Good, Attorney-General, William D. Mitchell, Postmaster-General, Walter F. Brown, Secretary of the Navy, Charles Francis Adams, Secretary of the Interior, Ray Lyman Wilbur, Secretary of Agriculture, Arthur M. Hyde, Secretary of Commerce, Robert P. Lamont. These appointments were sent to the Senate and duly confirmed. For two cabinet places, the President made no appointments. These were the places of Secretary of the Treasury and Secretary of Labor, occupied under the previous administration by Andrew W. Mellon and James W. Davis, respectively. Mr. Hoover followed the doctrine that these incumbents, whom he wished to retain, had not resigned, and that they might

accordingly remain in office without need of re-appointment. Some effort was later made in the Senate to controvert the point, it had the backing of some of Secretary Mellon's active though relatively not numerous antagonists in the Senate, despite them, no action questioning the right of the two Cabinet members to hold over was taken.

President Hoover, having given a campaign pledge to call Congress in special session that it might legislate for the relief of the farmers, proceeded to act in accordance with that promise. He summoned Congress to meet in special session on April 15, in a proclamation that asserted the need of "legislation to effect further agricultural relief and legislation for limited changes in the tariff." His subsequent position with regard to the farm relief measure was clearly expressed both in the recommendations contained in his message to the special session and in subsequent published statements. He made it plain that he wished a measure to pass which would create a farm board with wide discretion and credit powers, and he eventually obtained the creation of such a board. Against the scheme to grant the exporters a rebate on farm products shipped from the country, in the form of the so-called export debenture, he set his explicit disapproval.

On the matter of tariff revision, his course was less definite. While his message of April 16 called for the enactment of "an effective tariff on agricultural products," it suggested also "the necessity for some limited changes in the schedule" on other than agricultural products and that of administrative changes. The opinion was offered that "the test of necessity for revision is, in the main, whether there has been a substantial slackening of activity in an industry." Thereafter he made no public move or statement to clarify or emphasize his own tariff position, until September 24. He then issued a formal public statement in which he maintained the need of continuing the process of tariff revision by Executive order upon recommendation of the Tariff Commission, but he did not express any views as to the merits of the particular tariff rates over which the Senate had been engaged in contention.

President Hoover's dealings with legislative problems were renewed when, on December 3, he sent in his message to the first regular session of the Congress. In this message, he urged prompt action toward the settlement of the new tariff rates, for the prevention of business uncertainty. The message recommended cutting the tax on incomes of 1929 by 1 per cent on the normal rates for personal incomes and by 1 per cent for corporate incomes, as warranted by the Treasury's estimates of revenue and expenditure. The peculiar cogency of this recommendation lay in the occurrence of an exceptionally severe fall in the stock markets, which had occurred in October and November, and in the prospect that lighter taxation would work to rescue the country from a sequel in the form of economic depression. The message announced, with regard to the business situation, that the President had instituted voluntary measures of cooperation between the Administration and business leaders and institutions in order to "make certain that fundamental businesses of the country should continue as usual."

The initial operations of the new Farm Loan Board were hailed as "the most extensive action for strengthening the agricultural industry ever

taken by any government." The President stated that he would submit to the Senate for its ratification a protocol of adherence to the Permanent Court of International Justice under the Root reservations. He . . . accelerating and enlarging the Federal building programme for the District of Columbia. He condemned the system of granting Federal petroleum concessions on public lands by the system of oil permits, of which he had suspended the issue. Reorganization of the Federal Radio Commission into a permanent body, its members not to be longer chosen by geographic zones, was urged. The passage of banks in some great centres from National to State charter was indicated as weakening the National Bank system and calling for legislative attention. The need better to organize the system of administering justice was again submitted.

One of the characteristics of President Hoover's methods appeared in the opening months of his administration, in the creation of advisory and investigative bodies in large number. One of these, appointed under a law enacted by the Seventieth Congress, was the National Law Enforcement Commission (having as its chairman George W. Wickersham and among its members Newton D. Baker and Roscoe Pound, the latter executive secretary), which met in May to conduct a prolonged study of the whole field of law enforcement. Prohibition included. The President called the National Child Conference on July 1, to be financed by private contribution. The governors of States affected were brought together by him at Colorado Springs in June in a conference on oil conservation. He appointed a commission on conservation of the public domain. Upon the occurrence of the stock-market crashes of October and November, he made new resort to this favored form of organization. Meetings of leaders of business were summoned to take steps for maintaining the normal pace of the country's economic activities. Industrialists were thus won to declarations in favor of maintaining wages, and heads of railroads and of States made known, jointly, their intentions to proceed with programmes of physical improvements. He next promoted a more formal conference of some 400 business leaders, which met in Washington December 5, for the general purpose of taking measures to stabilize the business situation and for the particular purpose of setting up a permanent or continuing economic council to act between the organized business world and the Government, as represented by the Department of Commerce.

FOREIGN RELATIONS. Henry L. Stimson, appointed Secretary of State to succeed Frank B. Rowland, resigned his post as Governor-General of the Philippine Islands and left Manila somewhat before the end of the Coolidge term. He reached Washington and took office there on March 28. The first foreign problem with which he had to deal was the *Ionian* case, a matter of the sinking of a Canadian vessel, so named, in the Gulf of Mexico, by a U. S. Coast Guard vessel, as to which the Canadian Government had made representations. The settlement of the case, by mutual agreement of April 25, was left to arbitration. A number of foreign governments presented protests against the proposed tariff changes, as prejudicial to the business of their nationals exporting to the United States. These protests were forwarded to the Finance Commit-

tee of the Senate on June 13 See CANADA, under *History*

World Court The plan previously formulated by Elihu Root to enable the United States to enter the jurisdiction of the Permanent Court of International Justice was submitted to the Council of the League of Nations, which approved it on June 12 and forwarded it to the governments of the nations adhering to the Court. These later approved it. President Hoover refrained from acting on the plan during the special session, but the protocol providing the adherence of the United States, on December 9, was signed for the United States, by its chargé d'affaires at Berne, and was then sent to the Senate for its ratification. See **World Court**

Visit of Prime Minister MacDonald Prime Minister Ramsay MacDonald of Great Britain, announcing his purpose to be the promotion of understanding between his country and the United States, made an official visit to Washington in October. He was the guest of President Hoover at the latter's summer home on the Rapidan near the capital, on October 5, and later at Washington. Beside the formation of a personal contact with the President, the visit led to Mr. MacDonald's addressing Congress and speaking briefly at New York and elsewhere.

The subject of naval limitation was not formally taken up, but an understanding on the subject was reached that made it possible for the British Government, in the course of the Prime Minister's visit, to issue on October 8 an invitation to the governments of France, Italy, and Japan to a five-power naval conference for the reduction of naval armaments, to be held in London, starting in the third week of January, 1930, the United States Government concurring in the invitation. The United States was active thereafter in direct discussions with some of the governments concerned, as to the direction that the work of the conference would take. See **GREAT BRITAIN**, under *History*

Kellogg Treaty and Russia The Kellogg-Briand Treaty which had been executed in 1928, was proclaimed as in force by President Hoover on July 24, the requisite ratifications having been made. Acting under this treaty Secretary Stimson addressed to Russia and likewise to China on December 2, a communication setting forth the views of the United States as to the hostilities in Manchuria, expressing the concern of the United States over the conflict there, and calling attention to the agreement of both the opposed governments, under the treaty, to resort to pacific settlement of disputes. The communication was not a signed note, as formal diplomatic relations with Russia had not been resumed. The Russian copy was forwarded by the French Government. An unconciliatory reply was sent by the Soviet Government. See **RUSSIA**, under *History*

Latin America A force of some 1600 Marines was maintained throughout the year in Nicaragua at the request of the Nicaraguan Government. In Haiti, the military control exercised by the United States with the aid of 700 Marines encountered difficulty with an insurrectionary mob at Aux Cayes on December 6 and a reinforcement of Marines was dispatched, but was diverted from Haiti some days later on subsequent report that disorders had ended. In the course of the Mexican insurrection in progress early in 1929, the United States followed its earlier policy

of placing an embargo on arms consigned to all Mexican recipients except the Government. See **NICARAGUA**, **HAITI**, and **MEXICO**

IMMIGRATION By proclamation of March 22, President Hoover put in force the national-origins quota provided in the Immigration Act of 1924. This provision had been repeatedly postponed by Congress, but the outgoing session of the Seventieth Congress had failed to suspend it further. The proclamation required that, to start with July 1, 1929, immigrants from any foreign country subject to quota restriction should be admitted only in the proportion of one yearly to every 150,000 of the inhabitants of the United States, according to the Census of 1920 who had the same national origin, as determined in a table included in the proclamation. See **IMMIGRATION**

OIL CONSERVATION The Federal Departments carried out an order of President Hoover to issue no further permits for oil exploitation on public land. This policy was well received in some States, as likely to diminish overproduction of petroleum, but was protested by the governors of Wyoming, Colorado, and Utah.

INFREQUENT COMMERCE COMMISSION See **RAILWAYS**. See also separate articles **PUBLIC LANDS**, **INDIANS**, and **NATIONAL PARKS**

CONGRESS

SEVENTIETH CONGRESS, SECOND SESSION The short session, so called, of the outgoing Congress was resumed at the end of the holidays, on Jan. 3, 1928. A clash of interests in part opposite, as to precedence for the ratification of the Paris Treaty for the Prevention of War or for the bill to provide 15 new cruisers, both awaiting the attention of the Senate, was settled by an agreement under which Senator Hale of Maine first presented the cruiser bill, after which Senator Borah of Idaho, chairman of the Committee on Foreign Relations, brought up the matter of ratification, which took the right of way. In the consideration of the treaty, a group of some 25 Senators made a fight for a qualifying declaration, or reservation, on the part of the Senate, to be included in the ratifying resolution, in order to maintain explicitly the Monroe Doctrine, the right of the United States to take measures of self-defense and the freedom of the Government from obligation to punish any foreign violator of the treaty.

In order to satisfy this group, Borah and his fellow members of the Committee on Foreign Relations wrote into the report of the committee on the treaty the assertion that they understood the stipulations proposed to be in accordance with a proper interpretation of the treaty text, and that they had no intention to modify the treaty itself or to effectuate any reservations. On January 15, the Senate accordingly voted ratification of the treaty by 85 to 1, Blaine of Wisconsin casting the adverse vote. Copper of Kansas presented on February 11 a Senate resolution for taking definite measures, to enforce world peace. Its discussion was postponed to a later session.

Cruiser Bill Debate on the cruiser bill began, in the Senate, on January 16. Swanson of Virginia supported the bill on the ground that it would help render the U. S. Navy equal to Great Britain's. Borah offered an amendment to record Congress as favoring recodification of the laws of war at sea. Norris of Nebraska offered an amendment proposing a new conference with the British Government for cruiser limitation and

allowing suspension of the construction of cruisers during such negotiation President Coolidge made it known that he opposed the clause of the bill setting the time at which construction of cruisers should begin. Two amendments of Harrison of Mississippi, one to allow postponement of constructing the last cruiser until Jan. 1, 1932, or by a year, and to put back all construction dates by a year, were defeated on February 4. Reed of Missouri proposed an amendment requesting the President to treat with other nations for protection of neutrals and freedom of the seas. The bill was passed by the Senate on February 5, with the Reed amendment, to which had been united the proposal of Borah. The Norris amendment was rejected.

The House adopted the bill as submitted by the Senate, passing it on February 7 without roll call. President Coolidge, who had opposed the time limit on cruiser construction, nevertheless signed the measure on February 13. In its final form, it required that 15 cruisers and an airplane carrier be built, the last vessels to be laid down by July 1, 1931, and the cruisers to be of 10,000 tons. The authorized cost was \$274,000,000. Cruisers were to be laid down at the rate of five a year. Every odd-numbered vessel in the order of construction was to be built in a government navy yard, but it was not specified that the rest should be built in private yards, and in consequence a move inspired by resentment to later discoveries of shipyard lobby activities was started to deprive private yards of this construction.

Prohibition Enforcement. The Jones-Stalker Law, an amendment of the Prohibition Act, originating in the Senate, was passed by that body with the over vote of 65 to 18, and subsequently passed by 283 to 90, in spite of bitter opposition from the more aggressive Wets. It raised the maximum penalty for serious violations of the Prohibition law to \$10,000 fine and five years of prison, for first violators. Power of discretion remained with sentencing judges to discriminate between major and minor violators and to treat the latter more leniently. The law raised certain violations to the rank of felony, and thus provoked discussion as to whether it would render possible a wide resort to entrance of homes by enforcers without court warrant, under exercise of police power.

Another measure, sponsored by Senator Glass of Virginia, was passed by both Houses. It provided for a commission to be named by the President, to investigate the problem of law enforcement, including Prohibition. \$250,000 was appropriated for the investigation. Cognate with legislation on Prohibition was a series of measures creating additional Federal judges in districts where the pressure of work on the existing bench was heavy, owing largely to Prohibition prosecutions. The matter of Prohibition entered into the course of the Second Deficiency Bill when the Senate, receiving this bill from the House, voted an amendment by Harris of Georgia, adding \$24,000,000 to the appropriation for Prohibition enforcement. Secretary Mellon expressed himself against the \$24,000,000 increase. The House rejected it and eventually a compromise by conference committee increased the Enforcement appropriation by only \$2,977,914.

Other Enactments. A survey of the possible routes for a new interoceanic canal, both in Nicaragua and in Panama, was provided by the passage of a resolution offered by Senator Edge.

By the Hawes-Capper Act, the shipment in interstate commerce of prison-made goods was subjected to Federal regulation. The Norbeck-Andresen Act was passed, providing that the Government should establish preserves for the conservation of migratory birds in the several States, in cases where States cooperated. By the White-Watson Act, the powers of the Radio Commission were extended to December 31. Chief proposals that failed were that of McKellar to require public hearings of demands for tax refunds, efforts to force the withdrawal of U S Marines from Nicaragua, and legislation as to the census and reapportionment. Appropriations for the ensuing fiscal year totaled \$4,063,554,342 over the course of the entire session. Adjournment was on March 4.

SEVENTY-FIRST CONGRESS, SPECIAL SESSION. A very brief special session of the Senate was held on March 4, lasting an hour and a half, to the purpose of confirming appointments. This was distinct from the special session of Congress, which convened on April 15 at the call of President Hoover's proclamation of March 7. The composition of the new Congress that assembled differed considerably from that of its predecessor. In the Senate, the Republican strength had risen to 54, a gain of 4, and the number of Democrats had fallen by 5, to 39. The seat of Curtis of Kansas, who had become Vice President, was temporarily vacant, but immediately filled by a Republican. That of Vane of Pennsylvania remained vacant through the deferment of the proceedings as to his qualification.

In the House of Representatives, the Republican strength had risen to 268, from 237, and that of the Democrats had conformably fallen to 185. Each House contained one Farmer-Labor member. Henry J. Allen entered the Senate April 15, by appointment from Kansas. The Republican predominance promoted fairly rapid disposal of business in the House throughout the session, but not so in the Senate, where the majority was itself divided on questions of foremost importance. The Democratic group repeatedly joined forces with Republican Senators of Progressive stripe to oppose with success the plans of the regular Republican wing.

Farm Relief. Legislation for the assistance of agriculture took first place in the program of Congress. Chairman Haugen of the House Committee on Agriculture reported on April 18 a bill to create the Federal Farm Board disposing of a revolving fund to be loaned to associations of farmers for certain purposes, including the carrying of crops so that they might be held for favorable marketing. His bill eliminated the equalization fee that had prevented the enactment of previous measures for farm relief. It made no provision for restoring to farmers in any other way what they might lose below prevailing domestic prices on export sales. In the Senate, on the other hand, Chairman McNary introduced on April 18 a bill that, while similar to the House bill in other respects, provided for a system of virtual rebates to farmers upon exports, known as the plan of export debentures.

The principle of this plan was that those exporting certain farm products were to receive, in the proportion of one-half of the import tariff duty on such exports, evidences of government indebtedness known as debentures, and that these debentures might be employed for certain limited purposes, essentially for tender in payment of

tariff dues. The expected working of the plan was that grain could be exported at more nearly the same return as it could be sold at home, and that the Treasury would meet part of the differential in the two prices out of its customs, while the benefit of this virtual subvention would come back, eventually, to the farmer as the domestic price for his products would be thus sustained.

The Administration Senators condemned the proposal as directly at variance with the recommendations of the President in his message (see *Administration*, above). President Hoover wrote McNary an open letter on April 20, setting forth 10 reasons why he regarded the debenture plan as unsuitable. He characterized it as a direct subsidy from the Treasury, which so far as it brought any actual gain to the farmer must stimulate overproduction and must at the same time upset the basis of farm diversification and that of import tariff rates. The House acted promptly, passing the Haugen bill on April 25, barely more than a week after its introduction, by 307 to 34. The House measure as passed called for the creation of a Farm Board of six members, to have at its disposal a lending fund of \$500,000,000 for loans to agricultural organizations and for assistance to stabilization corporations and farm marketing agencies.

Norris of Nebraska proposed in the Senate an amendment to the McNary bill, designed to meet the President's objection on the point of overproduction through the action of a sliding scale, under which debentures should become less in value as the quantity of farm exports rose. The Senate accepted this amendment April 30. After much further debate, it passed its own bill, with the Norris amendment, on May 14, by a vote of 54 to 33. All but two of the nayes were Administration Republicans, while 33 of the ayes were Democrats. Instead of taking up the Senate bill or sending its own measure to the Senate, the House by special rule provided that both bills should go to conference committee. This committee of the two Houses held a protracted conference and finally on June 4 eliminated the debenture plan. The Senate, however, held to the plan and, on June 11, rejected the conference report. The President thereupon issued a vigorous public statement that such action put the whole scheme of farm legislation in peril. This statement put an end to the debenture's course in the Senate, which passed the conference report three days later. The report had naturally met with the favor of the House. The Farm Relief Act, as signed on June 15, provided a Farm Board of 10 members to be appointed by the President and authorized their use of a fund of \$500,000,000, of which \$151,500,000 was shortly afterward appropriated by separate act.

Census and Reapportionment The previous regular session had failed to pass the necessary legislation to provide for the census that the constitution required to be taken decennially and that must be taken, according to custom, in 1930. Under the Penn bill, which had made its appearance in that session, the census was linked with the cognate matter of reapportionment of representation among the States. Disposal of the bill had been postponed in the expectation that the special session would deal with it. The Senate, in the special session, took the lead in handling the subject; its commerce committee re-

ported late in April a bill making the required provision for the census and at the same time setting up a new system of reapportionment, which was to take place in the future, in default of special enactment, by administrative procedure. Wagner of New York submitted an amendment to place all census employees under the Civil Service system, a measure that struck at a treasured source of political patronage. Nevertheless, and in spite of some opposition on the part of Senators whose States stood to suffer in representation by a new apportionment, the Senate passed the bill on May 29, by 57 to 26. The House in taking it up incorporated an amendment to exclude aliens from the apportionment count and a second, to exclude disfranchised Negroes. It passed the bill, however, with both these amendments discarded. It rejected the Senate's Wagner amendment, and provided a date different from the Senate's for the beginning of the census enumeration.

In conference committee, it was agreed that enumeration should start on April 1 and that some 500 special agents of the census should alone be subject to Civil Service certification. The act was signed on June 18. In its final form, it authorized expenditure of nearly \$40,000,000 on the census, authorized a census of unemployment, as well as one of agriculture and one of irrigation, and required the President to submit to Congress in December two computations, showing respectively the number of Representatives to which each State was entitled under the system of equal proportions and under that of major fractions. If Congress should fail to reapportion by enactment at the session then current, the President's computation by the system of major fractions was to become effective.

The new enactment thus passed left it within the power of Congress to pass such a measure of reapportionment as it might choose, in 1930, including a change in the number of Representatives constituting the House, but in case the Congress should fail to pass any measure, the enactment provided that the number of the House remain fixed, under an executive reapportionment, at the existing strength of 435 members. See *CENSUS*.

Failure of Tariff Bill The effort to enact a revision of the Tariff Act of 1922, in conformity with the recommendations of President Hoover's message, failed by reason of the inability of the predominant wing of the Republican portion of the Senate to gain a majority in support of a measure regarded by its opponents, Republican and Democratic alike, as more beneficial to favored manufacturing interests than to the farmer, for whose requirements the President had specifically pleaded. As required by the constitution, the House took the initiative in framing a tariff bill. Its committee on ways and means had been occupied for months in preliminary work upon the subject. By general accord the House deferred the matter of the tariff until it had passed a measure for farm relief.

The Hawley Tariff bill, introduced by Chairman Hawley of the Committee on Ways and Means, was presented to the House on May 7. Instead of proposing a revision of the schedule of farm products and isolated increases in tariff rates in exceptional industries that had lately suffered demonstrably from importations of competing foreign goods in increasing volume, as the President's recommendations had led many to

expect, the bill provided very extensive increase in tariff duties. It was a document of 83,000 words, of which some part was given up to the provisions for changes in the administration of the tariff system, but of which the bulk related to changes in the schedules themselves. Changes in the tariff rates affected several hundred items, and the changes were prevailing, although not universally, upward. The title of the bill mentioned specifically among its purposes that of protecting American labor, a new departure in tariff legislation and a matter outside the recommendations of the President.

The schedule on sugar and kindred products, affecting one of the greatest components of the country's total of imports, contained a provision for the increase of the rate on Cuban raw sugar to 240 cents a pound, from 170 cents a pound. This was in deference to the wishes of the domestic growers of sugar beets, and was therefore defended as in line with the recommendation for higher rates on farm products. It was opposed by Cuban sugar interests as ruinous to the sugar growers of the island, who were at the time in some difficulty owing to inability to make profits under the existing rate.

Wool, fresh beef and veal, corn, rice, cream, fresh milk, and fresh pork rates were all increased. Philippine sugar remained free of duty, owing partly to the action of Secretary Stimson, who on his return from the islands had appeared before the committee to oppose the placing of a duty upon it. Duties were increased on such manufactures as numerous cotton products, clothing, woolen textiles and some 33 chemical items. Lumber generally remained on the free list, but cedar logs and shingles, some other lumber, and common brick were made dutiable. Among the proposed administrative changes was a provision denoting the Customs Court to its original status of the Board of General Appraisers and depriving it of jurisdiction in questions of valuation of imported goods, as between the foreign-value and the domestic-value basis.

A caucus of the House Republicans united them in favor of a special rule, adopted May 24, by which no amendments save those emanating from the Committee on Ways and Means itself should be entitled to debate. This rule led to the rapid disposal of all opposition amendments. The House proceeded to consider the schedules in turn. Adopting numerous alterations of detail, it passed the measure on May 28, by a vote of 264 to 147. Only 12 Republican votes were cast against the bill, while 20 Democrats voted in its favor.

The measure then went to the Senate, where the effort was made at the outset to commit the Upper House to a measure for revision of tariffs applying to farm products and related schedules alone. Senator Borah offered a resolution to this effect. It came to a vote on June 17 and was defeated, but by an unexpectedly close vote of 39 against, to 38 in favor. The Senate Finance Committee received the House bill and embarked on a process of extensive alterations. On June 18, in order to give the committee time for its work, the Senate took recess until August 19 and the House voted a recess until September 23.

The committee's bill, as reported by Chairman Smoot after the reassembling of the Senate, made 431 changes in the tariff rates of the House bill, by the chairman's own reckoning; and of these, 177 were increases and 254 were de-

creases. Many of the increases were in the agricultural schedule and cedar lumber and shingles had been replaced on the free list. New administrative provisions were made for dealing with cases where valuations could not be made satisfactorily on the basis of the foreign value of the goods, the so-called United States value, i. e., the value of the goods in the United States as based on their wholesale selling price, was to be applied instead of the so-called American value, or the value of competing domestic products. Right of appeal to the Customs Court on matters of valuation was restored. The provisions of the House bill to maintain and strengthen the flexible tariff clause, giving the President greater latitude in appointing members to the Tariff Commission, was retained.

The bill was reported on September 4. Simons of North Carolina straightway offered an opposition resolution calling for the publication of data on the income-tax returns of interests. . . . tariff increases, a move denounced by . . . an attempt to filibuster against the bill. The resolution none the less was passed on September 10, by 51 to 27. A number of insurgent Republicans from agricultural States united to join the Democratic opposition, on the ground that the tariff measure would harm the farming interest more, by reason of tariff increases on goods that farmers must buy, than it would help by reason of tariff increases to the farmers on their own products.

The opposition thus formed centred its attention on the administrative features of the bill, unpopular with the Democratic senators, which came up first for debate. Smoot announced on September 20 the decision to drop the provisions as to the flexible tariff from the bill. President Hoover, alarmed by the possibility that the Executive might lose its power under the existing law to alter tariff rates by proclamation, issued a statement on September 24, on behalf of maintaining the means for revising individual tariff rates by Executive action on recommendation of the Tariff Commission. His statement had particular bearing on an amendment that had been offered by King of Utah, a Democrat, to require the commission to refer its findings on required tariff changes to Congress instead of submitting them to the President.

From the end of September on, it became increasingly evident that the supporters of the tariff lacked the votes to carry it through the Senate in the face of the opposition of the insurgent Republicans. The occurrence of a violent collapse in the stock market in late October and early November led to some renewal of the attempt to put through a tariff bill in the closing period of the special session, on the plea of the necessity of such a move for the prevention of economic depression. The block of the opponents of the bill stood firm, however, and nothing was accomplished.

Investigation of Lobbies. A movement in the Senate to investigate the operations of lobbies and kindred activities made some progress into a subject in which there had been no previous Federal inquiry of a general character. W. B. Shearer, a former agent of shipbuilding interests, who had ostensibly done publicity work for them, brought suit late in August against the Bethlehem Shipbuilding Corporation, the Newport News Shipbuilding Drydock Co., and the American Brown Boveri Electric Corporation for a sum

of money alleged to be owed him for services as representative of shipping interests both in the United States and in Europe. It was made to appear in the course of this suit that Shearer had played a part unfavorable to the success of the plans of the Administration in the tripartite naval conference of Geneva in 1927, and it was further intimated that he had worked in Washington for the success of measures to authorize a programme of intensified naval construction.

Senator Borah offered a resolution for the investigation of Shearer's activities. The Senate passed this resolution on September 12, and accordingly a subcommittee of the committee on naval affairs examined Shearer, Charles M. Schwab, and others connected with the proceedings. Much publicity was given to conduct on the part of Shearer which was apparently of a character to frustrate the purpose of the Geneva Conference. At about the same time with this investigation came to light the course taken by Senator Bingham in employing C. L. Eyanston, a worker for tariff-seeking manufacturers, as an aid in his own duties on the finance committee in its revision of the tariff bill. Bingham received a vote of censure from the Senate.

The occurrence provoked sentiment among Senators, and more particularly among the public, in favor of a general investigation of lobbying. Black of Alabama moved an inquiry of this sort on September 25. The Senate passed a resolution for an inquiry, and a committee for the purpose was named, with Caraway of Arkansas for chairman. The committee mapped out an extended examination, not only of tariff lobbying but of the alleged activities of lobbies for disarmament, for power interests, for Cuban sugar interests and for other purposes. Joseph R. Grundy, president of the Pennsylvania Manufacturers' Association, later Senator from Pennsylvania by appointment, was among those examined, as were also Herbert C. Lakin of the Cuka Company, sugar producers, and Edwin P. Shattuck, represented as having been engaged to represent that company's tariff interests and as being a personal friend of the President. The committee continued its work to the end of the year.

Adjournment. Congress adjourned its special session on November 22, as the Senate had no hope of agreeing on a tariff measure in advance of the date for the regular session and as the House had before it no major business pending and had for two months occupied its time chiefly in waiting for the Senate.

SEVENTH FIRST CONGRESS, REGULAR SESSION. Congress convened on December 2 in regular session. In the brief previous interim, the eldest member of the Senate, Francis E. Warren of Wyoming, had died, leaving a vacancy in the Republican ranks. Patrick J. Sullivan, a Republican, was appointed Senator *ad interim* by the Governor of Wyoming. Objection was made that a law of the State, passed in the time when Nellie Tayloe Ross, a Democrat, was governor, had removed from the governor the power to appoint Senators to fill vacancies that might occur between sessions of Congress, but the point was not pressed and Sullivan was duly seated.

The President submitted to Congress a message of moderate length, in which he urged quick action with regard to tariff rates, in the interest of business stability, but at the same time insisted again on the necessity of preserving the flexible features of the administrative system, as

a safeguard against changing conditions. He represented the credit system of the country as unshaken by the ordeal of the recent collapse of the stock market and reported agriculture as making steady improvement. Without representing it as an emergency measure for the aid of business, he recommended a reduction of the income taxes for the ensuing year by the total of an estimated \$160,000,000, which he judged the Treasury could afford to forego. He recommended additions to the construction programme for the District of Columbia and to outlay for development of waterways in the Mississippi River area. Other topics treated were the development of highways, the need of conserving petroleum resources and better organization for the enforcement of Prohibition.

Tax Reduction. Though not particularly so stressed in the message, the reduction of income taxes was hastened as a measure for the safeguarding of business from the possible sequels of the depression in the market for securities. The measure favored by the Administration was introduced in the House, from the committee on ways and means, within a few minutes after the opening of the session. It was passed, virtually without debate, on December 6, by a vote of 282 to 17, although a sprinkling of opposition members questioned the certainty of taxable incomes holding up on account of the heavy losses that had been sustained in securities. The Senate after brief consideration voted the measure *unanimously* on December 14, by 63 to 14 votes. It was sent directly to the President for signature. It provided that the normal income tax rates on personal incomes should be reduced from $1\frac{1}{2}$ to $\frac{1}{2}$ per cent, for incomes under \$4000, from 3 to 2 per cent, for those from \$4000 to \$8000, and from 5 to 4 per cent, for incomes over \$8000, also, that the tax on the income of corporations should be reduced from 12 to 11 per cent. See **TAXATION**.

Close of the Vare Case. The close division of the Senate on tariff matters having rendered the vacancy of Senator-elect William S. Vare of Pennsylvania, excluded since 1927, a handicap to the regular Republican group, the course was adopted of bringing his case to a termination. By a vote of 43 to 31, the Senate refused on December 3 to postpone further its consideration of the Norris resolution to deny Vare his seat. Vare appeared on his own behalf and, although paralyzed in the left side, delivered before the Senate a vigorous defense of his Senatorial campaign of 1926. On December 6, the Senate passed the Norris resolution, finding Vare's election void by reason of fraud and corruption. The vote was 58 to 22, all the recorded votes except those of 22 regular Republicans being against Vare. By 66 to 15, the Senate next voted a resolution that Vare's Democratic opponent, William B. Wilson, had not been elected. The vote against Wilson included 22 Democrats. A vacancy in the Senate delegation of Pennsylvania was thus created. Governor Harris immediately filled it by the appointment of Joseph R. Grundy, manufacturer and high-tariff advocate, who was duly seated December 11.

UNITED STATES MILITARY ACADEMY. A government institution at West Point, N. Y., for the theoretical and practical training of cadets for the military service of the United States, opened in 1802. On Sept. 1, 1929, the total number of cadets was 1278, distributed as follows: First class, 247, second class, 303, third

class, 300; and fourth class, 428. There were 215 members on the faculty. Appropriations in 1929 amounted to \$2,307,051 for salaries and maintenance of public works. The library contained 108,000 volumes. Superintendent, Wm R Smith, Major-General, U S Army.

UNITED STATES NAVAL ACADEMY.

A school for the education and training of midshipmen in Annapolis, Md., founded in 1845. The total number of midshipmen at the beginning of the academic year 1929-30 was 2010, distributed as follows: First class, 412; second class, 407; third class, 515; and fourth class, 616. The faculty numbered 254. The library contained 70,000 volumes. Superintendent, Rear Admiral S S Robinson, U S N.

UNITED STATES OF EUROPE. See

LEAGUE OF NATIONS.

UNIVERSALISTS. A religious denomination, existing chiefly in the United States, Canada, Japan, and Korea, which holds as parts of its doctrine the universal fatherhood of God and the final harmony of all souls with God, established in the United States in 1770 by the Rev John Murray in Good Luck, N J. The ecclesiastical organization of the church is under the jurisdiction of the general convention, which meets biennially.

The general convention met in Washington from Oct 23 to 27, 1929, at which time the tower of the new National Memorial Church was dedicated.

The number of churches in 1929 was 609, ministers in fellowship, including lay licenses, 546; church members, 50,078; and Sunday schools, 405. The denominational periodical, the *Christian Leader*, is published weekly. The Rev Frank D Adams, D D., of Detroit was president of the general convention in 1929. Headquarters of the denomination are at 176 Newbury Street, Boston.

UNIVERSES. See ASTRONOMY.

UNIVERSITIES AND COLLEGES. STATISTICS.

Dean Raymond Walters of Swarthmore College prepared statistics of American universities and colleges. This was published in *School and Society* for Dec 14, 1929. He reported an increase of 1 1/2 per cent in the total of full-time students and of 2 per cent in the grand total enrollment among the 226 universities and colleges from which he received statistics. This was slightly less than the increase in previous years.

The institutions included in the report have 442,493 full-time students and 697,584 full-time regular students, part-time students, and summer-school students. Some institutions had astounding enrollments. Columbia University, for example, had 14,952 full-time students or a total of 33,367 full-time, part-time, and summer-session students. To this number it is necessary to add approximately 2850 extra-mural and special and about 10,500 home-study students. This makes the total of those who receive instruction from this institution 46,717.

The University of California with an enrollment of 9758 was the largest liberal arts college. New York University comes next with 5542, then Wisconsin with 5500. Hunter College with an enrollment of 5512 was the largest women's college. Smith had 2051, Florida State College for Women, 1574, Wellesley, 1556, Vassar, 1158, and Mount Holyoke, 1014.

The largest two engineering enrollments were Massachusetts Institute of Technology, 2405, and

Purdue, 2355. Harvard with an enrollment of 1640 was the largest law school. New York University enrolled 1574, and Fordham 1318 in their law schools. The largest medical schools were Michigan, 642, Pennsylvania, 626, Illinois, 548, Minnesota, 530, and Chicago, 517. The largest number of students in commerce and finance were at Pennsylvania, 2207, and New York University, 2205.

Columbia University with an enrollment of 5387 had the largest school of education. Fordham reported 2320 who were preparing to teach. The largest summer schools for 1929 were Columbia, 13,817, and California, 9595. Chicago had the largest divinity school with 251 students. Syracuse had the largest school of forestry with 379 students. The largest school of journalism was at the University of Missouri with 296 students.

JUNIOR COLLEGES. There were in 1929, 395 junior colleges. In these there were more than 51,000 students and the value of the buildings, land, and equipment was more than \$91,000,000. They were found in every State in the Union except Nevada, South Carolina, Rhode Island, Vermont, and Wyoming.

It was reported that cities and towns supported by taxation 115 junior colleges, that States supported 20, that various American churches supported 149, and that the Young Men's Christian Association supported 5. There were also some that were private.

MEDICAL EDUCATION. The number of medical schools recognized by the American Medical Association in 1928 was 74. While the number of schools showed a gradual decrease, the number of medical students increased from 18,840 in 1926 to 20,545 in 1928. The number of graduates in 1928 was 4262. A financial report of 63 institutions showed a total income of \$11,983,873. Of this total, \$4,057,304 was derived from students' fees, \$2,784,527 from endowments, \$2,574,973 from State or city, and \$2,567,069 from other sources. The total expenditures were \$11,308,800.

NEW PRESIDENTS. During the year, the following new presidents of universities, colleges, and technological schools were announced. Professor A A Gusendorf was elected president of Blinn Memorial College. The Rev Dr Clarence A Barbour was elected president of Biown University. Dr. Robert G. Sproul was elected president of the University of California. Dr William E Wickenden was elected president of the Case School of Applied Science, Cleveland. Dr Alexander Guenry was elected president of the University of Chattanooga. Dr Robert Maynard Hutchins was appointed president of Chicago University. Dr Albert W. Palmer was elected president of the Chicago Theological Seminary.

The Rev Dr Albert W. Beaven was elected president of the College of Divinity School. Dr George A. Works was elected president of the Connecticut Agricultural College. Dr Katherine Blunt was elected president of the Connecticut College for Women. Dr Walter L. Lingle was made president of Davidson College. Dr Mevin Grant Fuller was made president of Dickinson College. Dr Arlo Ayres Brown was elected president of Drew University. The Rev T H. Roach was elected president of Epworth Seminary. The Rev Tennis Herbert Megorden was elected president of Gale College. Dr Wendell S. Brooks was elected president of Intermountain

Union College Dr Clarence M Dannelly was elected president of Kentucky Wesleyan College

Raymond A Kent was inaugurated president of the University of Louisville Dr Alexander G Ruthven was elected president of the University of Michigan Dr G H Van de Bogart was made president of a new unit of the Greater University of Montana The Very Rev John J O'Byrne was appointed president of Niagara University Dr Heiman G James was elected president of the University of South Dakota Dr E T Franklin was elected president of Southwestern College The Rev John D Goss was elected president of Union College Dr James P Kinard was elected president of Winthrop College See articles on separate colleges

GIFTS AND BENEFACTIONS During 1929 there were many gifts for educational purposes and the year was characterized by a very large total of gifts Some of the individual gifts were very large, while a number of institutions completed drives for endowments

The University of Chicago announced the following contributions \$400,000 from the children of the late John P Wilson for the endowment fund of the law school, \$1,000,000 from Max Epstein for the erection of an art building, \$250,000 from the Conrad Hubert Trust Fund, \$1,500,000 from the General Education Board for the further development of education, \$1,000,000 for an International House

Columbia University received a contribution of \$2,000,000 from Edward S Harkness for the construction of residence halls at the new Medical Centre, and \$200,000 from Mrs Charlotte E De Sers for the endowment of a professorship in memory of her father Cornell University received an anonymous gift of \$200,000 toward the projected pension fund for professors, \$1,500,000 from the General Education Board conditioned upon the university's obtaining a similar amount by June 30, 1930, to be used to develop a graduate centre for scientific research in biophysics, more than \$1,000,000 by the will of the late Col H W Sackett for the beautification of the campus

Harvard University received \$2,000,000 from the International Education Board to be used toward establishing an Institute of Biology and a bequest valued at \$5,000,000 from the late Stuart Welch New York University received a building valued at \$2,000,000 from Mr and Mrs Frederick Brown, \$1,000,000 from Mr and Mrs Percy S Straus for endowment, \$250,000 from the Conrad Hubert Trust Fund, and \$250,000 from Dr William H Nichols The University of North Carolina received \$100,000 for a library school from the Carnegie Corporation

Northwestern University received \$1,000,000 from the family of the late Charles Deering for a new general library building, \$3,000,000 from F C Austin for the Austin Scholarship Foundation for the training of business executives, and more than \$1,000,000 for the college of liberal arts by the will of the late Milton H Wilson

Princeton University received \$200,000 from the class of 1887 to endow a chair of astronomy, \$500,000 from the estate of the late James T Walker, \$100,000 by the will of the late Percy R Payne, \$500,000 from Thomas D Jones, and half of the residuary estate amounting to several hundred thousand dollars of the late William B Isham

Yale University received a gift of \$200,000 from Charles Lathrop Pack for the establishment of a

foundation for the advancement of applied forestry, a bequest estimated at \$3,000,000 by the will of Mrs Ray Tompkins, \$2,000,000 for the New Haven Hospital affiliated with the Yale School of Medicine from the General Education Board, \$225,000 as a bequest from the late Thomas P Smallman for the new wing to the medical school, and \$100,000 from Edward S Harkness for the building of a residence college system

THE AMERICAN-SCANDINAVIAN FOUNDATION For the academic year 1928-29, American and Scandinavian students received scholarships from the American Scandinavian Foundation amounting to \$72,000 The foundation reported 26 university fellows and 33 industrial fellows

THE JULIUS ROSENWALD FUND This fund amounting to \$30,000,000 was established by Mr Rosenwald "for the benefit of mankind" He stipulated that both principal and any interest that may accrue must be expended within twenty-five years after his death During 1929, there was appropriated the sum of \$4,000,000 for various purposes The president reported that one-tenth of the expenditure was for the establishment of 553 Negro schools, bringing the number of Rosenwald schools to 4729

FELLOWSHIPS FOR STUDY ABROAD Since 1920 there has been a remarkable increase in the number of opportunities for Americans to study in the institutions of foreign countries The Institute of International Education in its tenth annual report listed many fellowships and scholarships that are open to American students Some of these carry stipends ranging from a few hundred dollars to two thousand dollars In the early part of the year, the Institute announced arrangements for student exchange with Austria, Czechoslovakia, France, Germany, Hungary, and Switzerland In each case corresponding opportunities were offered by American colleges and universities to the nationals of the country concerned Students who may be interested in applying for these fellowships were advised to communicate with the Institute of International Education, 2 West 45th Street, New York City

During the college year 1928-29 there was a total of 9085 foreign students in the colleges and universities of the United States In 1921-22 there were only 6488 In June former Senator and Mrs Guggenheim made a gift of \$1,000,000 to the John Simon Guggenheim Memorial Foundation to establish a system of exchange fellowships between the United States and the Latin-American countries

A CHRISTIAN SCIENCE COLLEGE OF LIBERAL ARTS The *Christian Science Monitor* announced gifts amounting to \$2,166,000 to the new college of liberal arts The trustees of The Principia announced that the actual work of construction was to begin as soon as \$3,000,000 additional is obtained The Principia comprised a junior college, an upper school, and a lower school The enrollment, which was limited to the sons and daughters of Christian Scientists, numbered 670

HARVARD SCHOOL OF CITY PLANNING Harvard University with the aid of the Rockefeller Foundation established the first school of city planning This was a graduate professional school coordinated with the schools of Architecture and Landscape Architecture The function of the school was to train men to be professional city planners and also to give sound conceptions of city planning to men who were going to be archi-

fects, landscape architects, engineers, or leaders in various public endeavors

STUDY OF SOCIAL PROBLEMS AT CHICAGO UNIVERSITY In November the University of Chicago opened a new social science building which had cost \$650,000, the gift of the Laura Spellman Rockefeller Foundation

COLLEGE ATHLETICS In the latter part of 1929 college and university circles were very greatly disturbed over a bulletin entitled *American College Athletics* published by the Carnegie Foundation for the Advancement of Teaching. The authors state that they had made personal visits to 130 American and Canadian universities and had had the cooperation of more than 2000 persons. The report charged that there was commercialism of athletics in many colleges, and that there is a negligent attitude toward the educational opportunity for which the American college exists. It describes commercialism in sport as "the placing of a higher value upon the monetary and material returns either direct or indirect from any athletic activity than is placed upon its returns in recreation, health, and physical and moral well-being." It stated that when tested by this definition, few schools and colleges can be regarded as keeping their sports free from the commercial taint.

In his preface to the bulletin, Dr. Henry S. Pritchett, President of the Foundation, asserted that "the responsibility to bring athletics into a sincere relation to the intellectual life of the college rests squarely on the shoulders of the president and faculty." See **CARNEGIE FOUNDATION, ROCKEFELLER FOUNDATION**

UPPER SENEGAL AND NIGER. A colony under the Government-General of French West Africa, officially known since Dec. 4, 1920, as French Sudan. See **FRENCH SUDAN** and **FRENCH WEST AFRICA**

UPPER SILESIA. See **POLAND**

UR. See **ARCHAEOLOGY**

URUGUAY. *Ur-u-gwá* or *õr'õdõgwí*. A republic on the east coast of South America, bounded by Brazil on the north and Argentina on the west. Capital, Montevideo.

AREA AND POPULATION. Area, 72,153 square miles, population, at the beginning of 1929, 1,808,286. The chief cities and their estimated populations in 1927 were: Montevideo, 420,000 (458,633 in 1928), Salto, 35,000, Paysandu, 28,000, Mercedes, 30,000, and Minas, 28,000. In 1928 the birth rate was 25 per thousand inhabitants, the death rate, 10.68, natural increase, 14.32, and the marriage rate, 6.17. Immigrants in 1928 totaled 21,165.

EDUCATION. The average attendance in the public primary schools in 1928 was 133,588, or 78.6 per cent of the enrollment. In 1927, 10,285 students were enrolled in the University of Uruguay at Montevideo.

PRODUCTION. About 60 per cent of the total area is devoted to stock raising, about 20 per cent to mixed farms and ranches, and 5 per cent to farms. The predominance of the livestock industry in the country's economy is indicated by the fact that animals and animal products constitute 95 per cent of the exports. Livestock in 1929 was estimated to include 7,523,432 cattle, 1,629,724 calves, 1,629,724 goats, and 19,357,725 sheep. In 1927 the total investment in the cattle industry was estimated at \$1,369,662,700 or more than half of the total national wealth. There is little mining, and meat packing is the leading

industry, followed by flour milling, shoemaking, and tanning.

COMMERCE. Uruguayan foreign trade in 1928 totaled \$202,729,933, or \$17,085,709 more than in 1927. Imports increased by 14.54 per cent to \$97,478,662 while exports rose by 4.68 per cent to \$105,251,271. During the first nine months of 1929 imports increased slightly, as compared with the same period in 1928, while the exports declined sharply, resulting in an adverse balance of trade for the first time in five years.

FINANCE. In the budget for the fiscal year 1929-30 revenues were estimated at 58,041,562 pesos and expenditures at 58,547,252 pesos, leaving a deficit of 505,690 pesos (1 peso equals \$1.0342 at par). For 1928-29, revenues and expenditures were estimated at 54,061,364 and 54,227,928 pesos, respectively, with the revenue total including an anticipated balance of 200,000 pesos from the 1927-28 budget operations. Actual receipts in 1927-28 amounted to 59,986,000 pesos, including 2,136,000 pesos carried over as surplus from the previous fiscal year, and actual expenditures to 55,946,000 pesos, leaving an actual surplus for the year of 1,904,000 pesos and a credit balance, including the carry over, of 4,040,000 pesos. The public debt as of July 31, 1929, was reported at 214,922,761 pesos, of which 74,040,914 represented the internal debt, 136,366,847 the external debt, and 4,295,000 the international debt.

COMMUNICATION. Most of the 1699 miles of railway line in Uruguay in 1928 were owned by private companies, the principal system being the Central Uruguay Railway, which in 1926-27 carried 4,544,000 passengers and 1,070,000 tons of freight, earning gross receipts of \$10,147,000. A law passed in October, 1928, authorized the construction of five new state railway lines at a total cost of \$23,600,000.

GOVERNMENT. Under the constitution of Jan. 3, 1918, legislative power is vested in the Parliament of two Houses, the Chamber of Representatives, elected by universal suffrage of males over 18 years of age, and the Senate, chosen by an electoral college which is elected by popular vote. Executive power is vested in the President elected by direct popular vote and a national administrative council of nine members. President in 1929, Dr. Juan Campstegey, elected for the term Mar. 1, 1927-Feb. 28, 1931.

HISTORY. An otherwise uneventful year in Uruguay in 1929 was featured by the emergence of this smallest of South American republics as a recognized leader in Latin-American affairs. The isolationist policy adopted by the Irigoyen administration in Argentina, hitherto the unofficial spokesman for the Spanish-speaking nations of the Western Hemisphere, left the way open for Uruguay's assumption of leadership. The most tangible evidences of Uruguay's growing prestige were the acceptance of its offer of mediation in the Paraguayan-Bolivian dispute over the Chaco boundary and the success achieved by Eduardo Rodríguez Larreta, Uruguayan delegate to the League of Nations, in bringing about the formation of a Latin-American bloc intended to secure a more important voice in the conduct of League affairs for the countries of South America and Central America. Uruguay, whose agricultural exports to the United States were threatened by the attempt at tariff revision by the Congress of the United States, joined with other Latin-American countries in protesting against this

and other policies of the North American republic See BOLIVIA and PARAGUAY, under *History*

UTAH. POPULATION According to the Fourteenth Census, the population of the State on Jan. 1, 1929, was 440,396 The estimated population on July 1, 1928, was 531,000 The capital is Salt Lake City

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929

Crop	Year	Average Prod Bu	Value
Hay	1929	657,000	1,620,000 *
	1928	647,000	1,590,000 *
Wheat	1929	266,000	6,403,000
	1928	257,000	6,861,000
Sugar beets	1929	46,000	564,000 *
	1928	51,000	637,000 *
Potatoes	1929	18,000	3,330,000
	1928	21,000	4,112,000
Oats	1929	58,000	2,446,000
	1928	55,000	2,475,000
Barley	1929	39,000	1,560,000
	1928	34,000	1,666,000

* Tons

MINERAL PRODUCTION Utah in 1929 produced gold, silver, copper, lead, and zinc valued at approximately \$90,485,000, an increase of about \$7,226,000 over the output of 1928, according to Federal estimates A large increase was reported in copper and gold on account of active mining and improvements at Bingham, especially during the first half of the year Increases also were reported in the production of silver and zinc, but the output of lead was slightly less than that of 1928 The production of copper in 1929 was the largest that ever had been recorded in the State Utah remained first in the United States in the production of silver, second in copper, after Arizona, and third in lead, coming after Missouri and Idaho

Gold production increased considerably from \$4,394,000 in 1928 to about \$1,803,000 in 1929 As in recent years, virtually all the gold was recovered from ores and concentrates smelted The silver output increased from 17,072,852 ounces in 1928 to about 17,749,000 ounces in 1929, and the production was about 4,490,000 ounces more than that of Montana, which was second in silver production in the United States The value of the Utah silver output decreased from \$9,987,618 to about \$0,478,000, owing to the lower average price obtained

Copper production increased from 203,235,039 pounds in 1928 to about 320,193,000 pounds in 1929, in value, from \$42,225,846 to about \$57,314,000, owing partly to increased prices for copper The lead output decreased from 91,840,021 pounds for 1928 to about 286,817,000 pounds for 1929, but the value increased from 16,926,141 to about \$18,213,000, on account of the higher average price of lead

There were mined in Utah, in 1928, 4,810,000 short tons of coal (estimated), in 1927, 4,781,480 tons, valued at \$11,084,000 The total value of the State's mineral products was \$90,368,455 for 1927, \$98,985,218 for 1928

FINANCE State expenditures in the year ended June 30, 1928, as reported by the U S Department of Commerce were for maintaining and operating governmental departments, \$8,025,627 (of which \$3,747,169 was for local education), for interest on debt, \$450,827, for improvements, \$2,031,206, total, \$11,107,660 (of which \$3,174,392 was for highways, \$1,355,399 being for

maintenance and \$1,818,993 for construction) Revenues were \$12,379,991 Of these, property and special taxes formed 45.2 per cent, departmental earnings and compensation to the State for officers' services, 8.5, sale of licenses, 23.3 (including gasoline taxation of \$1,661,068) The funded State debt, as of June 30, 1928, \$9,700,000 outstanding, included \$7,260,000 for highways Its total net of sinking funds was \$6,005,413 On a property valuation of \$701,797,693, State taxes of \$5,217,577 were levied in the year

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 2193.60 In 1929, 5.67 miles of first, and 994 of second, track were built

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and dealing with operations of 1927, there were 556 manufacturing establishments in the State in 1927 These employed 13,585 wage earners, whose wages for the year totaled \$16,688,574 Materials and supplies used in production cost \$120,567,348 Manufactured products combined attained the value of \$163,118,376

EDUCATION Enrolled in the public schools in 1928-29 were 137,160 pupils Of these, 107,174 were in the elementary, and 29,986 in the high schools The expenditures for public-school education totaled \$12,482,800 Salaries of teachers averaged \$1133 a year in elementary grades and \$1563 in high and junior high schools

LEGISLATION The State Legislature held its regular biennial session Apart from routine measures, it passed an act of an unusual type rendering it unlawful to display on billboards advertisements of cigarettes and other forms of tobacco, such as might depict these articles as advantageous, beneficial to health, or the like The measure was in consonance with one passed by the previous Legislature and later declared unconstitutional, forbidding newspapers to carry advertisements of tobacco products

POLITICAL AND OTHER EVENTS The action of the Federal administration in suspending the granting of rights to produce petroleum from the public domain was strongly opposed in the State, as in some of the other commonwealths having within their territory a great extent of Federal lands Utah entered the compact of the Colorado River States to enable the Federal Government to carry out the project for a Colorado River Dam, by legislative act on March 6 A deposit of natural gas said to contain as much as 7.07 per cent of helium was discovered in the Sndbad Helium area, on land adjoining the Federal Helium Reserve No 1 It was described as the richest find of gas in helium content yet discovered and as likely to enable producers to furnish helium gas at much less than the cost previously involved

OFFICERS Governor, George H. Dein, Secretary of State, Milton H. Welling, State Auditor, Ivo A. J. A. J., State Treasurer, A. E. Christensen, Attorney-General, George P. Parker, Superintendent of Public Instruction, C. N. Jensen

JUDICIARY Supreme Court Chief Justice, James W. Cherry, Associate Justices, Daniel N. Straup, Elias Hansen, William H. Folland, Ephraim Hansen

UTAH, UNIVERSITY OF A State institution of higher education in Salt Lake City, founded in 1850 The total enrollment for the autumn of 1929 was 2995 and for the summer session of the

same year, 677. The faculty, exclusive of 15 members on leave of absence, numbered 177. The productive funds of the university amounted to \$809,142, and the income for 1928-29 was \$875,000. The library contained 98,229 volumes and 28,821 pamphlets. President, George Thomas, Ph D.

VACCINATION. See SMALLPOX AND VACCINATION

VACCINES See VETERINARY MEDICINE

VANDERBILT UNIVERSITY. A nonsectarian institution of higher learning for men and women in Nashville, Tenn., founded in 1873. The enrollment for the autumn term of 1929 was 1453. Productive funds of the university amounted to \$11,000,000, the annual income was approximately \$1,000,000, and the value of the property was estimated at \$6,300,000. The library contained 144,000 volumes. Chancellor, James H. Kirkland, Ph D., LL D., D C L.

VAN DER STUCKEN, FRANK A. noted American choral and orchestral conductor, died in Hamburg, Aug. 19, 1929. He was born in Fredericksburg, Tex., Oct. 15, 1858. At the age of eight, he was taken by his parents to Antwerp, where he received his first musical instruction from Peter Benoit. From 1876 to 1878, he attended the Leipzig Conservatory, studying under Langer, Reinecke, and Grieg. In 1884 he was called to New York, as successor to Dr. Leopold Damrosch, as conductor of the Arion Society, which position he filled with signal distinction until 1895, taking the organization on a very successful tour of Germany (1892). During 1885-88 he also conducted in New York series of orchestral concerts, at which he introduced a number of new works by American composers. From 1895-1903, he was director of the Cincinnati Conservatory of Music, and from 1895 to 1907, conductor of the Cincinnati Symphony Orchestra. In 1905 he was chosen to succeed Theodore Thomas as conductor of the biennial Cincinnati May Festival and, although he lived in Germany from 1908 to 1917, he returned every two years to Cincinnati in time for the festivals. This position he resigned in 1912, but accepted invitations to conduct the festivals of 1923, 1925, and 1927.

VARE, WILLIAM S. See UNITED STATES, under Congress

VASSAR COLLEGE. A nonsectarian institution for the higher education of women in Poughkeepsie, N. Y., founded in 1861. The enrollment for the autumn of 1929 was 1157. The endowment, including fellowships and scholarships, amounted to \$7,195,611, the income from funds was \$389,575 (Gifts received during 1928-29 were in excess of \$400,000). There were 161,500 volumes in the library. President, Henry Noble MacCracken, Ph D., LL D., LL D.

VATICAN. See ROMAN CATHOLIC CHURCH

VATICAN CITY. A sovereign state, officially known as the State of Vatican City, established within the city of Rome as the seat of the Papacy under the terms of the political treaty signed between the Italian government and the Vatican on Feb. 11, 1929, and ratified by the Italian Parliament in May. Vatican City came into existence June 10 with the exchange of ratifications. Ruler, Pope Pius XI (Achilles Ratti).

Vatican City has an area of 108 7 acres. It embraces St. Peter's Church and Piazza, the Vatican with its administrative buildings, gardens, and observatory, and adjoining territory mostly

in the rear of these establishments. A census in 1929 showed 518 legal subjects, including 389 Italians, 118 Swiss (100 of whom were members of the Swiss Guard), and 11 Frenchmen. Citizens include all those having permanent residence there and the cardinals residing in Rome.

Under the Lateran Treaty, the State of Vatican City exercises all the prerogatives of a sovereign state, Vatican City high officials and cardinals are granted diplomatic immunity and the inviolability of the Pope is enforced by the Italian government. With the exception of St. Peter's Piazza, Vatican City is policed by the Pontifical Gendarmes Corps of 120 members. The Swiss Guard, of 100, and two volunteer corps, the Noble Guard and the Palatine Guard, bring the total force of the Papal army to 598 men and officers. The acquisition or sale of goods or foodstuffs within Vatican City boundaries is a state monopoly and duties are imposed on goods imported and exported.

FINANCE. Treasury officials estimate that the expenditures of the State of Vatican City slightly exceed those of the Vatican under its former status. With the interest from the indemnity of 750,000,000 lire cash and 1,000,000,000 lire in Italian 5 per cent bonds paid by the Italian government in accordance with the Lateran settlement, surpluses from the Vatican City financial operations were expected to be even greater than before.

In 1928 the Vatican received an income of \$13,500,000 from "Peter's pence," fiscal dues, private offerings, and other sources. Since 1917 the average ordinary expenditures have not exceeded \$1,400,000 (7,000,000 lire) annually, dispensed (in lire) chiefly as follows:

Entertainment of cardinals and diplomats	500,000
Administration of Vatican, Lateran palaces, and Villa Castel Gandolfo	2,500,000
Charities and school subsidies	1,500,000
Present and extraordinary aid	1,500,000
Miscellaneous	1,000,000

The greatest expense is incurred in connection with the maintenance of the Swiss Guard and the gendarmes. There is no public or state debt.

COMMUNICATIONS. The Vatican City has direct telegraphic, telephonic, and wireless communication with the other states of the world and also contains a railway station and a track 600 meters long connecting with the Italian State Railways. Separate coinage and postal systems are maintained.

GOVERNMENT. Under the fundamental law, which became effective June 10, 1929, all executive, legislative, and judicial powers are vested in "the Supreme Pontiff as Sovereign of the State of Vatican City." Some of the Pope's powers are delegated to the Governor of Vatican City, the Papal Secretary of State, and others. An appointive court tries all civil cases in accordance with a legal system based on canon law and pontifical constitutions and rules. Cases may be appealed to the sacred tribunal of the Rota, and, as a final judicial resort, to the Supreme Tribunal Segnatura. The chief officials of Vatican City in 1929 were Commendatore Serafini, the Governor, who was assisted by a treasurer and secretary-general, Prof. Francesco Pacelli, General Councillor, Monsignor Pizzardi, Secretary of the Congregation of Extraordinary Ecclesiastical Affairs, and Monsignor Antonio Sabatucci, Auditor General of Apostolic Rev-

enues Other officials of the Roman Curia previous to the Lateran settlement, including Cardinal Gasparri, Secretary of State, retained their posts under the new government at the end of the year

HISTORY The State of Vatican City concluded with Prussia on June 14, 1929, its first treaty with a foreign state other than Italy On June 25, 1929, the Pope as sovereign of Vatican City, received the credentials of the Italian Ambassador, Senator Cesare Maria de Vecchi, the first diplomat accredited to the new state The first arrest was that of a Norwegian woman, who was charged with attempting to shoot one of the canons of St Peter's, Archbishop John Smit, on Nov 25, 1929 The papal court declared her to be the victim of a mental infirmity and released her without trial for deportation by the Vatican civil authorities On December 20, Pope Pius entered Italian territory for the first time as pontiff, making an unannounced pilgrimage to the basilica of St John Lateran, the cathedral church of the Diocese of Rome, where he celebrated Mass

One of the first controversies involving the new state arose when the authorities of the British Crown Colony of Malta refused to issue a passport to a monk ordered to Sicily by the Italian superior of his monastery, on the ground that he was a British subject who was being sent away against his wishes and for political reasons

The *Osservatore Romano*, official organ of the Vatican, transferred its offices to quarters within the Vatican City on November 4, thus eliminating the possibility of censorship by the Italian government Extensive alterations and improvements on Vatican City property were inaugurated during the year See ITALY and MALTA, under *History*, and ROMAN CATHOLIC CHURCH

VAUGHAN, VICTOR CLARENCE An American physician and educator, died Nov 21, 1929, in Richmond, Va He was born in Mt Airy, Mo, Oct 27, 1851, and was graduated from Mount Pleasant College in 1872, receiving the Ph D degree from the University of Michigan in 1876 and that of M D in 1878 From 1875 to 1883, he was chemistry laboratory assistant at the University of Michigan, lecturer in medical chemistry in 1879-80, assistant professor, 1880-83, professor of physiological and pathological chemistry and associate professor of therapeutics and materia medica during 1883-87, professor of hygiene and physiological chemistry and director of the hygienic laboratory from 1887 to 1909, and dean of the department of medicine and surgery from 1901 to 1921 He became chairman of the division of medical sciences of the National Research Council and a member of the Typhoid Commission From 1915 to 1923, Dr Vaughan was managing editor of the *Journal of Laboratory and Clinical Medicine*

VEBLÉN, veb'lén, THORSTEIN BUNDE An American economist, died Aug 3, 1929, in Palo Alto, Calif Born in 1857, he was graduated in 1880 from Carleton College, receiving the Ph D degree from Yale University in 1884 In 1891-92 he was a fellow in economics and finance at Cornell University and at the University of Chicago in 1892-93 He became a reader in political economy at the University of Chicago in 1893, an associate in 1894, an instructor in 1896, and assistant professor in 1900 During 1906-09 he was associate professor of economy at Leland Stanford University and, from 1911 to 1918,

lectured in economics at the University of Missouri In 1918 Dr Veblen became a teacher in the New School of Social Research in New York, from which he retired in 1927 to devote his entire time to writing From 1896 to 1905, he was managing editor of the *Journal of Political Economy* He was the author of *The Theory of the Leisure Class* (1899, new ed, 1912), *The Theory of Business Enterprise* (1904), *The Instinct of Workmanship* (1914), *Imperial Germany and the Industrial Revolution* (1915), *An Inquiry into the Nature of Peace and the Terms of Its Perpetuation* (1917), *The Higher Learning in America* (1918), *The Vested Interests* (1919), *The Place of Science in Modern Civilization and Other Papers* (1920), *The Engineer and the Price System* (1921), *Absentee Ownership and Business Enterprise in Recent Times* (1923) He translated *The Lizarda Naga* (1925)

VEGETABLES See HORTICULTURE
VEHICLES, VEHICLE CODES See AUTOMOBILES

VENEZUELA, ven'e-zwá'la, Sp pron, va' nā-thwā'la or *Imu-Sp pron, vā'nā-swā'la* A republic on the northern coast of South America, bordering on the Caribbean Sea and lying between Colombia on the west, Brazil on the south, and British Guiana on the east Capital, Caracas

AREA and POPULATION Venezuela has an area of 393,874 square miles, population, according to the census of December, 1926, 3,026,878, as compared with 2,411,952 in 1920, estimated in 1928, 3,116,000 The population of Caracas in 1926 was 135,253, and of other large cities Maracaibo, 74,767, Valencia, 36,804, Barquisimeto, 23,109, and San Cristobal, 15,295

EDUCATION School registration in the various types of schools in 1928 was as follows: Government primary, 76,639, private, 14,827, state, 9958, municipal, 9906, secondary, 419, special, 1415, higher education institutions, 837

PRODUCTION Venezuela is primarily an agricultural country, despite its development in recent years to second rank in the list of petroleum producers Coffee and cacao are the chief crops in the agricultural zone, and sugar cane, tobacco, corn, beans, and chicle are other leading products

Petroleum production in 1929 was reported at 124,000,000 barrels, or 15,000,000 barrels more than in 1928 Venezuela rose to second place in the ranks of petroleum-producing countries in 1928, when the output increased 68 per cent over 1927 Exports in 1928 totaled 97,000,000 barrels, as compared with 61,900,000 in the previous year, the bulk of the exports going to Curaçao and Aruba for refining Gold, asphalt, and copper also are produced, the gold output in 1928 totaling 48,245 troy ounces and asphalt, 48,749 metric tons Petroleum refining is the only large-scale factory industry

COMMERCE The volume of foreign trade in 1928 increased to \$198,050,323, or 27 per cent more than the previous year's total of \$155,886,839 The 1928 imports, totaling \$80,406,215, represented a 14.58 per cent increase, and the exports (\$117,644,108), a 37.25 per cent increase over 1927 The principal sources of Venezuelan imports in 1928 were the United States, \$46,188,316, the United Kingdom, \$9,349,397, Germany, \$6,530,482, and France, \$1,370,081 Venezuelan exports went chiefly to the United States, \$32,703,320, Germany, \$4,449,571, France, \$2,403,085, and the United Kingdom, \$2,159,530 Im-

ports from the United States showed a further increase in 1920, while exports to that country were also higher, due principally to an increase of \$10,000,000 in petroleum shipments over 1928.

FINANCE The budget for the fiscal year ending June 30, 1930, estimated revenues at 193,189,750 bolívares (\$37,286,000) and expenditures at 192,450,000 bolívares (\$37,143,000). The budget estimates for the previous year balanced at 195,450,000 bolívares, but actual revenues considerably exceeded the estimate, totaling 219,820,087. Expenditures for the fiscal year 1928-29 were not available, but for the calendar year 1928 expenditures amounted to 224,867,000 bolívares, as against receipts of 204,346,000. The receipts were 29,322,000 bolívares greater than in 1927. The increased expenditures in 1928-29 were due to the inclusion in the budget of 30,000,000 bolívares for financing two governmental banks, and to considerably increased debt retirement and public works appropriations. The Treasury balance was consequently reduced from 91,485,000 bolívares on Jan. 1, 1928, to 70,964,000 on the same date in the following year. The public debt on July 23, 1929, totaled 64,482,605 bolívares, of which 28,733,884 represented the domestic and 64,482,720 the foreign debt. The cancellation made in London in June, 1929, on the 3 per cent diplomatic debt of Venezuela, 1905 issue, is not calculated in the above figure for the foreign debt. The bolívar has a par value of \$0.1930.

COMMUNICATIONS In 1928 there were 660 miles of railway line, for the most part privately owned, which carried 2,285,000 passengers and 451,000 tons of freight. Gross receipts totaled 19,507,255 bolívares (\$3,762,000) and expenditures 14,424,320 bolívares. About \$4,800,000 was spent on highway construction during 1928-29. There are 11,160 miles of navigable rivers and waterways. In 1927, 1909 vessels of 2,742,000 net registered tons entered Venezuelan ports and 5562 vessels of 6,574,000 tons cleared. Outward shipments of petroleum accounted for the large excess of clearances.

GOVERNMENT According to the constitution of July 1, 1925, the executive power is vested in the President, who acts through a responsible ministry, and who is elected by Congress for seven years and the legislative power is vested in the Congress, consisting of the Senate and the Chamber of Deputies. President at the beginning of 1929, General Juan Vicente Gómez (elected May 3, 1922, for the period 1922-1929).

HISTORY The termination in Venezuelan history in 1929 of the rule of General Juan Vicente Gómez of his twenty-year rule as President of the Republic. General Gómez declared himself President on Dec. 19, 1908, after he had been left in control of the country as provisional President by Cipriano Castro, who had gone to Europe to undergo an operation. Consolidating his position as virtual dictator, he was successively reelected to the Presidency, the last time in 1922 for the term ending June 25, 1929. Reelected by Congress in April, he refused the post and on May 30 Congress elected Dr. Juan Bautista Pérez, Chief Justice of the High Court of Cassation, to succeed him. Dr. Pérez had been named provisional President by Gómez on April 18 and his election was assured by the retiring President's support of his candidacy. Gómez retained his power, however, by accepting the post of commander-in-chief of the army. The constitution was amended to make the office of

commander-in-chief a constitutional one to be filled by Congress at the same time and for the same term as the Presidency. The office was invested with drastic powers. The incumbent was made head of all armed forces, with authority to fix the strength of each branch, and he was given joint authority with the President to appoint and remove cabinet ministers, declare war, convolve Congress in special session, suspend civil rights, and exercise powers in war or rebellion.

Despite these developments, there was no discontinuance of revolutionary activities directed against the Gómez régime. A number of revolutionary leaders made determined efforts to bring about a general uprising, but the populace appeared indifferent or hostile to such efforts, and each attack was repulsed by government troops, the leaders being either killed, captured, or put to flight.

Student demonstrations in Caracas against the Gómez régime resulted in the incarceration of a number estimated at from 100 to 500 in Puerto Cabello prison. After spending several months in prison, they were released on November 19 under peace bonds signed by their parents. Revolutionists under Gen. Rafael Urbina engaged in an adventure reminiscent of the filibusterers of an earlier day when on June 8 they seized Willemstad, capital of the Dutch island of Curaçao, off the coast of Venezuela, captured the governor and other Dutch officials, seized the American vessel *Maracabo*, and compelled the captain to land them at La Vela on the Venezuelan coast. They then attacked Coro, capital of the Province of Falcón, but were repulsed. Gen. José Rafael Galdós, who led another insurrection in southwest Venezuela, was captured on June 24. In August a group of revolutionists under General Delgado Chalbaud and Rafael María Carabano landed from the German steamer *Falk*, which they were said to have chartered, and attacked Cumana. They were defeated by forces under Gen. Emilio Fernández, Governor of Sucre, who was killed in the battle. With his control unshaken by these various efforts, Gómez on December 19 witnessed the celebration of the twenty-first anniversary of his ascendancy to power. Shortly afterward the 70-year-old dictator was reported to be seriously ill and some uneasiness was evidenced by the business element and foreigners with investments in the country, who feared that Venezuela might again plunge into the anarchy and disorder from which Gómez rescued it, once his control came to an end. The 100th anniversary of independence from Colombia was celebrated December 17. See EARTHQUAKES and CURAÇAO.

VERMONT. **POPULATION** According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 352,428. No later estimate had been prepared. The capital is Montpelier.

AGRICULTURE The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod. Bu.	Value
Hay	1929	927,000	1,542,000 *	\$16,919,000
	1928	927,000	1,497,000 *	17,304,000
Potatoes	1929	19,000	2,850,000	4,275,000
	1928	21,000	2,982,000	2,535,000
Corn	1929	88,000	3,606,000	1,788,000
	1928	80,000	3,520,000	3,872,000
Oats	1929	74,000	2,738,000	1,780,000
	1928	79,000	2,686,000	1,880,000

* Tons.

MINERAL PRODUCTION The total value of the mineral products of the State fell slightly to \$14,702,891 for 1927, from \$14,955,181 for 1926. The production of stone was 321,970 short tons, valued at \$9,216,116 for 1927, as against 330,230 tons, valued at \$9,244,465 for 1926. The value of the slate produced was \$4,108,911 for 1927 and \$4,267,041 for 1926, it fell farther to \$3,981,928 for 1928.

FINANCE State expenditures in the year ended June 30, 1928, as reported by the United States Department of Commerce, were for maintaining and operating governmental departments, \$6,365,784 (of which \$527,479 was for local education), for interest on debt, \$63,277, for improvements, \$2,998,807, total, \$9,427,868 (of which \$5,345,505 was for highways, \$2,710,534 being for maintenance and \$2,628,971 for construction). Revenues were \$9,085,727. Of these, property and special taxes furnished 36.4 per cent, departmental earnings and compensation to the State for officers' services, 5.2, sale of licenses, 43.6 (including gasoline taxation of \$971,983). The funded State debt, \$6,701,532 outstanding and net, included \$5,000,000 of flood bonds issued subsequent to the disastrous floods of November, 1927. On a property valuation of \$321,485,115, State taxes of \$1,174,203 were levied in the fiscal year.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 1034.15. There was no reported construction of additional line in 1929.

MANUFACTURES According to the biennial Census of Manufactures published by the U. S. Department of Commerce in 1929, there were in the State, in 1927, 880 manufacturing establishments. These employed 26,241 wage earners, whose wages for the year totaled \$32,305,433. Materials and supplies used in manufacture were of the total cost of \$69,977,432. The manufactured products combined attained the total value of \$134,029,978.

EDUCATION Authorities of the State estimated the number of persons of school age, i. e., between the ages of 6 and 18 years, inclusive, in the State in the academic year 1928-29, was 77,000. There were enrolled in the public schools in that year 65,464 pupils, of these, 54,192 were in the elementary, and 11,272 in the high-school, grades. The expenditures of the year ending June 30, 1929, for public-school education amounted to the sum of \$5,158,434.

CHARITIES AND CORRECTIONS The direct supervision of the State institutions for the care or custody of persons is one of the functions of the Department of Public Welfare.

LEGISLATION The regular biennial session of the State Legislature met in January and adjourned on March 15. Its chief matters of consideration were the extension of State appropriations for road construction and the meeting of charges on the bonds issued to pay the cost of repairing damage done by the flood of 1927. Appropriations for highway construction were increased by about \$1,000,000 a year. The appropriations were to include not only road maintenance expenses and cooperation in the towns' road improvements but also the construction of hard-surfaced roads at the rate of not over 65 miles a year. In order to provide for the payment of principal and interest on the flood bonds, an increase from 4 to 5 cents a gallon was made in the State sales tax on gasoline, as well as an

increase in the direct tax, and a poll tax of \$2.50 was laid.

A bill to place an income tax was defeated. Authority was granted to municipalities to own and operate airports, and a code to govern air traffic was enacted. The "blue-sky" law regulating the sale of investment securities was extensively revised. It was made possible for power interests to erect dams with the cooperation of the State Public Service Commission where these might serve a purpose of flood control.

POLITICAL AND OTHER EVENTS The Central Vermont Railway, one of the chief railroad lines of the State, was auctioned at a receiver's sale on July 29. It was purchased through representatives by the Canadian National Railway for \$22,000,000. The auctioned railroad had been in receiver's hands since Dec. 12, 1927, immediately after the disastrous Vermont floods. The Champlain Bridge, connecting Vermont and New York State by a highway communication across Lake Champlain, was opened on August 26. It extends from Crown Point, N. Y., to Chimney Point, Vt., cost about \$1,000,000, and was built by a commission of the two States. It was to be operated as a toll bridge until its cost had been met from the proceeds, and was then to be opened for the free use of the public.

OFFICERS Governor, John F. Weeks, Lieutenant-Governor, Stanley C. Wilson, Secretary of State, Lawson C. Myrick, Treasurer, Thomas H. Cave, Auditor, Benjamin Gates, Attorney-General, J. Ward Carver, Commissioner of Education, C. H. Dempsey.

JUDICIARY Supreme Court Chief Justice, George M. Powers, Associate Justices, Leighton P. Slack, Sherman R. Moulton, Harrie B. Chase, Frank D. Thompson.

VERMONT, UNIVERSITY OF An endowed institution of higher education in Burlington, Vt., receiving some State aid, founded by Ira Allen in 1791. The 1929 autumn enrollment was 1210, of whom 695 were men and 515, women. The faculty numbered 195. The endowment amounted to \$2,000,000 and the income for the year was \$650,000. The library contained 135,000 volumes. President, Guy W. Bailey, LL.D.

VESSELS, NAVAL Since the earliest days of fighting ships, the general tendency in the design of naval vessels has been toward an increase in size and speed and recent developments are following the same lines except as regards capital ships (battleships and battle cruisers) and aircraft carriers of which the tonnage was limited by the terms of the Washington Naval Conference. Increase in size has been a persistent tendency because it permits an increase in offensive power, defensive power, and speed. But there are arising, from time to time, limiting factors aside from naval conferences. The apparent trends of naval thought as regards new designs is evinced in the following notes concerning existing and proposed types of war vessels.

AIRCRAFT CARRIER The largest ships of this type in 1929 were the U. S. naval carriers *Saratoga* and *Lexington*. They are regarded as suitable for accompanying the battle fleet but smaller carriers are also needed for this and other services. The smaller ships are, moreover, much less expensive to operate either in peace or war.

BATTLESHIPS No new battleships were under construction, but if the naval Conference for the Limitation of Armaments, which was to meet in January, 1930, did not extend the limitations

imposed in the Washington Conference, the laying down of new battleships would commence in 1931.

CRUISERS, ARMORED The old type of armored cruiser has disappeared, but new types were under consideration. The advent of the German armored ship *Admiral Scheer* (see following note) caused some changes in naval thought.

CRUISERS, BATTLE Cruisers of this type were subject to the same treaty limitations as battleships. But vessels of 10,000 tons or less were not battle cruisers under the definition given in the Washington Pact. The German ship *Admiral Scheer* (which is fully described in the article on *NAVAL PROGRESS, Germany*), though of 10,000 tons only, was otherwise of the battle cruiser type because she carries very heavy guns, has more than ordinary battleship speed, and has much more armor than a light cruiser.

CRUISERS, LIGHT The various designs of 10,000-ton cruisers that had appeared since 1922, when cruiser tonnage was thus limited and cruiser guns restricted to calibres of 8 inches or less, had not shown any very great differences. The guns are of 8 inches, 8 to 10 in number. The speed has varied from 31.5 to 35 knots, the slower ships being given somewhat more protection. Considerable talk was heard of reducing the speed to about 28 knots for some 10,000-tonners and adding materially to their protection. Nothing in this direction was likely to take place until after the 1930 Naval Conference.

DESTROYERS The size of destroyers in the British, French, Italian, and Japanese navies had greatly increased in recent years. The United States had laid down no vessels of this class since the World War and her existing boats were 300 tons smaller than French torpedo boats and less than half the size of French destroyers. This was to some extent a question of nomenclature for the new French torpedo boats (*torpilleurs d'escadre*) were of about the same size (1500 tons) as destroyers (*contre-torpilleurs*—2700 tons), were much larger than the destroyer leaders in any other navy and approached the dimensions of small light cruisers.

DESTROYER LEADER Another name for a flotilla leader, or very large destroyer, which is used as the flag boat of a group of destroyers. As a more definite term than flotilla leader, it is coming into general favor, particularly in the United States Navy. Destroyer leaders of 1929 had a tonnage of 1600 to 2700 depending upon the size of the destroyer of their groups. In the French Navy, the destroyer leaders were called destroyers, but they are 600 to 900 tons larger than the destroyer leaders of other navies.

FLOTILLA LEADER See *Destroyer Leader*.

SUBMARINE Submarines of recent design are of five general types: (a) coast and harbor defense—300 to 750 tons; (b) cruising—900 to 2500 tons; (c) fleet, designed to accompany the battle fleet—2000 to 3000 tons; (d) submarine cruiser—3000 tons or more; (e) mine-laying—all sizes. The largest submarine built or building at the end of 1929 was the submarine cruiser *Surcouf*, under construction for the French Navy. Its displacement on the surface is 3250 tons; when submerged, considerably over 4000 tons. The next submarine in size was the U. S. mine-laying fleet submarine V-4 which has displacements of 2680 and 4080 tons (surface and submerged).

SUBMARINE SALVAGE AND RESCUE VESSELS Recent accidents to U. S. and other naval sub-

marines caused the alteration of certain vessels to adapt them to the salvage of submarines and the rescue of their crews. One of this type is stationed at a point which is as near as practicable to the centre of each field of submarine activity. See *NAVAL PROGRESS, under United States and Japan*.

VESTRIS, WRECK OF See *SAFETY AT SEA*.

VETERANS BUREAU. See *UNITED STATES VETERINARY MEDICINE*. The year saw continued progress in the control and eradication of several of the more important diseases and parasites of livestock. It was marked by the early detection of an outbreak of foot and mouth disease and its eradication and the release of the affected area from quarantine in 60 days. An outbreak of European fowl pest on farms in Morris Co., N. J., discovered in June was eradicated within a period of two weeks through destruction of all diseased and exposed birds on the infected farms.

Several leaders in the profession passed from the stage, including Maj.-Gen. Sir Frederick Stiles London, best known for his textbooks on veterinary physiology and veterinary hygiene, on July 27, 1929, at the age of 72; Dr. M. H. Reynolds, of the Minnesota Experiment Station, on Jan. 15, 1928, at the age of 63, and Dr. R. R. Dinwiddie, of the Arkansas Experiment Station, on Aug. 3, 1929, at the age of 60, both of whom were authors of numerous publications.

There was some progress in the field of education, the entering class in veterinary schools of 352 representing an increase of 30 over that of the preceding year. The number of accredited veterinary colleges continued at 12 and the foreign recognized veterinary institutions were 10 in number. The sixty-sixth annual meeting of the American Veterinary Medical Association was held at Detroit August 13 to 16, at which Dr. T. H. Ferguson of Wisconsin was elected president and Dr. M. Jacobs of Tennessee, treasurer. At the annual meeting of the United States Live Stock Sanitary Association, held at Chicago December 4 to 6, Dr. A. E. Wight of Washington, D. C., was elected president.

FOOT AND MOUTH DISEASE An outbreak of foot and mouth disease, the ninth to occur in the United States, was discovered on January 16 in a herd of 3500 hogs on a garbage feeding ranch near Whittier in Los Angeles Co., Calif. The disease was definitely diagnosed on January 17 and the entire herd was slaughtered on January 19. The infection appeared to have been introduced in garbage from a ship that had been provisioned at a foreign port. It appeared later in the month among cattle near Downey about 8 miles from Whittier. The animals affected or exposed included 3291 head of swine, 277 head of cattle, and 23 goats with an appraised value of \$107,539. The quarantine was removed from the limited affected area on March 18.

The outbreak was of the shortest duration and involved the smallest number of premises and animals of any of the outbreaks that had occurred in the United States. It was the third to be traced to infected meat from countries where the disease existed.

INFECTIOUS ABORTION AND UNDULANT FEVER With the increased suppression of tuberculosis in livestock, infectious abortion had become the greatest plague affecting the American cattle industry. As pointed out by the Secretary of Agriculture in his annual report for 1929, it was

taking an annual toll from both beef and dairy herds estimated at fully \$50,000,000 and also affected swine. The disease had been successfully combated in a number of States by a system of isolation. The Delaware Experiment Station reported the successful outcome in herds in which a system of segregation of the positive and negative reactors at calving time only was practiced, as well as the system of complete segregation.

The number of reported cases of undulant fever in man continued to increase with the more general recognition of the disease through serological surveys made by applying the agglutination test for *Brucella abortus*, the causative organism, to all typhoid and lues serums received by many State and city health departments. It was pointed out by the U S Public Health Service that the disease may be confused with many others including typhoid and paratyphoid fevers, tuberculosis, rheumatism, malaria, influenza, focal infections, sinusitis, appendicitis, and tularemia. The three strains of the causative organism were differentiated by their behavior toward dyes and named by Huddleson to the rank of species, the name *Brucella melitensis* being applied to the goat type, *Br. bovis* to the cow type, and *Br. suis* to the pig type. The use of these names will avoid some confusion although they do not necessarily denote the source of the organisms.

It appears that cattle may be infected with all three types, but there was no record of swine being infected naturally with the bovine or caprine type. The more recent work suggests that the porcine type is much more virulent for man than is the bovine. Huddleson has found that, in monkeys, the porcine type is the most highly pathogenic, the caprine type is next, and the bovine type the least pathogenic of the three. It was not easy to infect monkeys with the bovine type, but when so infected and subsequently recovered, the animals were immune to all three types.

The disease may be contracted by contact with infected animals, as well as through the consumption of infected milk, the former probably is a greater source of infection. This is indicated by the fact that the prevalence of undulant fever among packing-house employees is 25 to 30 times as great as that among raw-milk consumers. Even in the rural population, largely consumers of raw milk, it appears to be an occupational disease, since nine times as many men as women in rural sections have contracted the disease.

LIVER-ROCK TUBERCULOSIS ERADICATION. Substantial progress was made in the work of eradicating tuberculosis of livestock, which had been under way since 1916. More cattle—nearly a million a month—were tested during the fiscal year ended June 30, with a grand total of 11,665,000 head. The degree of infection found had been reduced in eight years from 3.9 per cent to 1.8 per cent, or more than 50 per cent since the systematic eradication began. The States of North Carolina and Maine were designated as modified accredited areas or areas in which tuberculosis infection in cattle had been reduced to less than one-half of 1 per cent. Some 740 counties had attained the designation of modified accredited areas and the work progressed in about 460 other counties in all 48 States. More than one-third of the counties in 44 States.

The Federal indemnity was increased to permit a maximum of \$70 instead of \$50 for pure-

bred cattle and a maximum of \$35, instead of \$25, for grade cattle, as heretofore. At the close of the calendar year, 178,388 herds containing 2,409,049 heads were listed as fully accredited. Twenty States reported more than 50 per cent of their cattle population as under supervision.

TEXAS FEVER AND CATTLE-TICK ERADICATION. The work of the fiscal year ended June 30 led to the release from Federal quarantine of three counties in Alabama, one and the remainder of a second county in Arkansas, eight counties in Florida adjacent to the Georgia State line, two parishes and part of a third in Louisiana, one county and the remainder of three counties in Oklahoma, and eight counties in Texas. On December 1, additional territory representing 15 counties in the four States of Florida, Alabama, Mississippi, and Texas, amounting to 10,358 square miles, were released from the Federal quarantine on account of the cattle tick and one parish in Louisiana was quarantined at the same time. The release of the territory in Oklahoma and Alabama resulted in the removal of the quarantine from all of the restricted areas in these States. Of the 985 counties and parishes quarantined for the cattle tick on July 1, 1906, 787 had been released and but 98 remained under supervision on June 30, 1920.

DOURINE ERADICATION. The eradication work with dourine in the horse was continued in a section of western Montana, where eleven head were found infected, and on the Indian reservations in Arizona and Nevada, the only areas where it was known to exist in the United States. The blood of 9781 animals was tested of which 156, or 1.06 per cent, reacted positively. It was thought that the work on the Indian reservations had resulted in the eradication of the disease there.

SCABIES ERADICATION. There was an increase of 8 per cent over the preceding year in the number of sheep found infected with scabies, or 732,937 head. The increase was considerable on the Indian reservations in Arizona, where the climatic and range conditions were unfavorable for eradication work. There was a decrease of approximately 34 per cent from the preceding year in the number of cattle found to be infected with cattle scabies, or a total of 99,003.

HOG CHOLERA CONTROL. The occurrence of hog cholera up to June was about the same as in 1928, when the year's losses were comparatively small. The control work conducted under the Federal appropriation included demonstrations of the proper use of anti-hog-cholera serum and hog-cholera virus in protecting herds against the disease and meetings for the giving of instruction. The number of outbreaks reported during the year was 7029.

ANAPLASMOSIS. It was found in California that calves born of dams that had apparently recovered from anaplasmosis did not carry the causative organism in their blood. Animals recovered from the disease proved to be carriers of the organism in their blood for as long as two years and two months. Blumpt found the causative organism of Tunisian origin in the blood of a cow six years and eight months after the animal had been inoculated.

FOWL POX. The loss suffered by the poultry industry due to fowl pox led to an increased activity aimed at protection through vaccination. It was found, as the result of work in several States, that cutaneous vaccination through scarification of the skin or by plucking several

feathers would give a strong immunity in healthy pullets when applied while they were still on the range and before coming into production and with their combs still undeveloped. In Oregon, 80,000 birds had been successfully vaccinated by the State Experiment Station at the close of the three years ended with 1928.

B W D. OR PULLORUM DISEASE OF THE FOWL. The active and successful work with this important disease . . . continued unabated, particular attention being given to means of detection. A rapid method for testing for infection in the field was reported by Bunyea, Hall, and Dorset. The slide and tube tests for the infection were found by two State experiment stations to be in agreement in a high percentage of the tests conducted. It was found that much so-called brooder pneumonia was due to the development of *Salmonella pullorum* in the lung tissue and that, when it is present, chicks may die without any symptom of diarrhea. Respiration appears to be a more common means of infection in the hatchery than previously suspected.

INFECTIOUS BRONCHITIS OF THE FOWL. This disease, which first appeared in Canada and is also known as Canada fowl flu, has rapidly increased in importance and become the source of serious losses from coast to coast. Heavy losses resulted from its outbreak in Washington State, in California, in New Jersey, and elsewhere, particularly in chicks ranging from one to two months of age.

VACCINES. It was found that a hemorrhagic septicemia aggression, a germ-free sterile product that has been prepared, protects against shipping fever. This was being manufactured under commercial conditions and was proving to be efficacious in practice.

PARASITES AND PARASITICIDES. The microscopic tapeworm of the fowl had increased in abundance in Washington and threatened to become a serious pest of poultry in the western part of the State. Tetrachlorethylene was found effective against most of the common internal nematode parasites of sheep. Used in single doses of 5 cc it was approximately 100 per cent effective against the stomach worm. It was found by the Kansas Experiment Station that carbon tetrachloride administered to chickens would remove all roundworms (*Ascaridia lineata*), with scarcely any ill effect upon the chickens. See **TETRAEMLIN**.

VICTORIA. A state of the Australian Commonwealth, situated in the southeastern part of the island continent. Area, 87,884 square miles, population, according to the census of 1921, 1,531,280, estimated June 30, 1929, 1,767,539. Capital, Melbourne, with an estimated population, including suburbs, on Dec 31, 1928, of 1,000,000. Other cities were Ballarat, Geelong, and Bendigo.

The wheat crop in 1928-29 totaled 40,818,833 bushels from 3,718,904 acres, as compared with 26,160,814 bushels from 3,064,172 acres in 1927-28. The production of wool (as in the grease) in 1928 was 148,503,795 pounds. The value of all minerals produced in 1928 was £1,008,691, including coal (£193,408) and gold (£144,068). In 1927-28, 8245 factories employed 160,357 workers.

Preliminary figures for 1928-29 placed the value of direct overseas imports at £40,000,880 and of direct overseas exports at £39,437,225, as compared with imports of £47,911,131 and exports of £31,728,558 in 1927-28. For the fiscal year ending June 30, 1928, revenues totaled £27,357,917 and expenditures £27,521,270. The net

public debt on June 30, 1928, amounted to £151,213,453.

The executive power is vested in a governor, acting through a responsible ministry, and the legislative power in a Parliament of two Houses. The Governor in 1929 was Lieut.-Col. Lord Arthur H. T. Somers, Premier and Treasurer, Sir W. W. McPherson. The Nationalist ministry headed by Premier McPherson fell on Dec 11, 1929, when the small Country Progressive party, which held the balance of power following elections earlier in the month, threw its support to the Labor party. A Labor cabinet was then formed under Edmund Hogan, former Labor Premier.

VILJOEN, vīl'yōon, W. J. A South African educator, died July 20, 1929, in Cape Town, South Africa, where he was born Oct. 5, 1869. He was educated at the Normal School and the South African College in Cape Town and at Victoria College in Stellenbosch. He also studied at the universities of Amsterdam, Leiden, and Strassburg, and received from Oxford University the degree of D.C.L. In 1894 he became professor of modern languages at Victoria College and in 1897 a member of the Council at Cape University. After 1918 he was Superintendent-General of Education in the Province of the Cape of Good Hope.

VIOLINISTS. See **MUSIC**.
VIRGINIA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,309,187. The estimated population on July 1, 1928, was 2,575,000. The capital is Richmond.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Corn	1929	1,522,000	44,118,000	\$44,138,000
	1928	1,826,000	44,175,000	44,715,000
	1929	1,058,000	1,400,000	21,628,000
Hay	1929	1,084,000	1,479,000	22,722,000
	1928	1,700,000	118,320,000	20,706,000
	1928	180,800	104,864,000	16,778,000
Potatoes	1929	132,000	17,461,000	21,826,000
	1928	151,000	21,618,000	10,809,000
Sweet potatoes	1929	45,000	6,705,000	6,011,000
	1928	44,000	6,116,000	4,415,000
	1929	700,000	8,960,000	11,200,000
Wheat	1928	671,000	9,758,000	11,173,000
	1929		13,000,000	14,300,000
	1928		16,100,000	11,685,000
Peanuts	1929	160,000	149,732,000	5,840,000
	1928	152,000	144,768,000	6,804,000
Cotton	1929	88,000	46,000	3,910,000
	1928	79,000	44,000	4,004,000
Oats	1929	167,000	3,841,000	2,571,000
	1928	182,000	4,641,000	2,970,000

* Tons * Pounds * Bales

MINERAL PRODUCTION. The coal production of the State again fell, to the quantity of 11,900,933 short tons for 1928, from the total, itself much reduced, of 12,916,042 tons for 1927, the yield had a value of \$20,375,000 for 1928 and \$23,203,000 for 1927.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 4508.62. There was no reported construction of additional line in 1929.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to operations of 1927, there were in the State in 1927, 2432 manufacturing establishments. These

employed 114,918 wage earners, whose wages for the year totaled \$110,377,945. Materials and supplies used in production cost \$346,165,769. Manufactured products combined attained the value of \$467,346,808.

EDUCATION Both in the administrative branch and in the handling of finances, the public-school system of the State made progress in passing from district to county control. There were enrolled in the public schools, in the academic year 1928-29, 568,930 pupils. Of these, 484,676 were in elementary, and 74,354 in high-school, grades. Expenditures of the year for public-school education totaled \$25,125,401. The annual salaries of teachers averaged \$858.

POLITICAL AND OTHER EVENTS Dr. John Garland Pollard, the regular Democratic candidate, was elected governor on November 5. He defeated Dr. William Mosely Brown, candidate of the Republicans and of the anti-Smith wing of the Democratic party in the State, by a decisive majority of approximately 70,000. The campaign leading to this election was one of the most lively that the State had experienced in many years. The opposition to Pollard sought to hold the gains made against the regular State Democracy in 1928, when the Nativist, Fundamentalist, and Prohibitionist sentiments had defeated the Democratic candidate for President Bishop James Cannon, Jr., leader of the Prohibition forces in the State, was active in reviving the anti-Smith sentiment, and raised the cry of "Raskolism" against Pollard. To this, the regular Democratic organization responded in August by announcing that it would accept no campaign contributions from outside the State. Pollard had the support of the Byrd administration, and was helped by the voters' wish to register approval of the administration's record. This sentiment was enhanced by the fact that Brown in the latter part of his campaign directed his attack against administration policies, including the cost of the State's donation for the Blue Ridge National Park and the amount and cost of highway construction and maintenance. Under the short-ballot amendment adopted in June, 1928, no popular vote was cast for Commissioner of Agriculture, Superintendent of Public Instruction, or State Treasurer.

Early in the year, one of the oyster wars not infrequent in the Chesapeake estuaries occurred on the waters of the York River.

A Negro voter who had been excluded from a Democratic State primary obtained in a Federal Court on June 5 at Richmond a decision tending to invalidate the provision of the State primary law enabling the party to exclude Negroes. An ordinance of Richmond for the residential segregation of races was likewise the subject of an adverse ruling in a Federal District Court. Delay in raising some \$5,000,000 needed to complete the purchase of land for the Shenandoah National Park gave owners opportunity to strip much timber from lands intended for inclusion in the park.

OFFICERS Governor, Harry F. Byrd, Lieutenant-Governor, Junius E. West, Secretary of the Commonwealth, M. A. Hutchison, State Treasurer, John M. Purcell, Auditor of Public Accounts, C. Lee Moore, Attorney-General, John R. Saunders, Superintendent of Public Instruction, Harris Hart, Commissioner of Agriculture, George W. Komer.

Judiciary Supreme Court of Appeals Presi-

dent, Robert R. Prentiss, Associate Justices, Louis E. Epps, Preston W. Campbell, R. H. L. Chichester, H. W. Holt.

VIRGINIA, UNIVERSITY OF. A nonsectarian institution of higher education in Charlottesville, Va., founded in 1819. The enrollment for the autumn term of 1929 was 2525. The faculty numbered 312. The productive endowment of the university amounted to \$10,000,000, the annual State appropriation was \$400,000, and the total annual income was \$1,741,352. There were 163,162 volumes in the library. President, Edwin Anderson Alderman, D.C.L., LL.D. See PUBLIC AFFAIRS, INSTITUTE OF.

VIRGIN ISLANDS. The name given by the United States Government to the former Danish West Indies, purchased by the American Government from Denmark by the treaty proclaimed Jan. 25, 1917, also a group of islands belonging to the British colony of the Leeward Islands. See LEeward ISLANDS. The Virgin Islands of the United States consist chiefly of the Islands of St. Thomas, St. Croix, and St. John, and have a total area of about 132 square miles, with a population according to the census of Nov. 1, 1917, of 26,051, of which 80 per cent were Negroes, 13 per cent of mixed races, and 7 per cent whites. The estimated population in 1927 was 20,728. In 1926, St. Thomas, with an area of 28 square miles had 8820 inhabitants, St. Croix, 84 square miles, 11,118 inhabitants, and St. John, 20 square miles, 784 inhabitants. The government is under a governor appointed by the President of the United States. In 1927 American citizenship was granted to the natives. Governor in 1929, Captain Waldo Evans, U. S. N. (Ret.).

VITACOLOR. See PHOTOGRAPHY.

VITAL STATISTICS. The U. S. Bureau of the Census, in a bulletin dealing with births and deaths in 1928, gave a total of 1,378,675 deaths in the registration area in continental United States, corresponding to a death rate of 12.0 per 1000 population as compared with 11.4 in 1927. The death-registration area for the fiscal year ending June 30, 1929, comprised 45 States and 10 cities in nonregistration States, with a total estimated population of 114,572,000, or 95.5 per cent of the population of continental United States. The birth-registration area, on the other hand, included 45 States with a total estimated population of 114,426,000, or 94.5 per cent of the population of continental United States. The number of births during 1928 totaled 2,062,760, the birth rate being 19.7 per 1000 population as compared with 20.6 for 1927. During the year Texas and New Mexico enacted satisfactory laws pertaining to birth and death registration, and Colorado and Nevada were added to the birth-registration area.

Increases in 1928 death rates (per 100,000 population) from those of the preceding year were from the following principal causes: Diseases of the heart (195.7 to 207.7), cerebral hemorrhage and softening (84.0 to 87.0), nephritis (92.5 to 95.0), diabetes mellitus (17.5 to 19.0), cancer (95.6 to 95.9), influenza (22.6 to 45.2), and pneumonia, all forms (80.5 to 98.0). The deaths from these causes numbered 741,739, which was considerably more than half the total number of deaths from all causes. Other increases in rates were for measles (4.1 to 5.4) and pellagra (5.0 to 6.1). The death rate from all accidental causes increased from 78.4 to 79.2, the individual types of accidents showing the greatest

increases being accidental drowning (6.7 to 7.1), and automobile accidents, excluding collisions with railroad trains and street cars (19.5 to 20.8); if deaths from these collisions were included, the total number of automobile accidents in 1928 would be 20,348 as compared with 23,312 in 1927. The death rates (per 100,000 population) for 1928 and 1927 were 23 and 21.4.

Among the decreases in rates from 1927 to 1928 were those from tuberculosis, all forms (80.8 to 79.2), congenital malformations and diseases of early infancy (67.7 to 65.6), whooping cough (6.9 to 5.4), diarrhea and enteritis, under 2 years (21.6 to 20.7), acute an-

terior poliomyelitis (19 to 12), typhoid and paratyphoid fever (5.5 to 4.9), and scarlet fever (3.3 to 1.9). The death rate from railroad accidents decreased from 6.4 to 5.9 and from mine accidents, from 2.5 to 2.3.

There also was a decrease in infant mortality, 10 States and the District of Columbia achieving a lower death rate in 1928 than in any year since admission to the birth-registration area (Oregon, which reported the lowest rate in 1927, broke its own record and again led the United States in 1928, with a rate of 47 deaths per 1000 live births. This was the lowest rate ever reported by any State in the birth-registration area. The rate for the birth-registration area as

DEATHS AND DEATH RATES IN THE UNITED STATES
PRINCIPAL CAUSES OF DEATHS IN THE REGISTRATION AREA OF THE UNITED STATES, 1927-28
From United States Bureau of the Census

Cause of Death	Deaths in the registration area in continental United States		Rate per 100,000 estimated population	
	1928	1927	1928	1927
All causes*	1,378,675	1,236,949	1,304.1	1,111.9
Typhoid and paratyphoid fever	5,620	5,905	4.9	5.5
Malaria	4,167	2,875	3.6	2.7
Smallpox	131	145	0.1	0.1
Measles	6,146	4,433	5.4	3.9
Scarlet fever	2,229	2,440	1.9	2.3
Whooping cough	6,214	7,445	5.4	6.4
Diphtheria	8,263	8,426	7.2	7.8
Influenza	51,741	21,471	45.2	22.6
Dysentery	3,215	2,605	2.8	2.4
Erysipelas	2,724	2,567	2.4	2.4
Septicemia	1,381	2,013	1.2	1.6
Leptospirosis	1,373	1,326	1.2	1.2
Meningococcus meningitis	2,923	1,705	2.6	1.6
Tuberculosis (all forms)	90,659	87,567	79.2	80.8
Of the respiratory system	80,285	77,195	70.1	71.3
Of the meninges, central nervous system	3,446	3,533	3.0	3.3
Other forms	6,928	6,839	6.1	6.1
Syphilis*	16,866	15,976	14.7	14.7
Cancer and other malignant tumors	109,770	103,578	95.9	95.6
Rheumatism	4,324	4,177	3.8	3.9
Pellagra	6,969	5,418	6.1	5.0
Diabetes mellitus	21,747	18,917	19.4	17.5
Meningitis (nonepidemic)	3,287	1,081	2.9	2.8
Cerebral hemorrhage and softening	99,624	91,001	87.0	84.0
Paralysis without specified cause	5,627	5,006	5.1	4.6
Diseases of the heart	237,849	211,976	207.7	195.7
Diseases of the arteries, atheroma, aneurysm, etc.	21,113	23,615	21.9	21.8
Bronchitis	5,975	5,651	5.2	5.4
Pneumonia (all forms)	112,195	87,230	98.0	80.5
Respiratory diseases other than bronchitis and pneumonia (all forms)	9,969	9,111	8.7	8.4
Diarrhea and enteritis	30,730	29,899	26.8	27.6
Diarrhea and enteritis (under 2 years)	21,663	21,183	20.7	21.6
Diarrhea and enteritis (2 years and over)	7,067	6,517	6.2	6.0
Appendicitis and typhlitis	17,431	16,305	15.2	15.0
Hernia, intestinal obstruction	11,954	11,309	10.4	10.4
Cirrhosis of the liver	8,630	8,098	7.5	7.5
Nephritis	108,811	100,181	95.0	92.5
Puerperal septicemia	5,692	5,715	5.0	5.1
Puerperal causes other than puerperal septicemia	9,299	9,145	8.7	8.7
Congenital malformations and diseases of early infancy	75,159	73,465	65.6	67.7
Suicide	15,566	14,356	13.6	13.3
Homicide	10,050	9,470	8.8	8.7
Accidental and unspecified external causes	90,712	84,980	79.2	78.4
Burns (conflagration excepted)	6,323	6,089	5.5	5.6
Accidental drowning	8,084	7,296	7.1	6.7
Accidental shooting	2,819	2,741	2.5	2.5
Accidental falls	16,116	15,152	14.1	14.0
Mine accidents	2,690	2,690	2.3	2.5
Machinery accidents	2,120	2,124	1.9	2.0
Railroad accidents	6,796	6,592	5.9	6.4
Collision with automobile	2,041	1,676	1.8	1.5
Other railroad accidents	4,755	5,216	4.2	4.8
Street car accidents	1,581	1,452	1.4	1.3
Collision with automobile	542	476	0.5	0.4
Other street car accidents	1,039	976	0.9	0.9
Automobile accidents (excluding collision with railroad trains and street cars)	23,765	21,160	20.8	19.5
Injuries by vehicles other than railroad trains, street cars, and automobiles	1,819	1,591	1.6	1.5
Excessive heat (burns excepted)	654	530	0.6	0.5
Other external causes	17,916	17,261	15.6	15.9
All other defined causes	124,097	116,301	108.4	107.4
Unknown or ill-defined causes	23,560	19,060	20.6	17.6

* Exclusive of stillbirths.

* Includes tabes dorsalis (locomotor ataxia) and general paralysis of the insane.

* Includes airplane, balloon, and motor cycle accidents.

UNITED STATES VITAL STATISTICS—1928

Births and deaths (exclusive of stillbirths), with rates per 1000 estimated population, and infant mortality, in the birth registration area in continental United States, 1928

Area	Number—1928						Rate per 1000 estimated population				Infant mortality (deaths under 1 year per 1000 births)	
	Births	Deaths		Births	Deaths		Births	Deaths		Births	Deaths	
		All ages	Under 1 year		All ages	Under 1 year		All ages	Under 1 year			
Birth registration area *	2,062,760	1,265,487	139,587	1928	1927	1928	1927	1928	1927	1928	1927	
Alabama	63,555	31,854	4,765	24.7	26.5	12.4	10.6	75.0	64.4			
Arizona	8,903	6,453	1,206	18.6	18.6	13.6	12.8	142.2	130.1			
Arkansas	38,131	20,012	2,557	19.6	21.0	10.3	9.5	67.0	60.9			
California	83,887	65,947	5,178	18.3	19.0	14.5	13.9	62.1	62.3			
Colorado	19,022	14,063	1,708	17.5	(*)	12.9	12.2	89.8	(*)			
Connecticut	28,017	17,929	1,653	16.8	17.7	10.8	10.2	59.0	58.8			
Delaware	4,311	3,196	338	17.7	17.5	13.1	12.4	78.4	70.0			
Florida	29,328	18,853	2,002	21.1	25.0	17.4	13.3	67.1	67.4			
Georgia	59,143	36,011	4,322	18.5	(*)	11.2	(*)	81.5	(*)			
Idaho	9,081	4,040	504	16.6	17.2	7.4	7.1	55.5	50.0			
Illinois	129,668	90,192	8,321	17.5	18.3	12.2	11.4	64.2	64.4			
Indiana	60,289	40,494	3,707	19.0	19.8	12.8	12.0	62.5	58.8			
Iowa	42,774	25,413	2,302	17.6	18.4	10.4	10.1	51.8	55.5			
Kansas	38,691	20,922	1,993	18.4	19.0	11.4	10.2	59.2	55.3			
Kentucky	67,954	30,226	4,109	22.7	24.6	11.8	10.7	70.9	61.0			
Louisiana	41,400	24,984	3,292	21.2	23.9	12.8	12.3	79.5	77.4			
Maine	16,404	11,005	1,194	20.6	20.6	13.8	13.8	72.8	80.0			
Maryland	31,724	21,651	2,533	19.6	20.3	13.4	11.2	79.8	81.5			
Massachusetts	79,028	51,034	5,084	18.1	19.4	11.9	11.6	64.3	64.5			
Michigan	97,500	54,751	6,789	21.2	22.3	11.9	11.3	69.6	67.7			
Minnesota	49,411	25,979	2,658	18.2	19.0	9.6	9.2	53.8	51.9			
Mississippi	48,034	25,900	3,589	26.8	27.5	14.5	13.0	74.3	66.8			
Missouri	63,219	45,280	4,164	18.0	18.9	12.9	11.6	65.8	59.7			
Montana	9,936	5,781	613	18.1	11.7	10.5	7.5	61.7	66.4			
Nebraska	28,029	13,489	1,448	19.9	20.0	9.6	8.9	51.7	51.2			
New Hampshire	8,665	6,442	602	19.0	19.8	14.1	13.9	69.5	69.2			
New Jersey	70,080	44,960	4,568	18.1	19.4	11.8	11.2	65.2	61.1			
New York	223,084	151,677	14,391	19.3	19.9	13.1	12.3	64.5	59.4			
North Carolina	80,891	50,165	6,903	27.5	28.8	12.1	11.4	85.1	79.1			
North Dakota	14,176	5,264	879	22.1	22.9	8.2	8.1	59.2	63.4			
Ohio	119,445	60,209	7,956	17.6	18.4	11.8	11.0	66.4	61.8			
Oklahoma	42,991	21,075	2,864	17.7	(*)	8.7	(*)	68.9	(*)			
Oregon	14,035	10,488	1,658	15.6	16.4	11.6	11.5	46.9	47.5			
Pennsylvania	200,769	119,616	14,507	20.4	21.6	12.1	11.4	72.3	69.0			
Rhode Island	13,021	8,198	878	18.2	19.5	11.7	11.2	67.4	66.5			
South Carolina	43,285	24,427	4,178	23.2	(*)	13.1	11.8	96.5	(*)			
Tennessee	50,363	31,391	4,070	20.1	22.0	12.5	11.7	80.8	71.1			
Utah	12,962	5,018	764	24.1	21.7	9.5	9.1	58.9	53.3			
Vermont	7,042	4,846	457	20.0	19.9	11.9	11.9	64.9	68.8			
Virginia	56,518	30,201	4,298	21.2	22.9	11.7	11.3	76.0	75.5			
Washington	22,863	16,714	1,113	11.4	14.9	10.5	10.2	48.7	49.8			
West Virginia	41,187	17,511	3,045	25.2	26.4	10.2	10.0	70.2	71.9			
Wisconsin	57,398	31,788	3,520	19.4	19.7	10.8	10.1	61.4	59.1			
Wyoming	4,496	2,151	307	18.2	18.6	8.7	8.2	68.1	68.9			

* Exclusive of Colorado, Georgia, Oklahoma, South Carolina, Massachusetts, and Utah for both years. The first four of these States were not in the registration area in 1927. The 1928 data for Massachusetts and Utah are incomplete.

† Not in the registration area in 1927.

a whole in 1928, according to the analysis of the Children's Bureau of the U S Department of Labor, was 69 deaths of infants under 1 year of age per 1000 live births. Washington and Oregon a close second, with a rate of 48. These were the only two States with rates under 50. The other States, reporting their lowest infant death rates since they had been in the birth-registration area, were Iowa, 53, North Dakota, 59, Montana, 61, Massachusetts, 64, Vermont, 65, District of Columbia, 65, West Virginia, 70, Maine, 73, and Maryland, 80. Six States which achieved their lowest infant death rate in 1927 maintained the same rate in 1928. They were California, 62, Illinois, 64, Connecticut, 59, New Hampshire, 69, Florida and Rhode Island, 67.

Twenty-five States and the District of Columbia had lower infant mortality rates in 1928 than the rate of the birth-registration area as a whole.

No American State, however, had yet equalled the rate of New Zealand, which was 36.18 per 1000 live births in 1928, as compared with a rate of 38.74 in 1927. The maternal mortality rate in New Zealand was 4.9 in both 1927 and 1928.

According to the figures of the Metropolitan Life Insurance Company as given in its *Statistical Bulletin* for January, 1930, the year 1929 established a new low-mortality rate. The tuber-

culosis death rate in the United States and Canada reached a new minimum of 85.6 per 100,000 policy holders, as compared with a previous minimum of 90.6 in 1928. The death rate for the four principal communicable diseases of childhood (measles, scarlet fever, whooping cough, and diphtheria) was 18.3 per 100,000, which also established a new minimum, the previous minimum being 19 in 1928. The outstanding item in the group was diphtheria, with a 1929 death rate of only 8.5 per 100,000, as compared with 9.5 (the previous minimum) in 1928, this meant a decline of 69 per cent since 1911, when the rate was 27.3. A new minimum rate for diseases and conditions incident to pregnancy and childbirth also was recorded for 1929, the rate being 13.5 per 100,000, a figure lower by 4.9 per cent than the previous minimum of 14.2 in 1928. The mortality rate for accidents rose slightly in 1929. Approximately one-third of all accidental deaths among industrial policy holders of the company arose from the use of the automobile, the rate for 1929 being 20.9 per 100,000, an increase of 12 per cent over the rate for 1928. It was estimated that a total of more than 31,400 automobile fatalities occurred in the general population of continental United States during 1929 and that approximately 1,000,000 persons were injured.

VITAMINS. Tardy recognition of the great debt which medicine owes to those who first made clear the existence and significance of the vitamins was shown in the award of the 1929 Nobel Prize for medicine jointly to Dr. Christian Eijkman of Utrecht, the Netherlands, and Sir Frederick Hopkins of Cambridge, England, for their pioneer work on vitamins nearly a quarter-century ago. See NOBEL PRIZES. While the year was marked by no spectacular vitamin discovery, new evidence was obtained of the complexity of the vitamins, of their extraordinary activity, and of their great importance in nutrition.

VITAMIN A. Drummond and Baker (*Biochem Jour*, vol. 23, p. 274), after unsuccessful attempts to isolate vitamin A by fractional distillation of various liver oils, concluded that direct attempts at isolating the vitamin by ordinary chemical methods were futile and that more progress would be made in the identification of the vitamin by studying the properties of sterols. Moore (*Lancet*, 1929, p. 499) tested the claim of von Euler (*Biochem Z.*, vol. 203, p. 370) that vitamin A is identical with carotin by testing samples of purified carotin for vitamin-A activity. Daily doses of 0.01 mg. proved capable of supporting growth in rats when fed as the sole source of vitamin A. In view of the fact that the absorption spectra of pure carotin and of a very active concentrate of vitamin A, bioactive, were not alike, Moore did not feel that the two substances were identical, but suggested that both carotin and the classical "vitamin A" may independently possess the same physiological action, or that the physiological action may be due to minute amounts of an active impurity present in both materials.

That vitamin A plays such an important rôle in the control of infection that it may well be called the "anti-infective vitamin" received further confirmation during the year. Tyson and Smith, in an elaborate study of tissue changes associated with vitamin A deficiency in the rat (*Am Jour Path.*, vol. 5, p. 57), found that infection was universally present and in some cases dominated the picture. Abscesses at the back of the tongue from which pus could be expressed were found in all of the rats deprived of vitamin A. These appeared sooner and did not heal as rapidly following corrective treatment as did the well-known xerophthalmia. Turner (*Jour Infect Diseases*, vol. 45, p. 208) isolated from the tongues, nasal cavities, and middle ears of rats suffering from a deficiency of vitamin A, but not from normal rats, Gram-negative cocci which produced a fatal septicemia when injected into rabbits. A striking illustration of the application to medicine of the conclusions drawn from animal experimentation was afforded by the report of Mellanby and Green (*Brit Med Jour*, No. 3569, p. 984) of the treatment of puerperal hemolytic streptococcal septicemia with vitamin-A concentrates. The five patients thus treated all made complete, though gradual, recoveries, whereas in the same hospital, during the year before this treatment was instituted, there had been 16 fatal cases of puerperal septicemia.

VITAMINS B (B₁) AND G (B₂). Following the recommendation of a committee of the American Society of Biological Chemists, the terms B and G came into general use in the United States to designate the antineuritic and antipellagric fractions of what was formerly called vitamin B, while

British scientists continued to use B₁ and B₂ for these factors. In the opinion of Peters (*Nature*, vol. 124, p. 411), at least five B factors have now been described. These include, in addition to (B) B₁ and (G) B₂, a second heat-labile factor thought by Williams and Waterman (*Jour Biol Chem*, vol. 78, p. 311) to be essential for growth in pigeons but not for rats, another heat-labile factor thought by Reader (*Biochem Jour*, vol. 23, p. 689) to be essential for growth in rats and a heat-stable factor described by Hunt (*Jour Biol Chem*, vol. 79, p. 723). "According to the exact conditions of the tests some of these factors must have been included as either B₁ or B₂ in much of the previous work."

Attempts to separate vitamin B (B₁) from G (B₂) in yeast were reported by Williams, Waterman, and Gurin (*Jour Biol Chem*, vol. 83, p. 321), Chick and Roscoe (*Biochem Jour*, vol. 23, p. 504), and Sherman and Sandels (*Proc Soc Expt Biol Med*, vol. 26, p. 536). Further evidence was obtained by Sherman and Sandels of the similarity to pellagra of the lesions produced in rats by a deficiency of vitamin G (B₂). Stern and Findlay (*Jour Path Bact*, vol. 32, p. 63) reported a striking similarity between the nerve lesions of rats on diets lacking only in vitamin G and those reported in the literature for human pellagra. See FOODS AND NUTRITION.

VITAMIN C. A comparison by Eddy (*Am Jour Pub Health*, vol. 19, p. 1309) of the Hojer method of determining the vitamin C content of food by histological examination of the teeth of guinea pigs after three weeks' subsistence on a diet containing the food in question as the sole source of vitamin C with the Sherman method, in which the prevention of scurvy in guinea pigs during a 90-day test is used as the criterion, showed that with each of the three foods tested—canned string beans, bananas, and oranges—about twice as much was required to prevent tooth decay as to prevent external signs of scurvy. Hanke reported at the International Physiological Congress in Boston that the diets of 40 per cent of 200 subjects from 4 to 60 years of age with all types of dental disorders were markedly deficient in vitamin C. These findings were thought by Eddy to suggest the advisability of a more liberal consumption of foods rich in vitamin C.

VITAMIN D. Irradiated ergosterol dissolved in oil was accepted by the United States Pharmacopoeia of the American Medical Association for admission to New and Nonofficial Remedies under the name "viosterol." This is available in different concentrations of known vitamin D potency. A number of breakfast foods treated commercially with ultra-violet rays also became available during the year. That unguarded use of a concentrated preparation such as viosterol may be harmful was shown by reports from many investigators, but the abnormal symptoms and excessive calcification noted in these reports occurred only when the therapeutic dosage had been multiplied several thousand times.

VITAMIN E AND OTHER FACTORS. During the course of an investigation of the testicular changes in rats on various vitamin-E-free diets and of the effect of the addition of different growth-promoting supplements to these diets, Mason (*Jour Nutrition*, vol. 1, p. 311) discovered that an amount of dried lettuce which was about one-eighth as rich in vitamin E as its equivalent in fresh lettuce had approximately the same stim-

ulating effect on growth. This suggested that vitamin E, *per se*, was not responsible for the growth stimulation and since all the other known vitamins had been supplied in the diet, possibly another unknown factor was involved.

VOCALISTS. See Music

VOLUNTEERS OF AMERICA. A nonsectarian evangelistic and philanthropic organization, founded by General and Mrs Ballington Booth in March, 1896, and incorporated on Nov 6, 1896, under the laws of the State of New York. The work of the society for the year is shown in statistical records as follows. In the 135 mission centres 25,884 gospel meetings were held in meeting halls, jails, and other buildings, and in the open air, with a combined attendance of 3,039,008. Employment was found for 53,802 persons, pastoral visits were paid to 70,765 families, 197,654 persons being helped in this way, 309,250 free lodgings were furnished in the society's 80 homes and industrial branches, and 1,417 577 meals were provided for needy families and men out of employment. The officers of the society are the *Volunteers' Gazette*. In 1929 were President, Gen Ballington Booth, secretary, Col James W Merrill, treasurer, Col Walter J Crafts. National headquarters are at 34 West 28th Street, New York City.

WAGES. See STATISTICS

WALDO, LEONARD American metallurgical and electrical engineer, died in Plainfield, N. J., Jan 25, 1929. Born in Cincinnati, Ohio, May 4, 1853, he was graduated from the scientific school of Marietta College in 1872. He continued his studies, receiving the A.M. degree from Marietta in 1877 and after attending the school of mines, Columbia University, received the Sc.D. degree from Harvard in 1879. At the same time, he served as assistant in the Harvard Observatory, 1875-80, and from 1879 to 1888, he supervised the biological bureau of the Yale Observatory. He then devoted himself to research and consulting work, being employed by the U. S. Steel Corporation, as well as by other firms. He was a member of the National Research Council.

WALES A historical division of the United Kingdom, consisting of 12 counties on the west coast of Great Britain, between the Irish Sea on the north and the Bristol Channel on the south. Area, 7,166 square miles, population, according to the census of 1921, 2,205,680. See GREAT BRITAIN.

WALKER, HENRY OLIVER American painter, died in Belmont, Mass., Jan 14, 1929. Born in Boston, Mass., May 14, 1843, he studied art in Paris under Leon Bonnat, 1879-82. Returning to the United States, he established a studio in New York, and was soon recognized for his poetic figure compositions, among the finest being "Eros et Musa" and "Musa Regina" in the National Gallery, Washington, D. C., and "Morning Vision" in the Metropolitan Museum, New York. He was best known, however, for his mural decorations, the most important including a series of lunettes in the library of Congress, Washington.

WALLENSTEIN, ALFRED See MUSIC, under Artists.

WALSH, STEPHEN An English labor leader, died in Wigan, Lancashire, Mar 16, 1929. He was born in 1859 in Liverpool, and attended an industrial school at Kirkdale near there. At the age of 13, he went to work in the Wigan coal

field, and soon gained a reputation among the miners as a leader. In 1906 he was elected to represent the Ince Division, Lancashire, and was reelected periodically until his death. He had an important part in the labor legislation of Parliament and, from 1914 to 1920, served as chairman of the miners' section of the English Conciliation Board. He was parliamentary secretary to the Ministry of National Service in 1927, and to the Local Government Board in 1917-19. In 1921-22 he was vice chairman of the Labor party in the House of Commons, and in 1924, during the first Labor administration of England, he was Secretary of State for War.

WAR, OUTLAWRY OF, ETC. See ARBITRATION, INTERNATIONAL, PEACE AND PEACE MOVEMENTS.

WAR CLAIMS. See ARBITRATION, INTERNATIONAL.

WAR DEBTS. See PUBLIC FINANCE.

WAR MEMORIALS. See ARCHITECTURE.

WARREN, FRANCIS EMBURY A United States Senator from Wyoming, died Nov 24, 1929, in Washington, D. C. He was born June 20, 1844, in Hinsdale, Mass., and in 1862-63 served in the 49th Massachusetts Volunteers, receiving the Congressional Medal of Honor for gallantry in action at the siege of Fort Hudson. In 1868 he moved to Wyoming and was a member of the territorial Senate (1873-74 and 1884-85). Mayor of Cheyenne in 1885, Governor of the Territory of Wyoming in 1885-86 and again in 1889. When Wyoming was admitted to the Union in 1890, he became the first Governor of the new State, but resigned the same year to enter the United States Senate. Except for a short period (1893-94), he served continuously in the Senate as a Republican member from Wyoming, establishing a record for long service.

WARREN, WILLIAM FAIRFIELD An American Methodist Episcopal theologian and educator, died in Brookline, Mass., Dec 6, 1929. He was born in Williamsburg, Mass., Mar 13, 1833, and was graduated from Wesleyan University in 1853, studying later at the Andover Theological Seminary (1854-56) and at the universities of Berlin and Halle (1856-58). He was ordained in the Methodist Episcopal ministry in 1855. From 1860 to 1866, he was professor of systematic theology in the Mission Institute of Bremen, Germany. He was acting president of the Boston Theological Seminary (1866-73), which was the nucleus of Boston University. Dr Warren was one of the organizers of the university and served as its president from 1873 to 1903. In 1873 he became also professor of comparative theology and of the philosophy of religion at the theological school of Boston University, during 1903-11 he served as dean, and in 1923 he was made president emeritus of the university.

WARSHIPS. See NAVAL PROGRESS.

WASHBURN COLLEGE. A coeducational institution in Topeka, Kan., founded in 1865. The enrollment for the summer session of 1929 was 259 and for the autumn term, 789. President, Parley P. Womer, Sc.D.

WASHINGTON. Population. According to the Fourteenth Census, the population of the State on Jan 1, 1920, was 1,356,621. The estimated population on July 1, 1928, was 1,587,000. The capital is Olympia.

AGRICULTURE. The table on page 838 gives the acreage, production, and value of the principal crops of the State in the years 1928 and 1929.

Crop	Year	Acres	Prod. Bu.	Value
Wheat	1929	2,480,000	44,910,000	\$47,802,000
	1928	2,271,000	48,644,000	48,620,000
Apples	1929	..	26,656,000	84,658,000
	1928	..	33,500,000	80,150,000
Hay	1929	973,000	1,914,000 *	32,030,000
	1928	987,000	2,186,000 *	28,484,000
Potatoes	1929	56,000	6,680,000	12,588,000
	1928	70,000	9,450,000	4,725,000
Oats	1929	191,000	8,977,000	5,296,000
	1928	201,000	9,447,000	5,196,000
Corn	1929	48,000	1,824,000	1,879,000
	1928	46,000	1,794,000	1,776,000
Barley	1929	63,000	2,142,000	1,671,000
	1928	55,000	1,952,000	1,366,000

* Tons

MINERAL PRODUCTION Coal, which had in recent years contributed nearly one-half of the annual total of the State's mineral products in point of value, was mined in 1928 to approximately 2,184,000 tons, as against 2,635,062 tons mined in 1927.

The metal production of the State is at present secondary. The value of the gold, silver, copper, lead, and zinc produced from ore mined in 1929 was about \$465,438, as compared with \$633,156 in 1928, according to Federal estimates. Production of gold decreased abnormally from \$537,167 for 1928 to about \$74,600 for 1929. The output of silver decreased from 99,738 ounces for 1928 to about 29,600 ounces for 1929. Copper production increased slightly from 1,177,246 pounds for 1928 to about 1,252,000 pounds for 1929, in value, from \$169,523 to about \$224,100. The output of lead decreased from 1,084,739 pounds, valued at \$62,915, for 1928, to about 813,000 pounds, valued at \$51,600, for 1929. Production of zinc increased from 85,318 pounds in 1928 to about 1,493,000 in 1929.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 5564.43. In 1929, 0.49 mile of additional second track was built.

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and dealing with operations of 1927, there were in the State, in 1927, 3344 manufacturing establishments. These employed 104,408 wage earners, whose wages for the year totaled \$145,930,030. Materials and supplies used in production cost \$380,884,598. Manufactured products combined attained the value of \$677,913,579.

EDUCATION The State board of education raised the standard of qualification for teachers' certificates to three years of higher education for teachers in the elementary grades and five years for high-school grades. There were enrolled in public day schools 343,377 pupils and in public evening schools 13,969. Of the day school pupils, 2026 were in kindergartens, 257,991 were in elementary, and 82,460 were in secondary grades. Expenditures for public-school education were current, \$27,289,742, interest, \$1,606,384, outlay, \$4,430,707. Salaries of teachers averaged, for the year men, \$1928, women, \$1453.

LEGISLATION The State Legislature held its regular biennial session, adjourning March 15. It provided appropriations of some \$26,000,000 for highways and removed the control of highway expenditure from the Highway Department, vesting it in the governor. The State tax on gasoline was increased from 3 to 4½ cents.

No action was taken with regard to the several millions of special taxes levied against the railroads and up to then unpaid. With regard to bank

taxation, however, a new act replaced the invalid existing tax on the capital stock of banks with a tax of 5 per cent on banks' dividends. The duty of enforcing the act governing the sale of securities was transferred from the Secretary of State, who had been charged with too rigorous action, to an official to be appointed by the governor.

A measure providing county units for the treatment of the power problem was passed, subject to a referendum at the next general election.

POLITICAL AND OTHER EVENTS Operation through the recently completed Cascade Mountain Tunnel was begun by the Great Northern Railway on January 12. The route through this 8-mile tunnel, constructed at a cost of \$14,000,000 with the expenditure of another \$9,000,000 for electrification and other accessory work, shortened the running time between Spokane and the Puget Sound terminal at Seattle, for the former 12-hour passenger trains, by about 2 hours. Scant rainfall in the summer and autumn had two adverse effects in the State. It rendered easy the spread of forest fires, which in the Chelan and Colville National forests alone overran an area of about 186,000 acres.

The shrinkage of streams on which the State depended for hydro-electric power brought on a power famine. At Seattle, the four transcontinental railroad lines entering the city agreed on July 15 to accept from the city new franchises providing for the simplification of their trackage in the city limits and for bridges to eliminate dangerous track crossings. See WATER POWER.

OFFICERS Governor, Roland H. Hartley, Lieutenant-Governor, John A. Gellatly, Secretary of State, J. Grant Hinkle, State Auditor, C. W. Clausen, State Treasurer, Charles W. Hinton, Attorney-General, John H. Dunbar, Superintendent of Public Instruction, N. D. Showalter. **JUDICIARY** Supreme Court, Chief Justice, John R. Mitchell, Associate Justices, Warren W. Tolman, John F. Main, Emmett N. Parker, Mark A. Fullerton, Walter M. French, O. R. Holcomb, Walter B. Beals, W. J. Millard.

WASHINGTON, STATE COLLEGE of A co-educational institution for higher learning in Pullman, Wash., founded in 1890 by an act of the State Legislature. The enrollment for the autumn of 1929 was 3035, 546 students attended the summer session. There were 311 faculty members. The amount of income for the year was \$1,834,495. The library consisted of 170,000 volumes. President, Ernest O. Holland, Ph.D.

WASHINGTON, UNIVERSITY of A State institution of higher education in Seattle, Wash., founded in 1861. The enrollment for the autumn term of 1929 was 7258. The faculty on November 1 consisted of 475 members. The income from all sources for the scholastic year 1928-29 was \$2,909,764. The library contained 250,712 volumes. President, M. Lyle Spencer, Ph.D.

WASHINGTON, D. C., IMPROVEMENT See CITY AND REGIONAL PLANNING, under City Planning.

WASHINGTON AND JEFFERSON COLLEGE. A nonsectarian institution for the higher education of men in Washington, Pa., which had its origin in the Washington Academy, founded in 1787 and chartered as Washington College in 1802. The enrollment for 1929-30 totaled 420. The faculty numbered 41. The productive funds of the college amounted to \$1,134,500, and the income from all sources was approximately \$208,-

402 The library contained 41,700 volumes. President, S S Baker, M S, LL D.

WASHINGTON AND LEE UNIVERSITY.

A nonsectarian institution for the higher education of men in Lexington, Va., founded in 1749 The enrollment for the autumn of 1929 was 900 There were 57 members on the faculty. The income for the year was \$347,936 The library contained 65,000 volumes President, Henry Louis Smith, Ph D.

WASHINGTON BICENTENNIAL COMMISSION See C'ORRECTIONS

WASHINGTON UNIVERSITY.

A nonsectarian institution of higher learning for men and women in St Louis, Mo., founded in 1853 The enrollment on Nov 1, 1929, was 6952 The endowment amounted to \$17,180,843, while the income for the year was \$2,369,309 Gifts received in 1928-29 amounted to \$3,726,037 The library contained 205,532 volumes and 84,256 pamphlets Chancellor, George R Throop, Ph D, LL D

WATERBURY, JOHN ISAAC American banker, died in Morristown, N J, Mar 4, 1929 Born in Stamford, Conn., in 1850, he was graduated from the College of the City of New York in 1870 and was one of the first to develop wireless " " on its commercial side

WATER POWER While the total output of central-station hydro plants in 1929 was about 35 billion kilowatt-hours, close to that of 1928, it represented a smaller percentage of the total central-station output (36 per cent, as compared with 40 per cent in 1928) This was due to the large increase in steam-generating capacity and to the fact that, although there was a sharp rise in hydro output during the first half of the year, droughts in certain sections materially reduced the output during the latter half of the year For instance, during August the water-power plants in Maryland operated at less than 12 per cent of capacity, or about one-fourth of the output of August, 1928, and in Massachusetts the August output for 1929 was only about one half that of 1928 May was a month of high output

Of the 3,000,000 kilowatts additional capacity installed in central stations of the United States during the year about 25 per cent was in water-power plants About five million kilowatts capacity was reported to be under construction, one-third of which was water power There was a marked slowing up in hydro construction in California due to an abundance of cheap oil and natural gas which makes it possible for the steam plants, with their lower first cost, to compete successfully with water power

In the Northwest the droughts during the fall and winter of 1929 dealt water power a severe blow and resulted in a decided power shortage in that section The city of Tacoma, which depends largely upon a hydro municipal plant was forced to seek the assistance of the Navy Department, which strung cables from the airplane carrier *Lexington*, moored to a wharf, and thus augmented the capacity of the city's system by 20,000 kilowatts a day for over a month

Among the more important hydro projects under construction at the end of the year were Fifteen Miles Falls development of the Connecticut Light and Power Company, the Wyman Plant of the Central Main Power Company with 68,000-horse-power initial capacity, the Connecticut River Development of 185,000, an initial installation of 50,000 horse power as part of a 225,000-

horse-power project of the Carolina Power and Light Company, 175,000 horse power by the Lexington Water Power Company, near Columbia, S C; the Boydton Station of the Virginia Electric & Power Company, which will contain 50,000 horse power initially and 130,000 horse power when completed, the 40,000-horse-power Oxbow plant of the Consumer's Power Company in Michigan, a 50,000-horse-power initial installation by the Alabama Power Company in its Tallahassee River project, the 112,000-horse-power Calderwood plant of the Knoxville Power Company, a 160,000-horse-power development of the Union Electric Light & Power Company on the Osage River, near Bagnell, Mo., and a 74,000-horse-power plant of the Arkansas Power & Light Company in the Diablo Canyon the city of Seattle was installing 125,000 horse power in a development which was estimated to have an ultimate capacity of over 400,000 horse power

The situation with regard to Boulder Dam on the Colorado River at the end of the year was little changed

In so far as development on the American side of the St Lawrence is concerned, this had remained for some years in political deadlock Governor Roosevelt of New York, like his predecessor, ex-Governor Smith, insisted that development be by the State or a State-constitutional body, while the legislative majority held out for private development

On the Canadian side of the St Lawrence work was progressing with the Beauharnois development, which, when completed, would have a capacity of 2,000,000 horse power The initial plans call for 500,000 horse power in ten 50,000-horse-power units operating under an 80-foot head

In other sections of Canada water-power development was progressing at a rapid rate On the Saguenay River in Quebec the Alcoa Power Company was installing four 65,000-horse-power units in what ultimately would be a 1,000,000-horse-power project The Montreal Power Company put six 12,000-horse-power units into its Black River plant and at Seven Sisters Falls on the Winnipeg River the Northwestern Power Company commenced work on a 225,000-horse-power plant which was to employ units of the propeller type operating on a 66-foot head

WATER SUPPLY. Although the tendency toward the gravity type of construction continued and aqueducts and dams were the outstanding features of construction, many other important problems and forms of construction are to be noted in this wide and important field

CONSUMPTION A basic and fundamental figure in design is the consumption of water, usually expressed in gallons per capita per day When the first important American supply was built, the Croton system in New York, completed in 1842, a base figure of 22 gallons per capita per day, taken from British experience, was used in design This soon proved to be totally inadequate Consumption has grown by leaps and bounds in the United States and even in recent years has shown a steady growth averaging as much as 5 gallons per decade

During the year the *Engineering News-Record* (New York) published the results of a study of the water consumption in 44 American and European cities This shows that the use of water tends to rise with industrial prosperity and fall with depression, and that the per-capita domestic use in the United States is 2 or 3 times that in Europe, due largely, if not wholly, to a higher standard of

living See WATERWORKS below, also AQUEDUCTS; DAMS

WATER WHEELS. See WATER POWER

WATERWORKS AND WATER PURIFICATION. The exact number of waterworks in the United States is unknown, but records compiled by the engineers of State health departments of 43 States, supplemented by estimates for the five other States, indicate some 11,000 to 12,000 plants at the close of 1929. The number is indefinite because some of the records go back to 1928 and 1927 and there is no agreement as to what constitutes a works.

Among notable construction projects under way were a new long tunnel to tap an additional water supply, further west, for the Massachusetts Metropolitan District, a second deep tunnel to convey Catskill Aqueduct water from the terminal reservoir to the various boroughs of New York City, with uptake shafts connecting with trunk distributing mains, and the Hetch Hetchy Aqueduct of San Francisco. The Mokelumne Aqueduct for the supply of the East Bay Utility District (Oakland and near-by California communities) was put in use during the year as also was an important addition to the waterworks of St. Louis, including pumps and filters. Studies were continued by the Metropolitan Water District of Southern California for an aqueduct from the Colorado River. Eleven cities were included in the district thus far, including Los Angeles, Pasadena, and San Bernardino. See AQUEDUCTS, DAMS, MUNICIPAL OWNERSHIP.

WEATHER. See METEOROLOGY

WEEVILS. See ENTOMOLOGY, ECONOMIC

WEINMANN, KARL ADOLPH, German, died in Pirelethofen, Bavaria, Sept. 26, 1929. He was born in Vohenstraus, Upper Palatinate, Dec. 22, 1873. He studied under Haberl and Haller at the Kirchenmusikschule in Ratibon, and then in Freiburg under Peter Wagner. After his ordination to the priesthood he was called to Ratibon as (choirmaster) of the Kollegiaten, and professor of the history of music at the Kirchenmusikschule, where, in 1910, he succeeded Haberl as director. Besides, he was librarian of the Episcopal Library from 1909 and editor of *Musica Sacra* from 1911.

WELFARE WORK. The fifty-sixth annual meeting of the National Conference of Social Work was held in San Francisco, June 26-July 4.

The conference discussed, among other things, the juvenile court, venereal diseases, high cost of medical care, tuberculosis in the States of the Southwest, child behavior, unemployment, migratory labor, Mexican labor, the Indian, the influence of the press on social relations, and the social worker and politics. There were 29 kindred group programmes and nine special group meetings at which 300 speakers addressed 3000 social workers. Miriam Van Waters was chosen president of the fifty-seventh conference, Boston was designated as the meeting place.

NATIONAL CONFERENCE OF JEWISH SOCIAL SERVICE. This conference was held in Atlantic City, June 4-7. The presidential address of Samuel A. Goldsmith called for greater co-operation with non-Jewish agencies. Other addresses were in the fields of family welfare, child care, and medical social service. The conference attempted to discuss the basis of Jewish group life, without getting very far, however. The conference of the Community Centre Secretaries, held

at the same time, was much more successful in this particular. This was due to the lead taken by Dr. Horace Kallen. Dr. Boris D. Bogen was elected president for 1930. His death shortly after the conference led to the appointment of Mr. Goldsmith as acting president.

WELLAND SHIP CANAL. At the end of the year the new Welland Ship Canal, which had been under construction by the Canadian government since 1913, was nearing completion, and it was estimated that the entire canal would be opened for navigation by the summer of 1930. During the year the more notable work included the removal of the damaged gates of Lock No. 6 which were wrecked in August, 1928, and their replacement by a pontoon gate fitted with a capacity of 500 tons. On September 12 Guard Lock No. 8, which is 1380 feet long 40 feet wide, and 30 feet deep, was opened at Hamilton, its purpose being to keep the summit level from Port Colborne to Thorold at a regulated level of 569.0. The difference in levels between Lakes Erie and Ontario was overcome by seven locks of uniform lift, namely 46.5 feet, with a usable length of 820 feet as compared with 255 feet of the older canal. The width of these locks is 80 feet, as compared with 45 feet for the old locks.

WELLESLEY COLLEGE. A nonsectarian institution for the higher education of women in Wellesley, Mass., chartered in 1870 and opened in 1875. The enrollment for the autumn term of 1929 was 1563. The officers of instruction and government numbered 243. The trust funds as of June 30, 1929, amounted to \$9,159,110 and the income for the year 1928-29 was \$1,136,500 (including dormitories' net). The library contained approximately 125,000 volumes. President, Ellen Fitz Pendleton, Litt. D., LL.D.

WELLS, JOSEPH. An English educator, died Feb. 28, 1929, in Oxford. He was born in Reading, Dec. 30, 1855, and was educated at Reading School and at Queen's College, Oxford. In 1882 he was elected a fellow of Wadham College, Oxford University, and from 1883 to 1913 was a tutor there. He was elected warden of Wadham College in 1913 and held the position until 1927, when he resigned. From 1923 to 1926, he was vice-chancellor of Oxford University.

WELLS, PHILIP PATTERSON. American lawyer and educator, died in San Francisco, Calif., Mar. 13, 1929. Born in Grand Rapids, Mich., Feb. 5, 1864, he was graduated from Yale in 1889, doing graduate work in history and economics, 1889-91, he then entered the law school at Yale, transferring to the Columbian (later George Washington) University in 1892. Becoming librarian at the Yale Law School in 1896, he was also an instructor in evidence, 1898-99, and a university history lecturer, 1902-06. He received the Ph.D. degree from Yale in 1900. Leaving Yale and working for a year as law expert for the U. S. Forest Service, he became chief law officer, 1907-10. He next held a similar position with the U. S. Reclamation Service, from 1911 to 1913. Dr. Wells was appointed Deputy Attorney-General of Pennsylvania in 1923, and, serving until 1927, was also on the grant power survey board, 1923-25, and on the Pennsylvania commission to negotiate the tri-State compact for control of the Delaware River, 1923-27.

WELLS COLLEGE. An institution of higher learning for women in Aurora, N. Y., founded in 1868. The enrollment for the autumn of 1929 was 260. The faculty numbered 43 members. The en-

downment amounted to \$1,500,000 and the income for the year from invested funds, tuition, etc., was \$358,182. There were approximately 60,000 volumes in the library. President, Kerr Duncan Macmillan, S.T.D.

WELSBACH, FRIEDRICH VON. See AUER, KARL. **WELSH LANGUAGE AND LITERATURE.** See PHILOLOGY, MODERN.

WENLEY, ROBERT MARK. An American educator and philosopher, died Mar. 29, 1929, in Ann Arbor, Mich. He was born in Edinburgh, Scotland, July 19, 1861, and was graduated from the University of Glasgow in 1884, studying also in France, Italy, and Germany. From 1886 to 1894, he was assistant professor of logic at the University of Glasgow, and from 1888 to 1895, was in charge of the department of philosophy of Queen Margaret College, University of Glasgow. After 1896 he was professor of philosophy and head of the department at the University of Michigan. Professor Wenley was associate editor of the *Dictionary of Philosophy* and of the *Encyclopedia of Religion and Ethics*.

WESLEYAN METHODIST CHURCH. See METHODISTS.

WESLEYAN REFORM UNION. See METHODISTS.

WESLEYAN UNIVERSITY. An institution for the higher education of men in Middletown, Conn., founded in 1831. The 1929 autumn enrollment was 607. The productive funds of the university amounted to \$4,987,003 and the income for the year was \$598,469. President, James Lukens McCaughy, Ph.D.

WESTERN AUSTRALIA. A state of the Commonwealth of Australia, comprising the western third of the continent. Area, estimated at 975,920 square miles; population, according to the census of 1921, 332,732; the full-blooded aborigines were estimated at 22,222 in 1925-26; estimated population of the state on June 30, 1929, 411,734. Capital, Perth, with an estimated population at the end of 1928, including suburbs, of 196,251.

The estimated area sown to cereals for the crop year 1928-29 was 3,554,399 acres, and to hay, 16,126 acres. In the same year the wheat crop totaled 33,790,000 bushels, from 3,343,530 acres. Wool production in 1929 was estimated at 63,718,824 pounds, as against 67,549,734 pounds in 1928. The timbered country included 20,400,000 acres and the total forest area 6,707,000 acres. Mining is important, the value of all minerals produced in 1928 amounting to £2,128,179, of which gold accounted for £1,671,093. In 1927-28 there were 1398 factories with 21,308 workers.

Preliminary figures placed the value of direct overseas imports in 1928-29 at £9,422,104 and of direct overseas exports at £15,310,282. Revenue in 1928 totaled £9,807,949 and expenditure, £9,831,415. The public debt stood at \$354,250,000 on June 30, 1929, as compared with \$386,875,000 on the same date in 1928. A deficit of \$1,380,000 in financial operations in 1928-29 was reported by the Treasurer. State railways in operation during the fiscal year ended June 30, 1929, included 3977 miles of line. Total receipts were £3,858,000 and expenditures £2,911,000.

Executive power is vested in a governor who acts through a responsible ministry, and legislative power in the Parliament of two Houses, a Council of 30 members elected for six years and an Assembly of 50 members elected for three years. Governor in 1929, Col. Sir William Robert Cam-

panion; Premier, Treasurer, and Minister for Forests, Philip Collier.

WESTERN RESERVE UNIVERSITY. A nonsectarian institution for the higher education of men and women in Cleveland, O., chartered in 1826. The enrollment for the autumn of 1929 in the regular day curricula was 4044. The endowment of the university amounted to \$9,777,808 and the income for the year was \$1,994,390. During 1929 a campaign was conducted to raise \$1,000,000 as additional endowment for the college of women, the new building of the Institute of Pathology was dedicated; and the Cleveland School of Architecture became an affiliated college of the university. President, Robert E. Vinson, D.D., LL.D., LL.D.

WESTERN SAMOA. See SAMOA.

WESTON, EDWARD PAYTON. An American pedestrian, died May 13, 1929, in Brooklyn, N. Y. He was born in Providence, R. I., in 1839, and was educated in Boston. In 1861 he made his first long trip, walking from Boston to Washington a distance of 143 miles, in 208 hours. He walked from Portland, Me., to Chicago (1326 miles) in 26 days in 1867, and 40 years later bettered his record by 29 hours. In 1909, at the age of 70, he crossed the continent on foot (3895 miles) in 104 days and 7 hours, and returned in 1910, walking 3500 miles in 76 days and 23 hours.

WEST POINT. See UNITED STATES MILITARY ACADEMY.

WEST SPITZBERGEN. The largest and most important of the islands of the Svalbard Archipelago (qv), which passed under the sovereignty of Norway in 1925. There are coal deposits of fair quality estimated at 8,000,000,000 tons. Shipments of coal totaled 267,000 tons in 1928 and were estimated at 200,000 tons in 1929. The population averages 2000 in winter and 1500 in summer. The largest settlement is at Longyearbyen on Advent Bay, with 529 inhabitants.

WEST VIRGINIA. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 1,463,701. The estimated population on July 1, 1928, was 1,724,000. The capital is Charleston.

AGRICULTURE. The following table presents the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Hay	1929	817,000	1,163,000 *	\$17,529,000
	1928	826,000	1,199,000 *	17,550,000
Corn	1929	441,000	13,892,000	14,726,000
	1928	459,000	16,624,000	17,020,000
Potatoes	1929	57,000	6,555,000	9,177,000
	1928	60,000	7,500,000	6,000,000
Apples	1929		5,600,000	7,280,000
	1928		5,750,000	7,875,000
Oats	1929	216,000	5,816,000	3,594,000
	1928	204,000	5,712,000	3,599,000
Wheat	1929	134,000	1,782,000	2,170,000
	1928	122,000	1,586,000	2,173,000
Tobacco	1929	8,500	6,588,000 *	1,647,000
	1928	6,800	5,100,000 *	1,367,000

* Tons * Pounds

MINERAL PRODUCTION. Again in 1928, as in 1927, the bituminous-coal production of the State exceeded that of Pennsylvania and indeed of any other member of the Union in point of quantity. The production nevertheless fell to 132,952,159 short tons for 1928, from 145,122,447 tons for 1927. The coal produced in 1928 had a value of \$211,480,000, that of 1927 was valued at \$249,730,000. West Virginia was one of a small group

of States in which the coking of coal by the beehive method made some recovery in 1928.

The blast furnaces of the State increased their output of pig iron to 645,038 long tons for 1928, from 504,816 long tons for 1927. The value of the pig-iron total of 1928 approximated \$12,000,000. Outside of the coal and iron group, the leading mineral activity has been the production of natural gas, of which the yield fell slightly to 162,375,000 M cubic feet for 1927, the most recent year recorded, from 180,223,000 M for 1926, in value, it fell to \$87,994,000 for 1927, from \$70,396,000 for 1926.

Natural gas went increasingly into the production of gasoline, of which 68,700,000 gallons were thus made, to the value of \$6,128,000 (estimated) in 1928, as against 64,102,000 gallons, valued at \$5,421,000 in 1927. Petroleum production declined to 5,704,000 barrels, estimated at \$17,000,000 for 1928, from 6,023,000 barrels, valued at \$17,410,000, for 1927. The total value of the mineral product of the State, duplications eliminated, was \$366,643,205 for 1927, \$395,941,940 for 1926.

FINANCE State expenditures in the year ended June 30, 1928, as reported by the United States Department of Commerce, were for maintaining and operating governmental departments, \$14,263,251 (of which \$2,165,068 was for local education), for interest on debt, \$2,461,007, for improvements, \$14,181,378, total, \$30,905,636 (of which \$15,970,558 was for highways, \$3,051,008 being for maintenance and \$12,919,550 for construction). Revenues were \$22,027,456, of which property and special taxes formed 19.6 per cent, departmental earnings and compensation to the State for officers' services, 8.8, sale of licenses, 62.0 (including gasoline taxation of \$1,029,235). The funded State debt was \$55,908,000 outstanding, or \$55,251,500 net of sinking funds, \$49,250,000 of it was for highways. On a property valuation of \$2,095,430,997, State taxes of \$2,933,603 were levied in the fiscal year.

TRANSPORTATION The total number of miles of railroad line under operation on Jan. 1, 1929, was 4049.45. In 1929, 21.48 miles of first, and 11.55 of third, track were built.

MANUFACTURES According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and relating to the operations of 1927, there were in the State, in 1927, 1313 manufacturing establishments. These employed 77,950 wage earners, whose wages for the year totaled \$103,431,224. Materials and supplies used in manufacture cost \$232,884,424. Manufactured products combined attained the value of \$455,216,551.

EDUCATION The population of school age in the State was estimated at 521,571. There were enrolled in the public schools of the State, in the academic year 1928-29, 416,775 pupils. Of these, 348,278 were in elementary, 27,545 in junior high-school, and 40,952 in high-school grades. The salaries of teachers averaged \$939 a year in the elementary schools and \$1940 in the high schools.

LEGISLATION The State Legislature met in regular biennial session in January. Its most notable action was to recast the law of 1913 governing the development of hydro-electric power. The new act permitted the exportation of electric current derived from water power beyond the bounds of the State but reserved preference for the domestic users. It maintained control over the power corporations by a license system. The

licenses were to run for 50 years. At their expiration, the State Public Service Commission might renew licenses for another 50 years. At the expiry of any 50-year term, unless renewed, the licenses were to continue on the indeterminate plan. The Public Service Commission held under the new act the power to regulate the rates charged to consumers of electric current. Right of condemnation was allowed for the development of power projects. The Legislature authorized an issue of \$20,000,000 of highway bonds, with the proviso that 80 per cent of the proceeds should be distributed as aid to the roadwork of the counties and 20 per cent turned into the reserve fund of the State Road Commission. Provision was made for a State system of toll bridges to be created with proceeds of bonds of a State Bridge Commission, the debt charges to be met from tolls. A bill to create the office of Lieutenant-Governor was passed by the Senate. In the autumn, Governor Conley called a special session of the Legislature to deal with the report of a codification commission. The Legislature replaced the provisions in the report, as to the primacy, marriage, and Prohibition laws, with the existing laws. It then adjourned to Mar. 12, 1930.

OFFICERS Governor, William G. Conley, Secretary of State, George W. Sharp, Treasurer, W. S. Johnson, Auditor, Sam T. Mallison, Attorney-General, Howard B. Lee, State Superintendent of Free Schools, William C. Cook, Commissioner of Agriculture, John W. Smith.

JUDICIARY Supreme Court President, John H. Hatcher, Associate Judges, Frank Lively, Homer B. Woods, Raymond Maxwell.

WEST VIRGINIA UNIVERSITY. An institution for the higher education of men and women in Morgantown, W. Va., founded in 1867. In the autumn of 1929 the enrollment was 2150. There were 1383 registered in the summer school of the same year. The faculty numbered more than 300. The libraries contained 92,000 volumes. The first unit of a new main library was under construction. President, John Roscoe Turner, Ph.D.

WHEAT. A report of the U. S. Department of Agriculture placed the world wheat crop in 1929, exclusive of Russia and China, at about 3,415,000,000 bushels and forecast the disappearance for the commercial year at about 3,650,000,000 bushels, indicating a reduction in the world's carryover at the end of the season of about 200,000,000 bushels. Surplus production in the principal exporting countries was given as about 460,000,000 bushels against 1,035,000,000 bushels the year before.

As reported by the International Institute of Agriculture, Rome, the estimates of production for the leading countries outside of the United States were as follows: France, 319,861,000 bushels, India, 317,595,000 bushels, Canada, 293,899,000 bushels; Italy, 259,643,000 bushels, Spain, 149,266,000 bushels, and Germany, 115,581,000 bushels. The estimated production of Canada was only 51.9 per cent of the yield in 1928 and 72.8 per cent of the average production for the 5 years 1923-27. The production of Argentina for the crop year 1929-30 was forecast at 175,000,000 bushels compared with 340,000,000 bushels the preceding year and an average of 230,000,000 bushels for the past 5 years. The Australian crop of 1929-30 was forecast at 112,000,000 bushels or about 70 per cent of the production of the year before and 82 per cent of the average for the five years 1923-24 to 1927-28. The Soviet Republics reported a production in 1928 of about 860,000,000 bushels.

The production of wheat in the United States in 1929 was estimated by the Department of Agriculture at 806,508,000 bushels compared with 914,876,000 bushels in 1928 and an average of 809,668,000 bushels during the preceding five years. The area harvested was 61,147,000 acres, or 4.9 per cent greater than the 58,272,000 acres harvested in 1928 but the yields per acre averaged 16 per cent lower than the year before. The farm price averaged \$1.043 per bushel on December 1, 1929, against 97 cents on Dec. 1, 1928. On this basis the total farm value was \$840,921,000 in 1929 and \$887,184,000 in the preceding season. The production of winter wheat was placed at 578,336,000 bushels, practically the same as the 578,673,000 bushels produced in 1928. The preceding 5-year average was 540,257,000 bushels. The 1929 area of winter wheat was 40,162,000 acres which was 10.9 per cent greater than the 36,213,000 acres harvested in 1928, but this large increase in acreage was more than offset by a decrease in yield per acre from 16 bushels in 1928 to 14.4 bushels in 1929. Farm prices for winter wheat averaged \$1.07 per bushel on Dec. 1, 1929, and \$1.035 on Dec. 1, 1928, indicating a total value of \$616,128,000 for the 1929 crop and \$599,207,000 for the 1928 crop.

The production of spring wheat other than durum wheat for 1929 was estimated at 175,792,000 bushels compared with 238,912,000 bushels the year before and 141,163,000 bushels as the average for the preceding five years.

The total production for all types of wheat in the leading States was as follows: Kansas, 138,060,000 bushels, North Dakota, 93,306,000 bushels, Nebraska, 56,555,000 bushels, Washington, 44,910,000 bushels, Oklahoma, 44,478,000 bushels, and Montana, 40,098,000 bushels. The area sown to winter wheat in the fall of 1929 was reported as 43,690,000 acres, an increase of 2 per cent over the area sown the year before. During the fiscal year ended June 30, 1929, the United States exported 103,114,000 bushels of wheat, or nearly 43,000,000 bushels less than in the preceding year. The exports of wheat flour for the same period amounted to 12,888,000 barrels, an increase of 67,000 barrels over the year before. The imports during this fiscal year included 21,430,000 bushels of grain, 510,000 pounds of wheat flour, 3,024,000 pounds of macaroni and other pastes, and 354,000 tons of bran, shorts, and other by-products and feeds of wheat. The average cost of producing wheat in the United States in 1928, as deducted by the Department of Agriculture from 2400 reports, was \$21.01 per acre and \$1.24 per bushel.

For Canadian Wheat Pool, see COOPERATION.

WHITEHEAD, ALBERT NORTH See PHILOSOPIHY.

WHITNEY, CASPAR, American editor and author, died in New York, Jan. 18, 1929. Born in Boston, Sept. 2, 1864, he was graduated from St. Matthew's College, Calif., and for 10 years hunted and explored in various parts of the world. Returning to the United States in 1888, he became sports writer for *Harper's Weekly*, doing much to popularize amateur athletics. At the outbreak of the Spanish-American War, 1898, *Harper's* sent Mr. Whitney to Cuba as war correspondent. On his return, he edited the *Outing Magazine*, 1900-09, *Collier's Outdoor America*, 1909, and *Recreation*, 1913. He accompanied the United States marines to Mexico as war correspondent in 1914. The following year, he and Mrs. Whitney

joined the Commission for Relief in Belgium. When the United States entered the World War, 1917, Mr. Whitney remained in Europe as correspondent for the New York *Tribune*, until after the peace.

WIDAL, FERNAND ISIDORE, A French bacteriologist and clinician, died in Paris, Jan. 1, 1929. He was born in Dellys, Algeria, Mar. 9, 1862, and studied medicine in Paris, where he became hospital physician in 1893. In 1895 he became professor *agrégé* in the Faculté de Médecine de Paris. He was known for his work on bacterial agglutination and its application to the diagnosis of typhoid fever and, with André Chantemesse, was the first in France to advocate vaccination against typhoid fever.

WIDIA See CHEMISTRY, INDUSTRIAL.

WILHELMINA, QUEEN OF THE NETHERLANDS See NETHERLANDS THE and CELEBRATIONS.

WILKINS'S POLAR EXPEDITION See POLAR RESEARCH.

WILLEBRANDT, MABEL WALKER See PROHIBITION.

WILLIAM AND MARY, COLLEGE OF An institution for the higher education of men and women in Williamsburg, Va., founded in 1693. The enrollment for the autumn of 1929 was 1418. The productive funds amounted to \$332,557, and the income for the year was \$1,058,000. The library contained 65,000 volumes. President, Julian A. C. Chandler, Ph.D.

WILLIAMS, JESSE LYNN, An American author, died in Herkimer, N. Y., Sept. 14, 1929. He was born Aug. 17, 1871, in Sterling, Ill., and was graduated from Princeton University in 1892. His writings include *Princeton Stories* (1895), *The Stolen Story*, a comedy (1906), *My Lost Duchess* (1908), *The Girl and the Game*, and *Other College Stories* (1908), *Mr. Cleveland, a Personal Impression* (1909), *The Married Life of the Frederic Carrolls* (1910), *Remating Time*, plays (1916), *And So They Were Married*, a comedy (1915), a new edition of which in 1917, under the title, *Why Marry?*, won the Pulitzer Prize. His *Why Not?*, a satiric comedy, was produced in New York in 1922, and *Lovely Lady*, a comedy, in Washington in 1925.

WILLIAMS COLLEGE, A non-sectarian college for men in Williamstown, Mass., founded in 1793. The enrollment for the autumn of 1929 totaled 820. There were 80 members on the faculty, of whom 14 were new appointees. The productive funds of the college amounted to \$6,163,725, and the income for the year ending June 30, 1929, was \$759,718. The library contained 129,630 volumes. President, Harry Augustus Garfield, LL.D. See POLITICS, INSTITUTE OF.

WILLIS, BAILEY, ADDRESS OF See GEOLOGY.

WILSON, JOSEPH HAYFLOCK, An English labor leader, died in London, Apr. 16, 1929. He was born Aug. 16, 1859, in Sunderland, Durham, and attended the Boys' British School there. At the age of 12, he ran away to sea. He was one of the organizers of the Seamen's Union in 1888 and until his death served as president of the National Sailors' and Firemen's Union. In 1892 he was elected to Parliament as a Labor member for Middlesborough, was reelected in 1895, and served again from 1906 to 1910, he was elected for South Shields, serving in 1918-22.

WILSON AWARD See WOODROW WILSON AWARD.

WINDLE, SIR BERTRAM COGHILL ALAN, English anthropologist and educator, died in Toronto,

Canada, Feb 14, 1929 Born in England, May 8, 1858, he attended the University of Dublin, winning, with high scholastic honors, the M. A., M. D., B. Ch., and D. Sc. degrees. Having been dean of the medical faculty and professor of anatomy and anthropology at the University of Birmingham, he was appointed professor of archaeology at University College, Cork, later becoming president of that institution. He resigned to become professor of cosmology and anthropology at St. Michael's College, and special lecturer on ethnology at the University of Toronto, Canada, where he remained until his death. In addition to his scientific articles, Sir Beitram wrote several medical books and a number on other subjects.

WINDWARD ISLANDS. The name applied to a group of islands in the West Indies, comprising Grenada, St. Vincent, and St. Lucia, together with the Grenadines (which are one-half under Grenada and one-half under St. Vincent), forming the eastern limit of the Caribbean Sea between Martinique and Trinidad, a British possession. (See articles on the islands mentioned above.) Each of the islands is under its own government, but they are united for certain common purposes and have a court of appeals. Governor and commander-in-chief in 1929, Sir Frederick Seton James.

WIRELESS TELEGRAPHY AND TELEPHONY. See RADIO COMMUNICATION

WISCONSIN. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 2,632,007. The estimated population on July 1, 1928, was 2,953,000. The capital is Madison.

AGRICULTURE. The following table presents the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Hay	1929	3,653,000	7,685,000	\$79,631,000
	1928	3,485,000	5,236,000	73,892,000
Corn	1929	2,036,000	81,440,000	67,595,000
	1928	2,121,000	89,092,000	69,484,000
Oats	1929	2,470,000	85,215,000	37,495,000
	1928	2,495,000	108,532,000	46,669,000
Potatoes	1929	220,000	20,240,000	24,288,000
	1928	278,000	31,970,000	12,788,000
Barley	1929	704,000	22,848,000	14,851,000
	1928	725,000	26,998,000	17,484,000
Tobacco	1929	37,000	45,140,000	7,223,000
	1928	37,000	48,100,000	7,023,000
Rye	1929	185,000	2,960,000	2,834,000
	1928	187,000	2,171,000	1,954,000
Wheat	1929	105,000	2,190,000	2,409,000
	1928	104,000	2,141,000	2,262,000

* Tons † Pounds

MINERAL PRODUCTION. The production of stone was the foremost of the reported mineral industries of 1927. It attained 3,104,240 short tons, valued at \$5,181,631, for 1927, thus surpassing the 2,852,070 tons, valued at \$4,937,661, for 1926. In 1928, 18,417 short tons of zinc, valued at \$2,246,874 were mined, as against 32,841 tons, valued at \$4,203,648, mined in 1927. Although totals had not for some years been officially reported, the production of pig iron remained an important industry. The iron mines of the State in 1928 shipped 1,394,371 long tons of iron ore valued at \$3,700,797, as against 937,935 tons, valued at \$2,567,078, in 1927. The total value of the mineral products of the State, with allowance made for duplications and the like, was \$21,766,847 for 1927; \$20,711,736 for 1926.

FINANCE. State expenditures for the year ending June 30, 1928, as reported by the Federal

Department of Commerce, were, for departmental maintenance and operation, \$30,274,681 (of which \$4,214,385 was for local education); for interest on debt, \$116,459, for permanent improvements, \$15,681,146; total, \$46,072,286 (of which \$17,814,662 was for highways, \$4,391,626 being for maintenance and \$13,423,036 for construction). Revenues were \$45,791,517. The funded or fixed debt of the State totaled \$1,563,700, gross and net.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 7353 1/2.

MANUFACTURES. According to the biennial Census of Manufactures published by the United States Department of Commerce in 1929, there were in the State in 1927, 7473 manufacturing establishments. These employed 247,722 wage earners, whose wages for 1927 totaled \$322,697,105. Materials and supplies used in manufacture cost \$1,153,327,898. The manufactured products combined attained the value of \$1,973,653,261.

EDUCATION. There were enrolled in the public schools of the State, in the academic year 1928-29, 518,035 pupils. Of these, 424,979 were in elementary, and 93,056 in high-school, grades. Expenditures for public-school education in 1928 totaled \$54,432,522. Salaries of teachers averaged, by the year, \$1455.

LEGISLATION. The State Legislature met in regular biennial session on January 9. Early in its session it dealt with the popular demand for action against Prohibition, by passing a resolution submitting to the popular vote at a referendum on April 2 the repeal of the Severson State Prohibition Law and the alternative of amending the law so as to permit the manufacture and sale of beer of 2.75 per cent alcoholic content. The casting of a heavy popular vote in favor of repeal was taken by the Legislature as a mandate. It accordingly passed a repeal measure, which was duly signed by Governor Kohler after some hesitation. A statutory State Highway Commission was created, to consist of three members.

A children's code was enacted, with a view to enabling needy mothers to keep with them children that otherwise would be sent to institutions. The State, acting through the juvenile courts, was to settle the budgets of needy families and to contribute to them. A revision of the State income-tax law, to lower taxes on incomes below \$4000 and increase them on those above that figure, was passed, but Governor Kohler vetoed it. An appropriation of \$10,000,000 for the needs of the University of Wisconsin was made.

POLITICAL AND OTHER EVENTS. The issue of State Prohibition was carried to the polls by a resolution of the Legislature. On April 2 the popular vote was cast both on a proposal to repeal the State Prohibition Enforcement Act and on a second proposition to repeal the State penalty for the manufacture or sale of beer containing 2.75 per cent or more of alcohol. Both proposals were carried by large majorities and the vote led to the repeal of the Prohibition Enforcement Act (see *Legislation*). A movement, based on the view that the Federal Prohibition amendment did not apply to States as direct agents, was started to have Wisconsin engage in the manufacture and distribution of alcoholic beverages as a State enterprise.

Governor Kohler, entering office at the beginning of the year, endeavored to make his mark as

a business administrator. He hired at his own expense an assistant to carry on research work in State affairs and followed a cautious course in financial matters, halting the disposal of moneys appropriated for certain State buildings in October, until he put himself at risk. An effort was made in February to invalidate his election on the ground that his campaign fund had exceeded the legal limit, but the attempt failed.

The State Board of Health entered an agreement with authorities of Minnesota and Iowa for action in preventing the pollution of streams by discharge from manufactories of dairy products. The State Railroad Commission exercised jurisdiction over motor trucks by issuing an order on November 30 to establish uniform rates for the carrying of freight by such vehicles.

OFFICERS: Governor, Walter J. Kohler, Lieutenant-Governor, Henry A. Huber, Secretary of State, Theodore Dammann, State Treasurer, Scott Levitan, Attorney-General, John W. Reynolds, State Superintendent of Schools, John Callaghan.

JUDICIARY. Supreme Court Justices, Marvin B. Rosenberry, Walter C. Owen, Charles Crownhart, E. Ray Stevens, Chester A. Fowler, Oscar M. Fritz. One vacancy, occasioned by the death during the year of Justice Franz C. Eschweiler, remained unfilled in December.

WISCONSIN, UNIVERSITY OF A State institution of higher education in Madison, Wis., founded in 1848. The enrollment for the autumn of 1929 was 9468. The faculty numbered 1332, including 329 new members. The endowment as of June 30, 1929, was \$1,064,984, while the income for 1928-29, exclusive of gifts, amounted to \$8,561,127. The library contained 800,000 volumes and 390,000 pamphlets. The requirements for admission to the law school also were changed from two to three years of preparatory college work. President, Glenn Frank, Litt D., LL D., LL D.

WITHERSPOON, JOHN A. An American physician, died Apr. 25, 1929, in Nashville, Tenn. He was born in Columbia, Tenn., Sept. 13, 1864, was graduated in medicine from the University of Pennsylvania in 1887, and began the practice of medicine at Nashville, in 1889. During 1889-94 he was a member of the medical faculty of the University of Tennessee. He was one of the founders of the medical department of Vanderbilt University and after 1894 was professor of medicine and clinical medicine there. In 1913-14 Dr. Witherspoon was president of the American Medical Association.

WOESTIJNE, KAREL VAN DE A Belgian poet, novelist, and journalist, died in Zwijnaarde, near Ghent, Aug. 24, 1929. He was born in Ghent, Mar. 10, 1878. Besides verse, he wrote several books of essays and criticism, a study of primitive Flemish painters, and several novels. At the time of his death, he was professor of the Flemish language at the University of Ghent. He was a member of the Royal Flemish Academy.

WOMAN'S CHRISTIAN TEMPERANCE UNION, NATIONAL. An all-partisan and all-sectarian movement which has as its purpose the protection of the home by the abolition of the liquor traffic. It is comprised of 10,000 local unions, with a membership of approximately 600,000, and is organized in every State, Territory, and dependency of the United States. The Young People's Branch for both young men and women, who are united for temperance and pro-

hibition, and the Loyal Temperance Legion for children are under its supervision. The organization carries 21 distinct departments of work. The officers for 1929-30 were: President, Mrs. Ella A. Boole, corresponding secretary, Mrs. Anna Marden DeLo, recording secretary, Mrs. Sara H. Hoge. National headquarters are in Evanston, Ill., a legislative headquarters is maintained at the Hotel Driscoll in Washington, with Mrs. Lenna Lowe Yost in charge.

WOMEN IN INDUSTRY, WAGE EARNINGS IN THE COTTON INDUSTRY. In view of the public attention that was accorded during the year to the position of labor in the Southern States, it is interesting at this point to summarize the results of the various surveys made by the Women's Bureau of the U. S. Department of Labor into the extent of women's earnings in the cotton-textile industries of the South. In Alabama, the wage range for women was from \$11.37 in 1924 to \$11.88 in 1928. In Georgia, the range was from \$12.82 in 1924 to \$12.77 in 1928. In North Carolina, the range was from \$15.64 in 1924 to \$14.62 in 1928. In South Carolina, the range was from \$12.87 in 1924 to \$12.32 in 1928. In Virginia, the range was from \$17.98 in 1924 to \$14.99 in 1928. On the other hand, the wage ranges in the Northern States for the same periods were considerably higher. In Connecticut, the range was from \$20.50 in 1924 to \$17.85 in 1928. In Massachusetts, the range was from \$20.68 in 1924 to \$16.91 in 1928. In New Hampshire, it was from \$23.72 in 1924 to \$20.31 in 1928. In New York, it was from \$21.66 in 1924 to \$18.15 in 1928. In Rhode Island, it was from \$21.64 in 1924 to \$19.47 in 1928.

LABOR LEGISLATION. The legislative sessions of 1928-29 saw the passage of few laws affecting the position of women in industry. In only California and Texas were laws passed amending existing hour laws. In California, the coverage of the eight-hour law was extended and in Texas new exemptions were added to the hour law. Minimum wage measures were introduced in New York and Utah. An amendment to the Minnesota minimum wage law also was introduced. All three failed of passage. Other significant bills to fail were a proposal in Massachusetts for the placing of all manufacturing plants on a par with textile mills by the prohibition of night work for women after six o'clock (instead of after 10 o'clock), as well as bills prohibiting the employment of women at night in New Hampshire and Rhode Island. In Massachusetts, a law was passed creating an industrial commission which was directed to investigate conditions in the textile manufacturing industry and to examine the state of unemployment in textile and other industries. New York State abolished its Industrial Survey Commission, and New Jersey created a new Bureau of Women and Children, the director to be a woman appointed by the Commissioner of Labor. See LABOR LEGISLATION.

WOMEN IN CHAIN DEPARTMENT STORES. During the year, the Women's Bureau staff completed a survey of the status of women working in the limited-price chain department stores. Facts were assembled for 5000 women in 233 stores located in 18 States. Most of these stores were in the five and ten cent or five, ten, and twenty-five cent group. The majority of the stores belonged to five important chains. It was discovered that most of the women thus employed were very young, nearly 60 per cent being under 20 years of age and more than 25 per cent under 18. Only about

one in six was 25 years of age or more. Of those reporting marital status, 82 per cent were single, though in one State more than one-third were or had been married. Of those reporting living conditions, 92 per cent lived at home or with relatives. It was found, too, that length of stay in employment was comparatively brief, more than 40 per cent of the girls declaring that they had been in the industry for less than a year. Less than 10 per cent had worked 10 years or longer. The study of hour schedules revealed that nearly 40 per cent of the women had a working day of 8 hours or less. In 6 States, from 60 per cent to 100 per cent of the women had a day of 9 hours, but, in the 18 States, 30.6 per cent of the women had a 9-hour day. The earnings during a week in the last quarter of 1928, taken for 6061 women, showed that 7 per cent earned \$18 or more. On the other hand, 70 per cent received less than \$15; over 40 per cent received less than \$12, and over 25 per cent received less than \$10.

For all the women studied, the median wage was \$12, though the medians differed in the different States. In California, it was \$16, in Michigan, it was \$15, in Kentucky, it was \$14, while in the Southern States of Alabama, Georgia, Mississippi, South Carolina, and Tennessee, it was as low as \$9.

AGRICULTURE The International Cooperative Women's Guild, as a result of an international survey which reached 38 cooperative organizations in 25 countries found that women the world over were assuming important roles in the activities of the agricultural cooperative movement.

NEGRO WOMEN Over a period of years, the Women's Bureau has been making surveys of the status of Negro women in industry. Its examinations covered 17,134 Negro women employed in 682 establishments. The report showed that industrial employment was a comparatively new thing for Negro women and evidently was on a decided increase. It would appear from these studies that the largest group (52.2 per cent) were working in tobacco and tobacco products, that food products engaged 19.5 per cent, textile industries employed 9.6 per cent, wood products employed 8 per cent; and the rest were distributed among a variety of industries including housefurnishings, glass, paper and paper products, and metal.

HOME WORK IN NEW YORK CITY. The New York State Department of Labor has kept an interesting series of figures recording trends in home work for women in New York City. Its records show that in 1924, 1277 firms were giving out home work and that in 1928 this roll had increased to 1527 (19.6 per cent). The peak year was 1926, when the number of firms totaled 1747. Similarly, the total number of workers employed was 10,760 in 1924, 14,046 in 1926, and 12,887 in 1928. The industries largely affected in 1928 were men's clothing, with 4175 workers, embroideries, with 2390 workers, and flowers and feathers, with 1118 employees.

ILLINOIS The Illinois Labor Department published the results of a study made by it of payrolls for November, 1928, affecting 402 factories employing 24,261 women. This survey showed that, while the Illinois law permits a 10-hour working day for women, the actual number of hours was considerably lower than those in most instances. Thus, 29.6 per cent of the working women worked 8 hours or less, 27 per cent worked between 8 and 9 hours, 31.8 per cent

worked 9 hours; 3 per cent worked between 9 and 10 hours; and 8.6 per cent worked 10 hours. The same study showed that more than 80 per cent of the women had the same working hours as the men employed in the factories and that 15.9 per cent had shorter hours.

WOMEN IN SPORTS. See Articles on ATHLETICS.

WOMEN'S CLUBS, GENERAL FEDERATION OF. An organization founded in 1880 and chartered by Act of Congress Mar. 3, 1901, for "the promotion of movements looking toward the betterment of life." In 1929 the General Federation was composed of approximately 14,000 local clubs in the United States, in addition there were affiliated with it 13 national organizations and 66 clubs outside of the United States. It is governed by a board of directors, consisting of the duly elected officers, a director from each State and the District of Columbia, the chairman of the departments, and members of the board of trustees. The official publication is the *General Federation News*. The last biennial convention was held in San Antonio, Texas, in 1928. The president in 1929 was Mrs. John F. Sippel, and Miss Josephine Junkin was manager of the research and club service. Headquarters are at 1734 N. Street, N. W., Washington.

WOMEN'S TRADE UNION LEAGUE See TRADE UNIONS.

"WOODBINE WILLIE." See KENNEDY, THE REV. (JEFFREY ANKETELL STUDDERT).

WOOD PULP. See FORESTRY, PAPER.

WOODROW WILSON AWARD. The Woodrow Wilson Foundation announced on December 27 that the 1929 award of \$25,000 had been voted unanimously to the League of Nations for ten years' service in the cause of world peace. Previous prizes have gone to Viscount Robert Cecil, Elhu Root, and Colonel Imlah.

WOOD-TICK FEVER. See LULAHEMIA.

WOOL Domestic wool production in 1929 was more than 80,000,000 pounds greater than in 1922, since which year there had been a gradual increase in the annual wool clip. The 1929 production was 8,000,000 pounds greater than the production of the preceding year, on account of the increased number of sheep sheared, notwithstanding a small decrease in the average fleece weight. Wool prices were high in 1928, though Delaine wools began to decline early in the year and continued the drop through 1929. Quarter-blood combing wool maintained a price above 50 cents a pound on the grease basis through 1928, but early in 1929 it dropped to 42 cents a pound. There was a small recovery in price in the summer, but the recovery was only temporary as the predicted production was heavy. Supplies at the end of the year, including carry over in primary markets, were estimated as about 1.5 per cent greater in 1929 than in 1928.

The wool situation in the United States is closely related to the world wool situation. It was estimated by the Bureau of Agricultural Economics of the U. S. Department of Agriculture that wool production in 19 countries which usually produce four-fifths of the world's clip, exclusive of Russia and China, was 2,687,000,000 pounds in 1929, which was about the same as the large clip of 1928.

The United States exports practically no raw wool, but large amounts are imported, notwithstanding a relatively high tariff. This is especially true of carpet and combing wools. In 1929

the imports of carpet wools amounted to 175,006,973 pounds, an increase of nearly 20 per cent over the 1928 imports. The imports of combing wools were 83,709,708 pounds in 1929 an increase of 11,000,000 pounds over the 1928 imports. There were 18,187,782 pounds of clothing wool imported in 1929 as against 18,407,589 pounds in 1928. The countries from which the United States received its principal importations of unmanufactured wool were China, United Kingdom, Argentina, Uruguay, and Australia. See TEXTILE MANUFACTURING.

WOOL MARKETING ASSOCIATION, NATIONAL. See COOPERATION.

WOOLSEY, THEODORE SALISBURY. An American professor of international law, died April 24, 1929, in New Haven, Conn., where he was born Oct. 22, 1852. He was graduated from Yale University in 1872 and from the Yale Law School in 1876. Returning to Yale University as instructor in public law in 1877, he became professor of international law in 1878 and emeritus professor after 1911. After 1914 he was president of the New Haven Park Board. Professor Woolsey edited *Woolsey's International Law*, *Pomeroy's International Law*, and wrote articles on international law for reference works. He also wrote *America's Foreign Policy* (1898).

WORCESTER FESTIVAL. See MUSIC.

WORCESTER POLYTECHNIC INSTITUTE. A nonsectarian institution for the technical education of men in Worcester, Mass., founded in 1865. The enrollment for the autumn of 1929 totaled 633. The faculty numbered 70. The productive funds of the institute amounted to \$2,897,175 and the income for the year was \$294,827. There were 23,500 volumes in the library. President, Ralph Earle, D.Sc., D.Eng., LL.D., captain, U.S.N., retired.

WORKMEN'S COMPENSATION. In view of the universal acceptance generally in the United States of the workmen's-compensation system as a legal-economic entity, one may at this point summarize the general status of the legislation. In 1903 the first commission for the purpose of investigation was created, in 1908 the first workmen's-compensation law was written on the statute books of an American State. By the end of 1929, laws were to be found on the statute books of 44 States, the Territories of Alaska, Hawaii, the Philippine Islands, and Porto Rico, and by enactment for the civil employees.

Government, for the District of Columbia, and for longshoremen and harbor workers.

Insurance of the employer's liability to pay compensation is recognized as an essential feature of the workmen's-compensation system in most of the States. Such insurance may be effected through private insurance companies, self-insurance, or by insurance in State funds (either exclusive or competitive). Compensation on insurance is compulsory in all but 17 States. State fund insurance systems exist in 19 of the States and, in these, seven are exclusive, whereas, in 12 States, the State fund competes with private insurance companies.

No law undertakes to cover all types of employment. The most important exceptions are those of agriculture and domestic service. Interstate commerce is exempt because it is subject to the action of Congress. It is to be noted that, in 12 States, coverage applies only to hazardous employments. Also, the laws of 23 States ex-

empt employers whose plants employ less than a stipulated number of workers. The exclusion of agricultural workers is universal in the compensation laws of the United States, except in New Jersey and Hawaii. Domestic service, too, is excluded, except in New Jersey. Exclusion of employees receiving above a "normal" wage is provided in a few States. At the beginning, a few of the laws provided for the compensation of occupational diseases, as a result of progressive amendments, the principle of disability because of disease has become recognized in 17 of the 50 laws. The Federal Civil Employees Compensation Act and the North Dakota law accept in the definition of the term "injury" any "disease promptly caused by the employment."

Most laws require a minimum duration of disability before compensation benefits are payable. In all but two States, the amount of compensation is based upon wages. A few States provide fixed lump sums for certain injuries but apply the percentage system to all others. Fifty per cent of the employee's wages is allowed in compensation in 15 States, 55 per cent in three States; 60 per cent in seven States, 65 per cent in seven States, and 66 2/3 per cent in the District of Columbia and 14 States.

Most laws have established a weekly maximum and minimum compensation grant. The results of the various restrictions have been computed as placing upon the injured worker about 50 per cent of the burden of industrial accidents in the most favorable States and from 65 to 80 per cent in those less favorable.

ACCIDENTS TO MINORS. The Illinois Act of 1927 provides an additional compensation of 50 per cent to be paid to minors injured while illegally employed. During the first year of the operation of this section of the law, industrial accidents occurred to 83 children under 16 years of age. Of this number, 76 lost more than a week's time from work or suffered some serious injury, and seven lost less than one week. Of the 76, 46 children were illegally employed. Of the seven children slightly injured, six were illegally employed.

NORTH CAROLINA. The 1929 Legislature of North Carolina passed an act establishing a workmen's-compensation law for that State. This made the forty-fourth State of the Union to enact such legislation. The act covers all public and quasi-public corporations and requires that anyone providing employment in which five or more employees are regularly employed insure the workers. It makes exceptions of agriculture, domestic service, railroad employees, Federal employees, convicts, and certain farm-produce merchants. The act provides for compensation for all injuries by accident arising out of and in the course of employment and does not include a disease in any form except where it results unavoidably from the accident.

OTHER STATES. For the acts amending existing compensation laws, as passed by 1929 legislatures, see the article LABOR LEGISLATION, where these are reviewed.

LEGISLATIVE HISTORY, 1929. In the 44 States whose statute books carried compensation legislation in 1929, sessions of the legislature were held in all but four (Alabama, Kentucky, Louisiana, and Virginia). In these 40 States, legislatures of 35 acted on matters relating to workmen's compensation. Five States in which no action

was taken were Arizona, Nevada, New Hampshire, Tennessee, and Utah. The outstanding achievement of the year was the enactment of a workmen's-compensation law in North Carolina. (See above.) Other important measures taken were a complete revision and reenactment of the Maine law, the complete revision of the New Mexico law, and the authorization of the appointment of a committee by the Oregon Legislature to study the needs of the State's workmen's-compensation law. It was agreed by students of industrial legislation that the actions taken by the 35 legislatures tended to strengthen the existing laws. For example, 14 States amended their coverage provisions (Delaware, Idaho, Illinois, Indiana, Maine, Maryland, New Mexico, New York, South Dakota, Texas, Vermont, West Virginia, Wisconsin, and Wyoming). The waiting period was decreased in New Mexico, Connecticut, Illinois, Maine, and Montana.

Benefits were liberalized in 20 States, resulting in the raising of the minimum or maximum weekly demands, by increasing the maximum amount in death cases and the number of weeks for specified injuries. Further liberalization was effected by larger allowances in cases of medical and surgical aid and burial expenses.

SOCIAL INSURANCE IN RUSSIA. Probably the most complete system of social insurance in operation today is that to be found in Russia, which extends to all wage earners whether employed by the state or in private concerns. Exemptions are made only in the case of agricultural workers on peasant farms and apprentices if their wages are paid in kind. The system allows the following benefits: (1) Temporary disability, funeral, unemployment, and dependents' benefits, (2) maternity benefits, (3) invalidity and widows' and orphans' pensions, (4) compensation for industrial accidents and occupational diseases, (5) medical treatment. Permanent-disability benefits are paid when a worker is disabled by accident or disease, during his employment or during the year following the termination of his work.

Duration of employment is not considered, except when a worker is over 50 years of age when he must prove employment at least eight years prior to disability. Disabled workers are grouped in six classes, and benefits vary in proportion to the extent of disability. In class one, a totally disabled person receives full earnings. In class two, a person showing a loss of earning ability from 65 to 100 per cent receives three-quarters of his earnings. In class three, affecting a person showing a loss of earning ability from 45 to 65 per cent, one-half of earnings is granted. In class four, a person showing a loss of earning power from 30 to 45 per cent receives one-third of his earnings. In class five, a person showing a loss of earning ability from 15 to 30 per cent receives one-sixth of his earnings. In class six, a person showing a loss of earning ability of not more than 15 per cent receives one-tenth of his earnings. Dependents of a worker whose death resulted from accident or occupational disease are entitled to three-quarters of the worker's earnings for three or more dependents, one-half of the earnings for two, and one-third of the earnings for one dependent. The system employed in Russia is not contributory, i. e., it is based entirely upon employers' donations.

GREAT BRITAIN. The English Home Office published comparative figures for the years 1919-27

covering accident and compensation payments in the following seven groups of industries: Mines, quarries, railways, factories, docks, construction work, and shipping. The figures serve to indicate that, despite a decreasing roll of employed persons, the number of accidents has increased. The toll of fatalities, however, is decreasing. In 1919 the total amount paid in compensation for fatal cases was £687,477, in 1927 the amount had risen to £763,271. In the same period, the total amount of compensation for fatal and non-fatal cases rose from £4,616,723 to £6,315,803. The English law governs compensation for the occupational diseases. In 1927 £5278 was paid out for 25 fatal cases and £548,492, for 17,079 cases of disablement. See *INSURANCE*.

WORLD AGRICULTURAL CENSUS See AGRICULTURE

WORLD CONFERENCE ON FAITH AND ORDER. See INTERNATIONALISM

WORLD COURT. Early in 1929 two notable events focused attention on the question of the adherence of the United States to the Permanent Court of International Justice. On February 16, the Honorable Elihu Root sailed for Europe to attend the meeting of the commission of jurists appointed by the League Council to consider what revision of the court statute was necessary in the light of seven years' experience. On February 20, Secretary of State Kellogg addressed identic notes to the states signatory to the Court, suggesting that the negotiations in regard to the American adherence be reopened. The communication of February 20 was the first official note from the U. S. State Department since that of February 12, 1926, in which the Secretary transmitted the Senate's resolution voting adherence to the Court with five reservations.

A conference of states signatory to the Court held in Geneva in September, 1926, practically accepted the first four of the Senate's reservations and worked out a formula which was designed to give the United States a position of equality with League members in regard to requests for advisory opinions. This solution did not meet with the approval of President Coolidge and, in his Armistice Day speech at Kansas City in 1926, he stated that he did not feel warranted in asking the Senate to change its position. This conference had suggested that a further exchange of views between the United States and the Court signatories might be useful, but, until Mr. Kellogg's note, the United States had made no move.

Couched in very courteous terms, this note reviewed the history of the problem and stated that the only substantial difference of opinion was in the second part of the fifth reservation.

The note suggested further informal exchanges of views with an end to finding a formula that would fully protect the United States' interests and rights, and added that the expectation of finding such a formula was "strongly supported by the fact that there seems to be but little difference regarding the substance of these rights and interests."

The question of whether a unanimous vote of the Council (or Assembly) and the United States was required to request the Court for an advisory opinion or whether a mere majority would suffice was the root of the difficulty. If the former contention was true, the interests of the United

States were amply protected by the Geneva conference formula. If only a majority vote was necessary, or if the votes of the parties to the dispute were excluded in reckoning unanimity, the United States felt that it must have further protection.

The League held back from making a ruling as to the necessity for a unanimous vote in requesting advisory opinions largely because it was fearful of imposing restrictions which might hamper future developments in its machinery for peaceful settlement of disputes. Advisory opinions rendered by the Court had been found most useful in settling disputes and seemed not to be regarded as endangering the standing of the Court.

A resolution introduced by Switzerland at the September, 1928, League Assembly asked the Council to study the question of the necessity of a unanimous vote . . . in advisory opinion. As originally . . . resolution had asked that the question be referred to the Court for an advisory opinion. The Assembly, on September 20, passed another resolution introduced by France, requesting the Council to examine the Statute of the Court with a view to amending it, in the light of experience, before 1930, when the terms and office of the present judges expire. The amendments envisaged were relatively minor ones. As a result of this action by the Assembly, the Council on December 14, appointed a committee of 12 jurists, including the president and vice president of the Permanent Court, to make a preliminary study of amending the statute. An American member was to be appointed in addition, by the president of the Council and the Rapporteur. Mr. Root was invited and on Feb. 16, 1929—his eighty-fourth birthday—sailed to assist in revising the statute, in the drafting of which he had originally played an important part.

On March 6, the formula, prepared by Mr. Root, of a method of bringing about the adherence of the United States to the World Court was published. Substantially, it redrafted Article IV of the Hague protocol, and got its interpretation from being read in the light of that document, which was prepared by a conference of signatories to the International Court. It will be recalled that the conference rejected the fifth American reservation, which would have given the United States an unrestricted veto privilege on advisory opinions by the Court when the American Republic found itself especially interested in the question propounded.

In lieu of this reservation, the protocol allowed an American objection the same force and effect as would attach to a vote of a League member of either the Assembly or the Council of the League. The new redraft which left the American Government free, so that it could withdraw if it did not wish to submit an issue to the World Tribunal, was considered as affording a good basis for further discussion of the United States' reservation not accepted by the other nations. Subsequently, the Council of the League of Nations accepted the Root Protocol. In essence the Protocol is as follows:

Article I The member states accept the special conditions of the United States' fifth reservation.

Article II The United States shall participate upon equality with the members of the League of Nations in the Council and in the Assembly in matters having to do with the World Court.

Article III No amendment of the statute of the Court may be made without the consent of all the states.

Article IV The Court shall render advisory opinions in public sessions after due notice.

Article V The Court shall not render such an advisory opinion on any matter in which the United States has or claims an interest until full notice shall have been given the United States, and exchange of views shall have taken place between the United States and all other nations interested, and any objection of the United States shall have the same force as would have an objection from any member of the Council of the League.

Articles VI, VII, and VIII state how and when the protocol shall come in force after having been signed by the member states and by the United States.

By authority of President Hoover, the signature of the United States was affixed to the protocols of the World Court in Geneva, December 9. These documents, when and if ratified by the Senate, permit American adhesion to the tribunal upon terms acceptable both to the Senate and to the other nations which hold membership in the court.

Secretary of State Stimson's careful analysis of the powers and policy of the Court made it clear that the advantages of adherence to it were substantial and the alleged disadvantages mythical. The much-discussed peril of advisory opinions did not seem to exist. Mr. Stimson said:

Unless a state has signed the so-called "optional clause," granting to the Court compulsory jurisdiction over it in certain classes of legal disputes (which is not proposed in the present protocol that the United States shall sign) the Court can take jurisdiction only over cases which the parties themselves refer to it, even if that suitor be a signatory of the Court, and render judgment in respect to such suitor. The Court simply stands ready and available as a carefully chosen and experienced tribunal to which the nations of the world, if they choose, can refer their disputes for settlement, without the ordinary delays and difficulties which accompany the selection of arbitrators.

At the opposite pole of World Court opinions were those "irreconcilables" who held that in spite of the Root formula and Senate reservations, the World Court was no place for the United States.

The *Chicago Tribune* argued that the World Court was less a judicial institution than "an instrument of international politics, finding juridical formulas for the imposition or compromise of national interests, the United States cannot join such an international group with any security or to any good purpose."

Nominations of candidates released by the League Secretariat on August 14 rendered it fairly certain that the vacancies on the bench of the Permanent Court of International Justice (World Court), caused respectively by the deaths of the British member, Viscount Finlay, and the French member, André Weiss, would be filled by Sir Cecil Hurst and Henri Fromageot, respectively. Both of these were legal advisers of Great Britain and France on The Hague bench, and were members of the committee of jurists which functioned in March. Italy offered different nominations. Messrs. Hurst and Fromageot were subsequently elected by the Assembly on September 19, M. Henri Fromageot (France) receiving 37 votes and Sir Cecil Hurst (England) receiving 40 votes, the nearest competitors having only six votes each. In the Council, the same two candidates received an absolute majority and were accordingly elected.

M. A. Hammarskjöld, Swedish Counselor of Legation, was reelected Registrar of the Court. He had served from its establishment.

During the year 1929, the Permanent Court of International Justice held two sessions and

handed down three judgments and three formal orders. The sixteenth (extraordinary) session of the Court began on May 13, 1929, and ended on July 12, 1929, and the seventeenth (ordinary) session began on July 8, 1929, and ended on September 10, 1929. At the sixteenth session, the court gave an order in the "Case Concerning the Denunciation by China of the Treaty of November 2, 1865, between China and Belgium", an order in the "Case Concerning the Factory at Chorzow (Indemnities)" (No. 14) in the "Case Concerning the Payment of Various Serbian Loans Issued in France", and a judgment (No. 15) in the "Case Concerning the Payment in Gold of the Brazilian Federal Loans Issued in France". At the seventeenth session, it gave an order in the "Case of the Free Zones of Upper Savoy and the District of Gex" and a judgment (No. 16) in the "Case Relating to the Territorial Jurisdiction of the International Commission of the River Oder". See UNITED STATES

WORLD CROPS. See AGRICULTURE

WORLD FAIRS. See EXPOSITIONS

WORLD LEAGUE AGAINST ALCOHOLISM. An organization originated in a conference of the Anti-Saloon League of America in Columbus, Ohio, in 1916, and launched in a joint conference of the Canadian Temperance Alliance and the Anti-Saloon League in Washington in 1919. The charter members included representatives of 16 national temperance organizations from 12 countries.

The meetings of the league are held triennially, that in 1927 was at Winona Lake, Ind. The official league membership in 1929 comprised 61 national temperance organizations from 34 of the leading countries of the world. The work is carried on by executive, legal, publicity, and service departments, with offices in Westerville, Ohio, the research department in New York City, the Scientific Temperance Federation in Boston, which on behalf of the league carries on studies of the scientific aspects of the alcohol problem and issues reports thereon; and the Intercollegiate Prohibition Association, operating as the students' department of the league, with headquarters in Washington. Branch offices are maintained in London, England, Lausanne, Switzerland, Oslo, Norway, and Tartu, Estonia. In 1929 the four presidents of the league were Miss Anna A. Gordon, Evanston, Ill.; Dr. Robert Herod, Lausanne, Switzerland; the Rt. Hon. Leif Jones, London, England; and Dr. Howard H. Russell, Westerville, Ohio. The general secretary was Dr. Ernest H. Cherrington. See ANTI-SALOON LEAGUE, PROHIBITION.

WORLD PEACE FOUNDATION. See PEACE AND PEACE MOVEMENTS.

WORLD RECORDS. See articles on ATHLETICS, etc.

WORLD SERIES. See BASEBALL.

WOUNDS. Howes, Sooy, and Haivey discuss the healing of wounds in the *Journal of the American Medical Association* for January 5. Various important factors which might favor or retard wound healing are considered experimentally. Some of those considered in the past have been diet, increase of temperature, etc. Carrel and Noy some years ago appeared to have shown that wound healing follows certain definite laws and that in time it would be possible from known data to predict the time of cicatrization. In the opinion of the authors, it has been an error to limit these studies to wounds of the

skin and therefore they have investigated muscle, fascia, mucous membranes, etc. Incidentally, the authors measured the tensile strength of the healing wound after removal of the dressing. It was first learned that there is a negative phase, a latent period, or "lag," of from four to six days while the wound is uniting and that this is succeeded by fibroplasia. The tensile strength of a healing wound is a function of this fibroplastic process. The maximal strength of the wound when tested for tensile strength is attained from the tenth to the fourteenth day.

LARVÆ OF THE BLOWFLY IN THE TREATMENT OF WOUNDS. During the World War, Dr. Wm. S. Baer of Johns Hopkins made the discovery that wounds which had been infested with ordinary maggots do not become subject to ordinary infection. The infestation occurred in those troops which were most neglected. The rationale was simple for the maggots lived on the dead tissue which served for the nutriment of the bacteria of wound infection. After the War, Dr. Baer was influenced to test this remedy in putulent open osteomyelitis, a surgical infection which is very difficult to combat and which is prone to follow surgical operations for the relief of the basic disease. With maggots bred in the laboratory, he introduced them into the operation wounds in the early stages of infection and in this way, by eliminating the bacteria, secured prompt healing.

WRAGGE, EDMUND. An English consulting engineer, died in Toronto, Canada, Nov. 26, 1929, at the age of 93. Born in Worcestershire, England, he began the practice of engineering with Sir Charles Fox & Partners of London. In 1858 he went to South Africa to build, between Cape Town and Stellenbosch, the first railway of that country. On his return to England in 1862, he was given supervision of the building of Victoria Bridge over the Thames. Going to Canada in 1869, he became chief engineer in charge of the construction of the Toronto, Gray & Bruce and the Toronto & Nipissing railways, and in 1883 he was appointed Toronto manager of the Grand Trunk Railway System.

WRECKS. See SAFETY AT SEA.

WRESTLING. There were two so-called heavy-weight professional wrestling champions at the end of 1929, Gus Sonnenberg and Richard Shikat, German and Philadelphia grappler Sonnenberg, although triumphant over Strangler Lewis in February in Boston, was not recognized by the New York and Pennsylvania commissions, whereas Shikat was considered the titleholder in 31 States. In amateur ranks the defeat of Oswald Kapp, Olympic welterweight champion, proved the high light of the season. He was eliminated in the A A U catch-as-catch-can middle-weight semi-finals by Al Cornsweet, former Brown football star. The A A U title winners for 1929 at the meet held April 1920 at the New York Athletic Club were 112-pound, George R. Shoemaker, Lehigh, 118-pound, Thomas McChary, Cornell College, Iowa, 126-pound, George Campbell, Sandusky, 147-pound, Arthur Tomlinson, Oklahoma, A and M College, 160-pound, Ben Sherman, Portland, Oregon, 175-pound, Kaare Knogh, University of Chicago, heavy-weight, Ed George, University of Michigan. Lehigh again won the intercollegiate title on the University of Pennsylvania mats in Philadelphia in April.

WÜRTTEMBERG, württém-bêrk. A constituent state of the German Republic since November, 1918; formerly a kingdom of the German Empire. Area, 7530 square miles, population, according to the census of 1925, 2,580,235. Chief city, Stuttgart, with a population in 1925 of 341,461. Supreme power is vested in the Landtag, composed of 80 members elected for four years by universal suffrage. This body appoints the state ministry, whose president is styled State President. State President and Minister of the Interior in 1929, Dr. Eugen Bolz (Centre party).

WYOMING. POPULATION. According to the Fourteenth Census, the population of the State on Jan. 1, 1920, was 194,402. Estimates made as of July 1, 1928, indicated a population of 247,000. The largest city was Casper, which increased from 11,447 in 1920 to 23,288 in 1925. The capital is Cheyenne.

AGRICULTURE. The following table presents the acreage, production, and value of the principal crops in 1928 and 1929.

Crop	Year	Acreage	Prod Bu	Value
Hay	1929	1,094,000	1,577,000 *	\$19,125,000
	1928	1,032,000	1,845,000 *	16,488,000
Wheat	1929	243,000	3,331,000	2,965,000
	1928	243,000	3,897,000	3,229,000
Corn	1929	177,000	2,832,000	2,407,000
	1928	167,000	2,672,000	2,004,000
Oats	1929	145,000	4,205,000	2,145,000
	1928	132,000	3,828,000	1,723,000
Potatoes	1929	19,000	2,090,000	2,717,000
	1928	21,000	2,352,000	1,529,000
Barley	1929	124,000	3,348,000	2,143,000
	1928	95,000	2,660,000	1,623,000

* Tons

MINERAL PRODUCTION. The quantity of the petroleum production of the State remained little changed for 1928, at 21,415,000 barrels, as against 21,307,000 barrels for 1927, the value of the year's product fell to \$27,900,000 (estimated) for 1928, from \$29,830,000 for 1927. The yield of coal, the second product in point of value, also fell, to 6,571,683 short tons for 1928, from 6,753,656 tons for 1927. The value of coal mined in 1928 was reported at \$17,303,000, that mined in 1927, at \$18,152,000. Natural gas was produced to the quantity of 43,581,600 M cubic feet in 1927, as against 46,507,000 M cubic feet in 1928, the value of the 1927 product was \$3,269,800, and in 1928, \$4,669,000. The total value of the State's mineral product was \$56,166,600 for 1927, \$78,988,066 for 1928.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1929, was 2041.60.

MANUFACTURES. According to the biennial Federal Census of Manufactures published by the Department of Commerce in 1929 and dealing with operations of 1927, there were in the State, in 1927, 229 manufacturing establishments. These employed 5577 wage earners, whose wages for the year totaled \$9,006,022. Materials and supplies used in production cost \$63,741,234. Manufactured products combined attained the value of \$85,368,360.

EDUCATION. There were enrolled in the public schools, in the academic year 1927-28, 53,148 pupils. Of these, 42,498 were in kindergartens, special classes, and elementary grades and 10,644 were in high schools. Expenditures of that year for public-school education totaled \$7,092,430.

POLITICAL AND OTHER EVENTS. The death of Senator Francis E. Warren (q. v.) removed from the scene one who had been a political leader from

the earliest days of the State. Governor Emerson appointed to succeed Warren as Senator, Patrick J. Sullivan, a former Representative and a Republican. At the instance of President Hoover, steps were taken in December to rename Fort Russell at Cheyenne Fort Francis E. Warren, in honor of the late Senator. There was reported in October a wholesale slaughter of antelopes in parts of the State, due to the removal for six days of the prohibition, enforced for many years, against shooting these creatures.

OFFICERS. Governor, Frank C. Emerson, Secretary of State, A. M. Clark, Treasurer, W. H. Edelman, Auditor, Rowena Alcorn, Attorney-General, W. O. Wilson, Superintendent of Public Instruction, Katharine A. Morton.

JUDICIARY. Supreme Court, Chief Justice, Fred H. Blume, Associate Justices, Ralph Kimball and W. A. Riner.

WYOMING, UNIVERSITY OF. A State institution of higher education in Laramie, founded in 1886. The enrollment for the summer session of 1929 was 788 and for the autumn term, 1083. The faculty numbered 123. The total permanent funds as of June 30, 1929, amounted to \$2,173,702, and the total receipts from all sources for 1928-29 were \$1,259,324. The library contained 72,369 volumes. President, Arthur Griswold. Chanc. Ph. D.

X-RAYS. See PHYSICS.

YACHTING. In an international sense American yachting faded badly during 1929, four matches being lost and only two won—the Star Class international championship in which American boats predominated in number of entries, and the Interclub-Bermuda series, at Bermuda. In the Seawanhaka Cup series the American boat lost by the scantiest of margins, winning the first two races from the Scotch eight-meter sloop *Carol*, and losing the other three by seconds only. The invading boat did better in the stiff breezes that prevailed off Oyster Bay at the time. Of the other races that the United States lost to foreign sailors, the thirty-square-meter sloop races at Marblehead went to Sweden, the twenty-two square-meter at Indian Harbor, Connecticut, to another boat representing the same foreign nation, and the seven races on Barnegat Bay and Lake St. Louis to the Canadians.

The season on Long Island Sound was very successful. Over 255 racing yachts started on the two days of the Larchmont Race Week, and the attendance at the twenty-eight regattas on western Long Island Sound were proportionately high. For long distance racing, the 450-mile race from London, Conn., to Gibson Island in the Chesapeake was the feature event of the year. It was won by the schooner *Aino*, owned by Elihu Root, Jr., and Paul Hammond, which had taken the Spanish race and the Fastnet race. R. G. Bigelow's schooner *Teal* was second. Another important long-distance race, the Bay-side-Block Island event, was captured by J. H. Ripley's schooner *Kumalong*. The New York Yacht Club cruise, despite poor weather conditions, was interesting and brought to light the superiority of J. V. Santy's schooner *Pleione*. In the sloop division J. Schott's *Sonny*, E. W. Clark's *Resolute*, G. M. Pynchon's *Isalena*, and Gerard Lambert's *Janite* were the more important winning boats. The *Janite* won the King's Cup by sixteen seconds from the *Isalena*, while the New York Yacht Club Cup was annexed by Harold Vanderbilt's *Prestige*.

zinc there was an output of about 52,100 tons of redistilled secondary zinc, as compared with 48,666 tons in 1928, making a total supply of distilled and electrolytic zinc in 1929 of about 676,100 tons, composed of 235,700 tons of high-grade and intermediate, 97,500 tons of select and brass special, and 342,900 tons of prime Western zinc. Of the total output of primary zinc in 1929, 157,300 tons was electrolytic zinc.

The total number of refiners at the 21 zinc smelters that operated during all or a part of the year was about 107,500. Of that number, about 62,200 were said to be in operation at the end of the year. At the end of 1928 there were 63,716 in operation at 19 plants.

ZINC PRODUCTION IN UNITED STATES [Short tons]

	1928	1929 *
Eastern States	144,045	153,100
Central States		
Tri State district	297,020	299,600
Southeastern Missouri	3,457	3,700
Upper Mississippi Valley	18,434	17,700
Other	176	9
Western States		
Arizona	639	1,200
California		25
Colorado	35,731	29,700
Idaho	31,263	49,600
Montana	82,830	84,800
Nevada	8,398	7,000
New Mexico	31,201	74,000
Utah	46,929	50,200
Washington	43	700
	695,170	731,300

* Estimated

ZIONISM See JEWS

ZIRKLERITE. See MINERALOGY

ZONING. See CITY AND REGIONAL PLANNING

ZOOLOGY. Articles in earlier YEAR BOOKS have noted the fact that research in modern Zoology is experimental rather than descriptive in nature—i. e., rather a study of the forces at work in the animal than the way it is put together. As illustrating this situation, an examination of the titles of papers offered at the meeting of the American Society of Zoologists is interesting. Here, 83 titles were in comparative and general physiology, 23 in cytology, 22 in embryology, 10 in parasitology, 8 in ecology and none at all in anatomy. In addition, 39 papers dealing with genetics were read at a meeting of the genetics section of the society. Prominent in experimental technique are the use of X-rays and ultra-violet rays, grafting and transplantation of surface tissues and of glands of internal secretion, and the study of the chemical effects of the environment on the animal. A comparison of the titles in both American and foreign periodicals shows that about the same proportion of experimental to other work exists elsewhere.

The American Society of Zoologists met at Des Moines, Iowa, in connection with the meeting of the American Association for the Advancement of Science, November 27, the Deutscher Zoologischer Gesellschaft at Marburg, May 21-23, and the Zoological Section of the British Association met with that Association in Cape Town and Pretoria, South Africa, July 22-August 3. The American Society of Naturalists also met at Des Moines, and the Thirteenth International Congress of Physiology met at Boston, August 19-23.

In the YEAR BOOK for 1927 is a reference to a difference of opinion between Gregory and Os-

born as to the relationship of man to the higher apes. The former held to the traditional view of a close relationship, while the latter believed that the two lines separated very early in mammalian evolution. As President of the A. A. S., Osborn in his presidential address developed his theory. According to the first theory, man would be of arboreal origin and about 15,000,000 to 18,000,000 years old, while Osborn would put his origin back at least 40,000,000 or 50,000,000 years into the Tertiary era. At the end of the Tertiary, he declared, man's brain was fully as capacious as that of some living races today and he denied that the human hand shows indications of an aboreal ancestry. *Nosence*, 71, p. 1.

As president of the Zoology section of the British Association meeting in South Africa, Watson asserted (*Nature*, 124, p. 231) that, as concerns evolution, we are in a very unsatisfactory condition in that we accept the theory but are still in the dark as to how it could have been brought about.

In development of any animal, the (apparently) homogeneous egg gives rise to a mass of cells among which eventually there appear differentiations leading to distinct organs. An important problem in this connection is the question as to the forces at work in this differentiation and coordination process. The "genes" of the geneticist certainly determine the ultimate and finer details of the process but have nothing to do with the broader outlines. Lillie (*Bour Archiv*, 118, p. 449) discussed the problem of "embryonic segregation" by which is meant the origin of "diverse specific potencies." In some cases, where cleavage is determinate, separation of cells in the beginning of segregation. In others, where cleavage is indeterminate, the segregation involves a mass of cells acting as a whole. This segregation has been assumed to operate by means of, or in a fashion similar to, hormones, but Lillie's argument is that hormones may stimulate existing segregates but cannot create them. He rejects any hypothesis of organ-forming stuffs and concludes that the "organization as a whole" is the governing agency in the differentiation process.

As the Sedgwick Lecturer at the Marine Biological Laboratory, Conklin (*Am. Nat.*, 63, p. 51) dealt with the problem of differentiation. He stated that this problem has three phases: (1) When and how do differentiations arise? (2) How are they oriented, orientation, and regulation brought about? (3) How can we explain the teleological character of development where the end seems to be in view from the beginning? Genes contained in the nucleus do not themselves change but are most important factors in differentiation. At first, the nucleus is large, as compared with the cytoplasm, because of the presence of dialysable materials which pass through the nuclear membrane into the nucleus. As development proceeds, these mingle with the cytoplasm again, forming new combinations which are non-dialysable and thus the relative size of the cytoplasm, as compared with that of the nucleus, increases and the composition of the cytoplasm changes. Genes, themselves unchanged, produce different results when acting on these diverse materials.

Conklin stated that in some cases (ascidians), there are obvious organ-forming materials which are early localized, while in others they apparently do not occur, simply because localization is later. The answer to the first of the above ques-

tions is that there is an interaction between genes, nucleoplasm, and cytoplasm which leads to specific chemical compounds in the cell which are localized in their appropriate places. Conklin was unable to accept the entirety of Driesch as the answer to the second question, even though he was unable to suggest any alternative, nor could he explain the difficulty raised in the third question where the end of the embryonic process seems to be in view from the beginning. Far from being discouraged by this failure, he considered that the situation is one that should lead to further research.

Garner's Castle (*Jour of Heredity*, 20, p. 193) described a new variety of rabbit known as "rex" appearing about fifty years previously. The fur has no large guard hairs, such as must be plucked from the fur of the ordinary rabbit and hence will probably be valuable commercially. The gene for rex shows no linkage with any other thus far described. Dählbörgh (*Genetica*, 14, p. 421) discussed the question of inbreeding in man. From a mathematical study, he developed the conclusion that, from the standpoint of the community, consanguineous marriages are of no importance, but may be of great significance to the individual. Such a marriage may on the one hand increase, and on the other decrease, the probability of having "character bearers" among the descendants. The author thinks that the effects of inbreeding in the general population are so slight as to be entirely negligible.

Human twins are classified in two groups—"fraternal," who may be of the same or of different sexes and often resemble one another no more closely than do any other brothers or sisters, and "identical" always of the same sex and very similar to one another in appearance, the resemblance being so close that sometimes it is difficult to tell them apart. There is embryological evidence that while fraternal twins came from separate eggs, identical ones arose from the division of a single egg. If the genes which determine heredity are located in the chromosomes, they are equally distributed in cleavage divisions, and it follows that the twins receive identical chromosomal material. If now, these twins are separated when very young, reared under different conditions, and given different training, it should be possible to determine from their adult characteristics whether their heredity or their environment played the greater part in establishing adult characters, physical, mental, or moral.

Corroborating earlier work of Galton, most observers have found such striking resemblances between such twins as to indicate that environment and training are of minor importance so far as adult characters are concerned. Newman (*Jour of Heredity*, 20, pp. 49, 97, and 153) discussed at some length three cases of this sort.

Newman's final conclusion was that each case is a problem in itself and that generalizations from the data now at hand are impossible. So far from being conclusive evidence in favor of the theory that inheritance is all important and environment of minor value, these cases show that the question is still open.

In this work Newman agreed with other students of the subject that finger and palm prints offer the best evidence in deciding whether a given set of twins are really identical. Reichle, however (*Biol Bull*, 56, pp. 104 and 313), questions the accuracy of this method. Double-headed

monsters are obviously potentially identical twins, which have failed to entirely separate, and obviously they are the only absolutely certain examples of identical twinning. Reichle examined a series of these monsters taken from a museum collection, and was unable to work out from comparative study of finger and palm prints any definite law of resemblances. Another criterion for identical twins is that the two should be enclosed in the same birth membrane or amnion. Reichle agrees with this conclusion but points out that in many cases even in the best organized hospitals, insufficient attention has been given to this point, and there remains an uncertainty in most cases, whether the twins are identical. This does not affect the value of the study of such twins for information bearing on the above mentioned question, but emphasizes the vital importance of accuracy in the original diagnosis.

SEX DETERMINATION. A widely held generalization in biology is that the sex of an individual is determined by the presence of one or of two "X" chromosomes in its cells. Wittechi (*Jour Exp Zool*, 54, p. 157) challenges this conclusion as a universal principle though admitting that in the fruit fly and in some other animals it holds under normal conditions. The situation is however, more complicated in hermaphroditic animals. Wittechi traced a series from *Sagittia* where there is no sex-determining mechanism, through the frogs where a chromosomal mechanism underlies sex determination but is regularly eclipsed by other factors causing rudimentary hermaphroditism in young males and adult females, up to the nematodes, where the chromosomal mechanism has lost its sex-determining significance which it possessed in earlier times. He concluded that sex determination through chromosomal distribution has been a process of evolution and has progressed in different species to varying grades of perfection.

Christie (*Jour Exp Zool*, 54, p. 59), stated that in the nematode *Agonostomus decaudata* which lives as a parasite in insects, where infestation is heavy a large majority of the animals are males, while, conversely, if few, the majority are females. A suggested conclusion is that in these animals sex is finally determined by environmental conditions.

PROTOZOA. For the past 70 years, the question of the significance of conjugation in protozoa has received a great deal of attention. Jennings (*"Genetics of the Protozoa," Biblog Genetica*, 5, p. 105) summarized the literature bearing on this problem, with especial reference to the relation of protozoan reproductive processes to the origin, causation, and persistence of constitutional differences some of which persist and may lead to permanent differences of taxonomic importance, while others are of a more transitory nature. Among the progeny of a single progenitor may be found individuals differing in various respects, these differences being due to age, fatigue, or to pathological conditions. These are certainly not inherited. Other individual differences are due to action of environment, to division into nonequivalent parts, to cyclical changes, or to divergences due to conjugation.

Jennings is inclined to accept the view that while some "environmental" differences persist for only a limited number of generations, others lead to permanent changes in the race. The fact that, according to Jennings, the longer these en-

vironmental forces act, the more durable will be their effects, seems to add force to the argument. Beers (*Am Nat*, 63, p 125) carried Didinium to the 1384th generation without loss of vigor. Lloyd and Beattie (*Biol. Bull.*, 55, p 404) stated that when the contractile vacuole of *Paramecium* contracts, the liquid is forced back into the radial canals, as well as to the outside. The authors think that the vacuole contains a liquid of relatively high osmotic pressure and while in the radial canals it operates so as to extract water from the surrounding protoplasm.

PLATYHELMINTHS The small turbellarian *Microstomum caudatum* sometimes feeds upon hydra and after such feeding thread cells of the hydra are in various tissues of the worm, eventually taking their places at the surface of the body. Kepner asserts that here they function much as they do in the hydra, throwing out threads for protection when touched, here of course, the protection being afforded the worm. According to Kepner, the worm exercises choice in its reactions to hydra, eating this animal only when it needs a new supply of thread cells. Kepner and Nuttycombe (*Biol Bull.*, 57, p 69) investigated the question whether this property of gathering thread cells when, and only when, needed, or transferring them to the appropriate place in the body surface of the worm, and discharging them when necessary for protection arises, could be transmitted from generation to generation of asexually produced individuals or whether some hereditary genes for this series of activities is limited to the germ plasma.

They found that after having been kept free from hydras for 22 asexual generations the animals reacted to them in a perfectly normal fashion. The actual use of thread cells for protection was observed in a worm of the 15th asexual generation. Even if all nerve ganglia were removed from worms, the regenerated individuals still reacted normally. The authors conclude that this instinct does not reside in neuropilasm but is transmitted through the soma.

ANNELIDS In the *Victoria Naturalist* for July, Barrett described some giant earthworms, *Megascolides australis*. In the locality investigated, they live in burrows in clayey flats, living deep down and coming to near the surface in the autumn and winter. The eggs are tough and horny, 2 to 3 inches in length. The average length of the adult worms is 4 feet, though the largest actually measured were 9 feet. The longest reported ones measured 11 feet.

INSECTA A most important economic problem in entomology appeared in Florida in 1929 in the shape of the Mediterranean fruit fly which was discovered in April and \$4,000,000 was at once appropriated for its eradication and stringent quarantine measures were adopted. A bill for a further appropriation of \$15,000,000 was before Congress at the end of 1929. See ENTOMOLOGY, ECONOMIC.

Rau (*Ecology*, 10, p 191) reported on the breeding habits of *Polistes* wasps, calling attention to the fact that the ordinary textbook statement that *Polistes* sp. "builds in sheds, etc." does not suffice. Near St. Louis, he found four species of wasps each with its characteristic nesting habits. *P. annularis* nests in trees, *P. variatus* close to the earth, *P. pallipes* in buildings and *P. rubiginosus* in hollow trees or dark recesses.

The ecological advantages seem to be that under these conditions, since there is more or less antagonism between the members of these different species, it is better for them to nest separately, thus avoiding conflicts as to nesting sites, as well as in the search for food.

CHORDATA Tretzjoff (*Zett. f. Wiss. Zool.*, 134, p 558), derived the Chordata from Ctenophores rather than from Coelenterates. The aboral region became a sensory plate from which eventually the central nervous system developed. Original mouth opening became the anus and the permanent mouth appeared at the other end. The peripheral portions of the paired stomach developed into coelomic spaces, while the ciliated bands sank in and became nephridia.

ORNITHOLOGY Friedman in "The Cowbirds, A Study in the Biology of Social Parasitism," recorded observations on several species of the cowbirds made in New York State, Argentina, and on the Texas-Mexican border. The greater part of the book is devoted to descriptions of the nesting habits of the birds and their general ecology. The author presents a suggested explanation for the origin of the parasitic habit in the cowbirds, but is careful to say that this does not necessarily apply to other parasitic birds. He argues that the parasitic habit is not primitive but must have arisen from an earlier, nest-building and brooding condition, such as is the case at present in the bay-winged cowbird, the only non-parasitic member of the group. As has been shown by Howard, the primary instinct in most birds is to select and defend a certain territory, and later to build a nest in it. The bay-wing can and does, build its own nest but usually lays in the deserted nests of other birds. The female after laying, loses most of her protective "territorial" instinct and the nest is protected and the young cared for by the male. If the male should also lose this "territorial" instinct, the parasitic habit would be necessary if the race is to survive, and precisely this has happened in the other cowbirds. The ancestral cowbirds cared more for the nest than for the territory and the loss of the protecting instinct was the definite cause of parasitism.

ZSIGMONDY, shig'mon-dë, RICHARD A. German chemist, died in Göttingen Sept. 24, 1929. He was born Apr. 1, 1864, in Vienna, Austria, and was graduated from the University of Munich. His early study of the colors produced by the presence of metals or metallic oxides in glass brought him to the study of colloid chemistry and he published a book on colloidal gold (1898). With Professor Siedentopf, he constructed in 1904 an ultramicroscope by means of which hitherto invisible colloidal particles could be seen. In 1907 he went to Göttingen as director of the Institute for Inorganic Chemistry, which, under his direction, became a school for the study of colloid chemistry. His principal work in the field of colloid chemistry, which Zsigmondy was awarded the 1925 Nobel Prize for chemistry.

ZULULAND, zū'loo-land. A portion of the Province of Natal in the Union of South Africa, to which it was annexed Dec. 30, 1897. Area, 10,427 square miles, population in 1911, 219,606. There are extensive sugar and tea plantations. See SOUTH AFRICA, UNION OF, for the statistics on Natal.

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